# RED BANK OUTLINE PLANNING APPLICATION, AND NT02-04 NEW TOWN FULL PLANNING APPLICATION

## Environmental Statement Volume 2: Main Text

**April 2023**



Far East Consortium

# Environmental Statement – Volume 2: Main Text

## Contents


| | | |
|---|---|---|
| **Chapter 1** | - | Introduction |
| **Chapter 2** | - | Approach |
| **Chapter 3** | - | Site Description |
| **Chapter 4** | - | Alternatives |
| **Chapter 5** | - | The Proposed Development |
| **Chapter 6** | - | Landscape and Visual |
| **Chapter 7** | - | Ecology and Nature Conservation |
| **Chapter 8** | - | Cultural Heritage |
| **Chapter 9** | - | Ground Conditions |
| **Chapter 10** | - | Flood Risk and Drainage |
| **Chapter 11** | - | Transport and Access |
| **Chapter 12** | - | Air Quality and Dust |
| **Chapter 13** | - | Noise and Vibration |
| **Chapter 14** | - | Daylight, Sunlight and Overshadowing |
| **Chapter 15** | - | Wind Microclimate |
| **Chapter 16** | - | Socioeconomics |
| **Chapter 17** | - | Health and Wellbeing |
| **Chapter 18** | - | Climate Change |
| **Chapter 19** | - | Effect Interactions |
| **Chapter 20** | - | Schedule of Additional Mitigation |

**Abbreviations**

**Glossary**

# Environmental Statement – Volume 2: Main Text

## List of Tables


| | | |
|---|---|---|
| | | **Chapter 1: Introduction** |
| **Table 1.1** | - | Overview of Terminology |
| **Table 1.2** | - | The Project Team |
| | | **Chapter 2: Approach** |
| **Table 2.1** | - | Overview of Planning Application Submissions for Red Bank |
| **Table 2.2** | - | Assessment Scenarios |
| **Table 2.3** | - | List of Cumulative Schemes 'Scoped-into' the CEA |
| **Table 2.4** | - | List of Cumulative Schemes 'Scoped-out' of the CEA |
| **Table 2.5** | - | Description of the Sensitivity of an Environmental Receptor |
| **Table 2.6** | - | Description of the Magnitude of an Impact |
| **Table 2.7** | - | Typical Matrix for the Assessment of the Significance of Effects |
| | | **Chapter 5: The Proposed Development** |
| **Table 5.1** | - | Proposed Floorspace and Residential Unit Numbers |
| **Table 5.2** | - | Car Parking Provision for Application 5 |
| **Table 5.3** | - | Indicative Plant and Equipment |
| | | **Chapter 6: Townscape and Visual** |
| **Table 6.1** | - | Overview of approach to TVIA |
| **Table 6.2** | - | TVIA assessment scenarios |
| **Table 6.3** | - | Definition of terms relating to the magnitude of change |
| **Table 6.4** | - | Illustrative significance matrix |
| **Table 6.5** | - | Consultation |
| **Table 6.6** | - | Committed Developments included in TVIA |
| **Table 6.7** | - | Townscape Character Areas – Baseline and Sensitivity to Change |
| **Table 6.8** | - | Conservation Area townscape appraisal extracts |
| **Table 6.9** | - | Representative viewpoints included in the TVIA |
| **Table 6.10** | - | Representative Viewpoints – Baseline and Sensitivity to Change |
| **Table 6.11** | - | Preliminary Assessment of Effects on Townscape Character (Application 4) |
| **Table 6.12** | - | Assessment of Townscape Character – Demolition and Construction (Application 4) |

**Table 6.13** - Assessment of Townscape Character – Completed and Operational Development (Application 4)
**Table 6.14** - Preliminary Assessment of Effects on Character Areas (Application 4)
**Table 6.15** - Assessment of CAs – Demolition and Construction (Application 4)
**Table 6.16** - Assessment of CAs – Completed and Operational Development (Application 4)
**Table 6.17** - Visual Assessment – Demolition and Construction (Application 4)
**Table 6.18** - Visual Assessment – Completed and Operational Development (Application 4)
**Table 6.19** - Cumulative Townscape Character Assessment – Completed and Operational Development (Application 4 – Cumulative)
**Table 6.20** - Cumulative Visual Assessment – Completed and Operational Development (Application 4 – Cumulative)
**Table 6.21** - Preliminary Assessment of Effects on Townscape Character (Application 5)
**Table 6.22** - Assessment of Townscape Character – Demolition and Construction (Application 5)
**Table 6.23** - Assessment of Townscape Character – Completed and Operational Development (Application 5)
**Table 6.24** - Preliminary Assessment of Effects on Conservation Areas (Application 5)
**Table 6.25** - Assessment of CAs – Demolition and Construction (Application 5)
**Table 6.26** - Assessment of CAs – Completed and Operational Development (Application 5)
**Table 6.27** - Visual Assessment – Demolition and Construction (Application 5)
**Table 6.28** - Visual Assessment – Completed and Operational Development (Application 5)
**Table 6.29** - Cumulative Townscape Character Assessment – Completed and Operational Development (Application 5)
**Table 6.30** - Cumulative Visual Assessment – Completed and Operational Development (Application 5)
**Table 6.31** - Preliminary Assessment of Effects on Townscape Character
**Table 6.32** - Assessment of Townscape Character – Demolition and Construction (In-Combination Application 4 and 5)
**Table 6.33** - Assessment of Townscape Character – Completed and Operational Development (In-Combination Application 4 and 5)
**Table 6.34** - Preliminary Assessment of Effects on Character Areas (In-Combination Application 4 and 5)
**Table 6.35** - Assessment of CAs – Demolition and Construction (In-Combination Application 4 and 5)

| | | |
|---|---|---|
| **Table 6.36** | - | Assessment of CAs – Completed and Operational Development (In-Combination Application 4 and 5) |
| **Table 6.37** | - | Visual Assessment – Demolition and Construction (In-Combination Application 4 and 5) |
| **Table 6.38** | - | Visual Assessment – Completed and Operational Development (In-Combination Application 4 and 5) |
| **Table 6.39** | - | Cumulative Townscape Character Assessment – Completed and Operational Development (In-Combination Effects Application 4 and 5) |
| **Table 6.40** | - | Cumulative Visual Assessment – Completed and Operational Development (In-Combination Effects Application 4 and 5) |

| | | |
|---|---|---|
| | | **Chapter 7: Ecology and Nature Conservation** |
| **Table 7.1** | - | Geographical Context of Important Ecological Features |
| **Table 7.2** | - | Conversion matrix |
| **Table 7.3** | - | Consultation |
| **Table 7.4** | - | Summary of BS5837:2021 Tree Quality Categorisation Criteria |
| **Table 7.5** | - | Locally designated sites within 2km of Application 4 |
| **Table 7.6** | - | Valuation of ecological features |
| **Table 7.7** | - | Residual Effects Summary (Application 4) |
| **Table 7.8** | - | Cumulative Sites (Application 4) |
| **Table 7.9** | - | Residual Cumulative Effects Summary (Application 4 + SRF) |
| **Table 7.10** | - | Locally designated sites within 2km of Application 5 |
| **Table 7.11** | - | Valuation of ecological features (Application 5) |
| **Table 7.12** | - | Residual Effects Summary (Application 5) |
| **Table 7.13** | - | Cumulative Sites (Application 5) |
| **Table 7.14** | - | Residual Cumulative Effects Summary (Application 5 + SRF) |
| **Table 7.15** | - | Valuation of ecological features (Applications 4 and 5 combined) |
| **Table 7.16** | - | Residual Effects Summary (Applications 4 and 5 combined) |
| **Table 7.17** | - | Residual Cumulative Effects Summary (Application 4, Application 5 + SRF) |

| | | |
|---|---|---|
| | | **Chapter 8: Cultural Heritage** |
| **Table 8.1** | - | Significance of heritage assets |
| **Table 8.2** | - | Magnitude of impact |
| **Table 8.3** | - | Matrix of Effect Significance |
| **Table 8.4** | - | Consultation |
| **Table 8.5** | - | Residual Effects Summary |

| | | |
|---|---|---|
| | | **Chapter 9: Ground Conditions** |
| **Table 9.1** | - | Description of the Magnitude of an Impact Classification |

**Table 9.2** - Sensitivity Criteria for Receptor / Receiving Environment (as applicable to the scheme)
**Table 9.3** - Matrix for the Assessment of the Significance of Effects
**Table 9.4** - Overall Effects
**Table 9.5** - Consultation
**Table 9.6** - Baseline Conceptual Site Model – Red Bank Neighbourhood (Outline Application 4)
**Table 9.7** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on construction / groundworkers – Red Bank Neighbourhood (Outline Application 4)
**Table 9.8** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on third party neighbours – Red Bank Neighbourhood (Outline Application 4)
**Table 9.9** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in superficial aquifers – Red Bank Neighbourhood (Outline Application 4)
**Table 9.10** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in bedrock aquifers – Red Bank Neighbourhood (Outline Application 4)
**Table 9.11** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in surface waters – Red Bank Neighbourhood (Outline Application 4)
**Table 9.12** - Cumulative Schemes adjacent to Red Bank Neighbourhood (Outline Application 4)
**Table 9.13** - Cumulative Effects and their Significance – Demolition and Construction – Red Bank Neighbourhood (Outline Application 4)
**Table 9.14** - Cumulative Effects and their Significance – Demolition and Construction – Red Bank Neighbourhood (Outline Application 4), Cumulative Schemes and Victoria North SRF
**Table 9.15** - Baseline Conceptual Site Model – New Town Neighbourhood (Detailed Application 5)
**Table 9.16** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on construction / groundworkers - New Town Neighbourhood (Detailed Application 5)
**Table 9.17** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on third party neighbours - New Town Neighbourhood (Detailed Application 5)

**Table 9.18** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in superficial aquifers - New Town Neighbourhood (Detailed Application 5)

**Table 9.19** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in bedrock aquifers - New Town Neighbourhood (Detailed Application 5)

**Table 9.20** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in surface waters - New Town Neighbourhood (Detailed Application 5)

**Table 9.21** - Cumulative Schemes adjacent to New Town Neighbourhood (Detailed Application 5)

**Table 9.22** - Cumulative Effects and their Significance – Demolition and Construction - New Town Neighbourhood (Detailed Application 5)

**Table 9.23** - Cumulative Effects and their Significance – Demolition and Construction – Red Bank Neighbourhood (Outline Application 5), Cumulative Schemes and Victoria North SRF

**Table 9.24** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on construction / groundworkers – Redbank & New Town Neighbourhood (Detailed Applications 4 & 5)

**Table 9.25** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on third party neighbours - Redbank & New Town Neighbourhood (Detailed Applications 4 & 5)

**Table 9.26** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in superficial aquifers - Redbank & New Town Neighbourhood (Detailed Applications 4 & 5)

**Table 9.27** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in bedrock aquifers - Redbank & New Town Neighbourhood (Detailed Applications 4 & 5)

**Table 9.28** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in surface waters - Redbank & New Town Neighbourhood (Detailed Applications 4 & 5)

**Table 9.29** - Cumulative Effects and their Significance – Demolition and Construction – Red Bank Neighbourhood (Outline Application 4) and New Town Neighbourhood (Detailed Application 5) combined

**Table 9.30** - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on construction / groundworkers – Redbank & New Town Neighbourhood (Detailed Applications 4 & 5) & SRF.

| | | |
|---|---|---|
| **Table 9.31** | - | Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on third party neighbours - Redbank & New Town Neighbourhood (Detailed Applications 4 & 5) & SRF. |
| **Table 9.32** | - | Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in superficial aquifers - Redbank & New Town Neighbourhood (Detailed Applications 4 & 5) & SRF. |
| **Table 9.33** | - | Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in bedrock aquifers - Redbank & New Town Neighbourhood (Detailed Applications 4 & 5) & SRF. |
| **Table 9.34** | - | Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in surface waters - Redbank & New Town Neighbourhood (Detailed Applications 4 & 5) & SRF |
| **Table 9.35** | - | Cumulative Schemes adjacent to Red Bank Neighbourhood (Outline Application 4), New Town Neighbourhood (Detailed Application 5) and the SRF |
| **Table 9.36** | - | Cumulative Effects and their Significance – Demolition and Construction – Red Bank Neighbourhood (Outline Application 4), New Town Neighbourhood (Detailed Application 5) and the SRF |

**Chapter 10: Flood Risk and Drainage**

| | | |
|---|---|---|
| **Table 10.1** | - | Determining the Sensitivity of Receptors |
| **Table 10.2** | - | Determining the Magnitude of Impact |
| **Table 10.3** | - | Significance Matrix |
| **Table 10.4** | - | Identification of Receptors and Assessment of Sensitivity of Receptor |
| **Table 10.5** | - | Consultation |
| **Table 10.6** | - | Identification of Protected Areas within 5 km of the Proposed Development |
| **Table 10.7** | - | Surface water abstraction licences within 5 km of the Proposed Development |
| **Table 10.8** | - | Surface water discharge locations within 1 km of the Proposed Development |
| **Table 10.9** | - | Licensed Groundwater Abstractions within the Study Area |
| **Table 10.10** | - | British Geological Survey Borehole Records within the Site |
| **Table 10.11** | - | Assessment of effects to water quality and hydromorphology by entrainment of materials |
| **Table 10.12** | - | Assessment of effects to water quality by spillage of pollutants |
| **Table 10.13** | - | Assessment of effects for hydrological and hydromorphological processes from works in the River Irk Channel |
| **Table 10.14** | - | Assessment of effects to flood risk |
| **Table 10.15** | - | Impacts on Groundwater during Demolition and Construction |
| **Table 10.16** | - | Assessment of impacts to water quality from site drainage |

| | | |
|---|---|---|
| **Table 10.17** | - | Assessment of channel morphology from new structures within the channel / floodplain |
| **Table 10.18** | - | Assessment of likely significant effects to infrastructure capacity |
| **Table 10.19** | - | Assessment of likely significant effects to flood risk |
| **Table 10.20** | - | Impacts on Groundwater during Operational Phase |
| **Table 10.21** | - | Residual effects summary for Application 4 |
| **Table 10.22** | - | Summary of cumulative schemes and their likely significant effects |
| **Table 10.23** | - | Residual Cumulative effects and their significance during the Demolition, Construction and Operational phase |
| **Table 10.24** | - | Assessment of likely residual cumulative effects of Application 4, cumulative schemes and the SRF |
| **Table 10.25** | - | Licensed Groundwater Abstractions within the 1 km Study Area |
| **Table 10.26** | - | Assessment of effects to water quality and hydromorphology by entrainment of materials |
| **Table 10.27** | - | Assessment of effects to water quality by spillage of pollutants (Application 5) |
| **Table 10.28** | - | Assessment of effects for hydrological and hydromorphological processes from works in the River Irk Channel |
| **Table 10.29** | - | Assessment of effects to flood risk (Application 5) |
| **Table 10.30** | - | Assessment of impacts to water quality from Site drainage |
| **Table 10.31** | - | Assessment of channel morphology from new structures within the channel / floodplain |
| **Table 10.32** | - | Assessment of likely significant impact to infrastructure capacity |
| **Table 10.33** | - | Assessment of likely significant effects of flood risk (Application 5) |
| **Table 10.34** | - | Residual effects summary for Application 5 |
| **Table 10.35** | - | Assessment of likely residual cumulative effects and their significance (Application 5) |
| **Table 10.36** | - | Assessment of cumulative effects of Application 5 and the SRF |
| **Table 10.37** | - | Assessment of likely residual cumulative effects of Application 5 and the SRF |

**Chapter 11: Transport and Access**

| | | |
|---|---|---|
| **Table 11.1** | - | Assessment Scenarios |
| **Table 11.2** | - | Significance of Effect |
| **Table 11.3** | - | Summary of Highway Network Sensitive Receptors |
| **Table 11.4** | - | Consultation |
| **Table 11.5** | - | Local Bus Services |
| **Table 11.6** | - | Tram Services |
| **Table 11.7** | - | Rail Services |
| **Table 11.8** | - | Baseline Traffic Flows |

| | | |
|---|---|---|
| **Table 11.9** | - | Construction Phase Traffic Effects |
| **Table 11.10** | - | Operational Phase Traffic Effects |
| **Table 11.11** | - | Road links screened in for further assessment |
| **Table 11.12** | - | Residual Effects Summary |
| **Table 11.13** | - | Construction Phase Traffic Effects |
| **Table 11.14** | - | Operational Phase Traffic Effects |
| **Table 11.15** | - | Road links screened in for further assessment |
| **Table 11.16** | - | Residual Effects Summary |
| **Table 11.17** | - | Construction Phase Traffic Effects |
| **Table 11.18** | - | Operational Phase Traffic Effects |
| **Table 11.19** | - | Road links screened in for further assessment |
| **Table 11.20** | - | Residual Effects Summary |
| **Table 11.21** | - | Residual Effects Summary |

| | | **Chapter 12: Air Quality and Dust** |
|---|---|---|
| **Table 12.1** | - | Summary of Relevant Air Quality Standards (for the protection of human health) |
| **Table 12.2** | - | Impact Descriptors for Individual Receptors |
| **Table 12.3** | - | Consultation |
| **Table 12.4** | - | MCC Nearby Continuous Air Quality Monitoring Data |
| **Table 12.5** | - | MCC Nearby NO2 Diffusion Tube Monitoring Data |
| **Table 12.6** | - | Dispersion Model 2019 Baseline Prediction Summary |
| **Table 12.7** | - | Potential Dust Emission Magnitude (Red Bank Outline Application 4) |
| **Table 12.8** | - | Sensitivity of the Study Area Results (Red Bank Outline Application 4) |
| **Table 12.9** | - | Summary Dust Risk Table to Define Site Specific Mitigation Results (Red Bank Outline Application 4) |
| **Table 12.10** | - | Peak Construction Day HGV Impacts Red Bank Outline Application 4 and NT02-NT04 Full Application 5 |
| **Table 12.11** | - | Dispersion Modelling Results Summary for Application 4 |
| **Table 12.12** | - | Impacts Summary for Outline Application 4 |
| **Table 12.13** | - | Proposed Development Predicted Pollutant Concentrations for Application 4 |
| **Table 12.14** | - | Residual Effects Summary (Red Bank Outline Application 4) |
| **Table 12.15** | - | Cumulative Effects Summary for Outline Application 4 |
| **Table 12.16** | - | Summary Dust Risk Table to Define Site Specific Mitigation Results (NT02-NT04 Full Application 5) |
| **Table 12.17** | - | Dispersion Modelling Summary for NT02-NT04 Full Application 5 |
| **Table 12.18** | - | Impacts Summary for NT02-NT04 Full Application 5 |
| **Table 12.19** | - | |

| | | |
|---|---|---|
| | | Proposed Development Predicted Pollutant Concentrations for NT02-NT04 |
| **Table 12.20** | - | Full Application 5 |
| **Table 12.21** | - | Residual Effects Summary (NT02-NT04 Full Application 5) |
| | | Dispersion Modelling Summary In-Combination Effects of Applications 4 and |
| **Table 12.22** | - | 5 |
| **Table 12.23** | - | Impact Summary In-Combination Effects of Applications 4 and 5 |
| **Table 12.24** | - | Proposed Development Predicted Pollutant Concentrations |
| | | Residual Effects Summary (Applications 4 and 5) |

**Chapter 13: Noise and Vibration**

| | | |
|---|---|---|
| **Table 13.1** | - | Matrix for Determining the Significance of Effects |
| **Table 13.2** | - | Consultation |
| **Table 13.3** | - | Predicted 'Average' and 'Worst' Case Construction Noise Levels for Application 4 – Façade $L_{Aeq,10h}$ (dB) |
| **Table 13.4** | - | Construction Noise Compliance for the Average Case for Application 4, dB |
| **Table 13.5** | - | Predicted daytime and night-time noise levels at the external façades of sensitive areas of development in Application 4 and minimum sound insulation performance requirements, free-field |
| **Table 13.6** | - | Predicted daytime noise levels at the Proposed School Site in Application 4 and minimum sound insulation performance requirements, free-field |
| **Table 13.7** | - | Receptor Noise Limits for Proposed Fixed Plant, dB |
| **Table 13.8** | - | Residual Effects Summary for Application 4 |
| **Table 13.9** | - | Cumulative Effects Summary |
| **Table 13.10** | - | Predicted 'Average' and 'Worst' Case Construction Noise Levels for Application 5 – Façade LAeq,10h (dB) |
| **Table 13.11** | - | Construction Noise Compliance for the Average Case for Application 5, dB |
| **Table 13.12** | - | Predicted daytime and night-time road traffic noise levels at the external façades of sensitive areas of development in Application 5 and minimum sound insulation performance requirements, free-field |
| **Table 13.13** | - | Residual Effects Summary for Application 5 |
| **Table 13.14** | - | Residual Effects Summary for Application 4 and 5 |
| **Table 13.15** | - | Residual Effects Summary for Application 4, Application 5 and SRF |

**Chapter 14: Daylight, Sunlight and Overshadowing**

| | | |
|---|---|---|
| **Table 14.1** | - | Drawing Sets Used to Construct the 3D Model |
| **Table 14.2** | - | BRE Criteria 2022 for Daylight, Sunlight and Overshadowing |
| **Table 14.3** | - | Significance Criteria – Existing Receptors – Daylight |
| **Table 14.4** | - | Significance Criteria – Existing Receptors – Sunlight |
| **Table 14.5** | - | |

| | | |
|---|---|---|
| **Table 14.6** | - | Significance Criteria – Existing Receptors – Overshadowing of Open Amenity Spaces |
| **Table 14.7** | - | Significance Criteria – Consented Receptors – Daylight (VSC) |
| **Table 14.8** | - | Significance Criteria Descriptors – Consented Receptors – Sunlight (APSH and WSPS) |
| **Table 14.9** | - | Significance Criteria Descriptors – Consented Receptors – Overshadowing of Open Amenity Spaces (SHOG) |
| **Table 14.10** | - | Significance Criteria Descriptors – Consented Receptors Adjacent to Site – Internal Daylight (ILL) |
| **Table 14.11** | - | Significance Criteria Descriptors – Consented Receptors Adjacent to Site – Sunlight (SH) |
| **Table 14.12** | - | Criteria Descriptors – Proposed Development – Daylight (VSC) |
| **Table 14.13** | - | Criteria Descriptors – Proposed Development – Sunlight (SH) |
| | | Criteria Descriptors – Proposed Development – Overshadowing of Open Amenity Spaces (SHOG) |
| **Table 14.14** | - | Existing and Consented Sensitive Receptors Surrounding the Proposed Development – Buildings |
| **Table 14.15** | - | Existing, Consented and Proposed Sensitive Receptors– Open Amenity Spaces |
| **Table 14.16** | - | Summary of Daylight Results – Baseline Scenario |
| **Table 14.17** | - | Summary of Sunlight Results – Baseline Scenario |
| **Table 14.18** | - | Summary of Overshadowing Results for Open Spaces – Baseline Scenario |
| **Table 14.19** | - | Summary of Daylight Results – Proposed Scenario |
| **Table 14.20** | - | Summary of Sunlight Results – Proposed Scenario |
| **Table 14.21** | - | Summary of Overshadowing Results for Open Spaces – Proposed Scenario |
| **Table 14.22** | - | Residual Effects Summary – Proposed Scenario |
| **Table 14.23** | - | Daylight Assessment within Application 4 |
| **Table 14.24** | - | Sunlight Assessment within Application 4 |
| **Table 14.25** | - | Summary of Daylight Results – Cumulative Scenario Application 4- Existing Properties |
| **Table 14.26** | - | Summary of Sunlight Results – Cumulative Scenario Application 4- Existing Properties |
| **Table 14.27** | - | Summary of Overshadowing Results for Open Spaces– Cumulative Scenario Application 4- Existing and Consented Open Spaces |
| **Table 14.28** | - | Summary of Daylight Results – Cumulative Scenario (Victoria Riverside) Application 4 |
| **Table 14.29** | - | Summary of Sunlight Results – Cumulative Scenario (Victoria Riverside) Application 4 |
| **Table 14.30** | - | |

| | | |
|---|---|---|
| **Table 14.31** | - | Summary of Daylight Results – Cumulative Scenario Application 4 – Consented Schemes |
| **Table 14.32** | - | Summary of Sunlight Results – Cumulative Scenario Application 4 – Consented Schemes |
| **Table 14.33** | - | Residual Effects Summary – Cumulative Scenario Application 4 |
| **Table 14.34** | - | Summary of Daylight Results – Proposed Scenario Application 5 |
| **Table 14.35** | - | Summary of Sunlight Results – Proposed Scenario Application 5 |
| **Table 14.36** | - | Summary of Overshadowing Results for Open Spaces – Application 5 |
| **Table 14.37** | - | Residual Effects Summary – Application 5 |
| **Table 14.38** | - | Daylight Assessment within Proposed Development – Application 5 |
| **Table 14.39** | - | Sunlight Assessment within Proposed Development – Application 5 |
| **Table 14.40** | - | Summary of Daylight Results – Cumulative Scenario Existing Properties |
| **Table 14.41** | - | Summary of Sunlight Results – Cumulative Scenario - Existing properties |
| | | Summary of Overshadowing Results for Open Spaces– Cumulative Scenario Application 5- Existing and Consented Open Spaces |
| **Table 14.42** | - | Summary of Daylight Results – Cumulative Scenario (Victoria Riverside) Application 5 |
| **Table 14.43** | - | Summary of Sunlight Results – Cumulative Scenario (Victoria Riverside) Application 5 |
| **Table 14.44** | - | Summary of Daylight Results – Cumulative Scenario Application 5– Consented Schemes |
| **Table 14.45** | - | Summary of Sunlight Results – Cumulative Scenario Application 5– Consented Schemes |
| **Table 14.46** | - | Residual Effects Summary – Cumulative Scenario Application 5 |
| | | Summary of Daylight Results – Proposed Scenario Applications 4 and 5 |
| **Table 14.47** | - | Summary of Sunlight Results – Proposed Scenario Applications 4 and 5 |
| **Table 14.48** | - | Summary of Overshadowing Results for Open Spaces – Proposed Scenario |
| **Table 14.49** | - | Applications 4 and 5 |
| **Table 14.50** | - | Residual Effects Summary – Cumulative Scenario Applications 4 and 5 |
| | | Daylight Assessment within Proposed Development, Outline results – |
| **Table 14.51** | - | Applications 4 and 5 |
| **Table 14.52** | - | Daylight Assessment within Proposed Development, Detailed Plots results – Applications 4 and 5 |
| **Table 14.53** | - | Sunlight Assessment within Proposed Development, Outline Results – Applications 4 and 5 |
| **Table 14.54** | - | Sunlight Assessment within Proposed Development, Detailed Plots Results – Applications 4 and 5 |
| **Table 14.55** | - | Summary of Daylight Results – Cumulative Scenario Applications 4 and 5- Existing Properties |

| | | |
|---|---|---|
| **Table 14.56** | - | Summary of Sunlight Results – Cumulative Scenario Applications 4 and 5- Existing Properties |
| **Table 14.57** | - | Summary of Overshadowing Results for Open Spaces– Cumulative Scenario Applications 4 and 5 |
| **Table 14.58** | - | Summary of Daylight Results – Cumulative Scenario (Victoria Riverside) Application 4 |
| **Table 14.59** | - | Summary of Sunlight Results – Cumulative Scenario (Victoria Riverside) Application 4 |
| **Table 14.60** | - | Summary of Daylight Results – Cumulative Scenario Applications 4 and 5– Consented Schemes |
| **Table 14.61** | - | Summary of Sunlight Results – Cumulative Scenario Applications 4 and 5– Consented Schemes |
| **Table 14.62** | - | Residual Effects Summary – Cumulative Scenario Applications 4 and 5 |
| | | Residual Effects Summary – Cumulative Scenario Applications 4 and 5 and SRF |
| | | **Chapter 15: Wind Microclimate** |
| **Table 15.1** | - | LDDC Lawson Criteria for Pedestrian Wind Comfort |
| **Table 15.2** | - | LDDC Lawson Criteria for Pedestrian Safety |
| **Table 15.3** | - | Matrix for determining the significance of effects at existing/off-site receptors |
| **Table 15.4** | - | Matrix for determining the significance of effects at introduced/on-site receptors |
| **Table 15.5** | - | Receptors for Assessment |
| **Table 15.6** | - | Residual Effects Summary |
| **Table 15.7** | - | Residual Effects Summary |
| **Table 15.8** | - | Residual Effects Summary |
| **Table 15.9** | - | Residual Effects Summary |
| | | **Chapter 16: Socioeconomics** |
| **Table 16.1** | - | Significance Matrix |
| **Table 16.2** | - | Assumptions Used to Calculate Net Additional Construction Employment |
| **Table 16.3** | - | Assumptions Used to Calculate Net Additional Permanent Employment |
| **Table 16.4** | - | Housing by property type for Application 4 |
| **Table 16.5** | - | Sensitivity of Receptors |
| **Table 16.6** | - | Assumptions Used to Calculate Net Additional Construction Employment |
| **Table 16.7** | - | Assumptions Used to Calculate Net Additional Permanent Employment |
| **Table 16.8** | - | Assumptions Used to Calculate Net Additional Permanent Residents |

| | | |
|---|---|---|
| **Table 16.9** | - | Sensitivity of Receptors |
| **Table 16.10** | - | Primary Schools Within a 1-mile Radius of the centre of the Application 4 Area of the Site |
| **Table 16.11** | - | Secondary Schools Within a 3-mile Radius of the Centre of the Application 4 Site |
| **Table 16.12** | - | Open Space Within a 1-mile Radius of the Site |
| **Table 16.13** | - | Additionality on construction jobs (person years of employment) |
| **Table 16.14** | - | Estimated Population Yield Assumed for Proposed Development |
| **Table 16.15** | - | Gross, On-Site Employment Generation from the Completed and Operational Proposed Development |
| **Table 16.16** | - | Additionality on Permanent Employment – Minimum Scenario |
| **Table 16.17** | - | Additionality on Permanent Employment- Maximum Scenario |
| **Table 16.18** | - | Residential Unit Numbers within the Complete and Operational Proposed Development |
| **Table 16.19** | - | Residual Effects Summary |
| **Table 16.20** | - | Additionality on construction jobs (person years of employment) |
| **Table 16.21** | - | Estimated Population Yield Assumed for Proposed Development |
| **Table 16.22** | - | Gross, On-Site Employment Generation from the Complete and Operational Proposed Development |
| **Table 16.23** | - | Additionality on Permanent Employment- Minimum Scenario |
| **Table 16.24** | - | Additionality on Permanent Employment- Maximum Scenario |
| **Table 16.25** | - | Residential Unit Numbers within the Complete and Operational Proposed Development |
| **Table 16.26** | - | Residual Effects Summary |
| **Table 16.27** | - | Additionality on construction jobs (person years of employment) |
| **Table 16.28** | - | Population Yields Assumed for Proposed Developments |
| **Table 16.29** | - | Additionality on Permanent Employment- Minimum Scenario |
| **Table 16.30** | - | Additionality on Permanent Employment- Maximum Scenario |
| **Table 16.31** | - | Residential Unit Numbers within the Complete and Operational Proposed Developments |
| **Table 16.32** | - | Residual Effects Summary |
| **Table 16.33** | - | Population Yields Assumed for Proposed Developments |
| **Table 16.34** | - | Residual Effects Summary |

**Chapter 17: Health and Wellbeing**

| | | |
|---|---|---|
| **Table 17.1** | - | Health Determinants and Potential Impacts |
| **Table 17.2** | - | Methodology for assessing magnitude of health impact |
| **Table 17.3** | - | Guidelines for the assessment of population exposure and vulnerability |
| **Table 17.4** | - | Population sensitivity matrix |

| | | |
|---|---|---|
| **Table 17.5** | - | Significance of impact |
| **Table 17.6** | - | Significance and assessment criteria |
| **Table 17.7** | - | Residual Effects Summary |
| **Table 17.8** | - | Residual Effects Summary |
| **Table 17.9** | - | Residual Effects Summary |

| | | **Chapter 18: Climate Change** |
|---|---|---|
| **Table 18.1** | - | UK Carbon Budgets |
| **Table 18.2** | - | RIBA 2030 Climate Challenge target for embodied carbon for domestic and non-domestic buildings |
| **Table 18.3** | - | IEMA significance level definitions |
| **Table 18.4** | - | Significance of effects as per RIBA guidance |
| **Table 18.5** | - | Likely Emission Sources in the Proposed Development |
| **Table 18.6** | - | GHG emissions assessment – construction phase |
| **Table 18.7** | - | GHG emissions assessment – operational phase |
| **Table 18.8** | - | Scenarios 1a and 1b GHG emissions assessment – scope of the quantitative assessment undertaken by the WSP Carbon Management Team |
| **Table 18.9** | - | GHG emissions assessment – construction phase |
| **Table 18.10** | - | GHG emissions assessment – operational phase approach |
| **Table 18.11** | - | Scenarios 2a and 2b GHG emissions assessment – scope of the quantitative assessment undertaken by the WSP Carbon Management Team |
| **Table 18.12** | - | IEMA's GHG Emissions Mitigation Hierarchy |
| **Table 18.13** | - | Embodied and transport carbon emissions during construction phase (domestic and non-domestic) |
| **Table 18.14** | - | Calculations for the embodied carbon emissions during operation (Domestic + non-Domestic) |
| **Table 18.15** | - | Annual operational energy use estimate for the proposed Application 4 development |
| **Table 18.16** | - | Transport emissions during operational phase |
| **Table 18.17** | - | Embodied carbon emissions during end of life |
| **Table 18.18** | - | Total Carbon Emission Summary for Application 4 |
| **Table 18.19** | - | Proposed Development impact on Sixth UK Carbon Budget |
| **Table 18.20** | - | Circular Economy Principles recommended by GLA in Circular Economy Statement Guidance (2022) |
| **Table 18.21** | - | Principles for reducing WLC emissions recommended by GLA in the Whole Life Carbon Assessment Guidance (2022) |
| **Table 18.22** | - | Residual Effects Summary |
| **Table 18.23** | - | Embodied and transport carbon emissions during construction phase (domestic and non-domestic) - NT02 Block 1 |

**Table 18.24** - Calculations for the embodied carbon emissions during operation NT02 Block 1 (Domestic + non-Domestic)
**Table 18.25** - Annual operational energy use estimate for Application 5
**Table 18.26** - Transport emissions during operational phase
**Table 18.27** - Embodied carbon emissions during end of life for NT02 Block 1
**Table 18.28** - Total carbon emission summary for Application 5
**Table 18.29** - Proposed Development impact on Sixth UK Carbon Budget
**Table 18.30** - Residual Effects Summary (Application 5)
**Table 18.31** - Embodied and transport carbon emissions during construction phase (domestic and non-domestic)- Application 4 and 5
**Table 18.32** - Calculations for the embodied carbon emissions during operation Application 4 and 5 (Domestic + non-Domestic)
**Table 18.33** - Annual operational energy use estimate for the Proposed Development
**Table 18.34** - Transport emissions during operational phase for Applications 4 and 5
**Table 18.35** - Embodied carbon emissions during end of life for Applications 4 and 5
**Table 18.36** - Total carbon emission summary for Applications 4 and 5
**Table 18.37** - Proposed Development impact on Sixth UK Carbon Budget
**Table 18.38** - In-combination assessment and SRF
**Table 18.39** - Consequence Definitions
**Table 18.40** - Likelihood Definitions
**Table 18.41** - Significance Rating Matrix
**Table 18.42** - Scoped in Receptors for Application 4
**Table 18.43** - Scoped in receptors for Application 5
**Table 18.44** - Long term average seasonal rainfall (mm) (1981–2010) for the North West England and Rochdale Weather Station, in comparison to the rest of the UK
**Table 18.45** - Long-term average mean seasonal temperature for the North West England and Rochdale Weather Station, in comparison to the rest of the UK
**Table 18.46** - Projected change in average summer and winter precipitation (%) for the 2030s, 2050s and 2080s, RCP8.5. The results are shown as 50th (10th-90th) percentile
**Table 18.47** - Number of months per year at least as wet as the wettest month between 1981-2010, for the 2030s, 2050s and 2080s, RCP8.5
**Table 18.48** - Projected change in mean summer and winter temperature (°C) for the
**Table 18.49** - 2030s, 2050s and 2080s RCP8.5
**Table 18.50** - Embedded Mitigation Table (Application 4)
**Table 18.51** - Assessment of effects during the operation phase of Application 4
**Table 18.52** - Residual Effects Summary (Application 4)
Embedded Mitigation Table (Application 5)
**Table 18.53** -

| | | |
|---|---|---|
| **Table 18.54** | - | Assessment of effects during the operation phase of the proposed Application 5 development<br>Residual Effects Summary (Application 5) |

**Chapter 19: Effect Interactions**

| | | |
|---|---|---|
| **Table 19.1** | - | Likely Residual Effects of the Demolition and Construction Phase (Application 4) |
| **Table 19.2** | - | Likely Effect Interactions of the Demolition and Construction Phase (Application 4) |
| **Table 19.3** | - | Likely Residual Effects of the Operational Phase (Application 4) |
| **Table 19.4** | - | Likely Effect Interactions of the Operational Phase (Application 4) |
| **Table 19.5** | - | Likely Residual Effects of the Demolition and Construction Phase (Application 5) |
| **Table 19.6** | - | Likely Effect Interactions of the Demolition and Construction Phase (Application 5) |
| **Table 19.7** | - | Likely Residual Effects of the Operational Phase (Application 5) |
| **Table 19.8** | - | Likely Effect Interactions of the Operational Phase (Application 5) |
| **Table 19.9** | - | Likely Residual Effects of the Demolition and Construction Phase (Applications 4 and 5) |
| **Table 19.10** | - | Likely Effect Interactions of the Demolition and Construction Phase (Applications 4 and 5) |
| **Table 19.11** | - | Likely Residual Effects of the Operational Phase (Application 4 and Application 5) |
| **Table 19.12** | - | Likely Effect Interactions of the Operational Phase (Applications 4 and 5) |

**Chapter 20: Schedule of Additional Mitigation**

| | | |
|---|---|---|
| **Table 20.1** | - | Summary of Additional Mitigation Measures for Application 4 |
| **Table 20.2** | - | Summary of Additional Mitigation Measures for Application 5 |
| **Table 20.3** | - | Summary of Further Additional Mitigation Measures for Application 4 and Application 5 in Combination |

# List of Figures


| | | |
|---|---|---|
| | | **Chapter 1: Introduction** |
| **Figure 1.1** | - | Application 4 Site Location Plan |
| **Figure 1.2** | - | Application 5 Site Location Plan |
| | | **Chapter 2: Approach** |
| **Figure 2.1** | - | Indication of the Initial Development Area in the Context of the Victoria North Initiative |
| **Figure 2.2** | - | Timeline of Planning Application Submissions for Red Bank |
| **Figure 2.3** | - | Map of Cumulative Schemes 'Scoped-into' the CEA |
| | | **Chapter 3: Site Description** |
| **Figure 3.1** | - | Areas within the Red Bank Neighbourhood |
| | | **Chapter 5: The Proposed Development** |
| **Figure 5.1** | - | Application 5 – Proposed Site Plan |
| **Figure 5.2** | - | NT02 and NT03 – Elevation 1 (North / Dantzic Street and East / Dulwich Street) |
| **Figure 5.3** | - | NT02 and NT03 – Elevation 2 (South / Dulwich Street and West / Travis Square) |
| **Figure 5.4** | - | NT04 – Elevation 1 (Travis Square and Dantzic Street) |
| **Figure 5.5** | - | NT04 – Elevation 2 (Dalton Street and Dulwich Street) |
| **Figure 5.6** | - | Building Heights Across Application 5 (NT02-04) |
| **Figure 5.7** | - | NT02 and NT03 – Building Material and Colour Choice |
| **Figure 5.8** | - | NT024 – Building Material and Colour Choice |
| **Figure 5.9** | - | Application 5 – General Arrangement Site Wide Public Realm |
| **Figure 5.10** | - | Outline Lighting Strategy for Application 4 |
| **Figure 5.11** | - | Application 5 – Vehicle Movement Plan |
| **Figure 5.12** | - | Proposed Junction Layout Lord Street / Red Bank / Roger Street |
| **Figure 5.13** | - | Anticipated Phasing Delivery Plan |
| **Figure 5.14** | - | Demolition Plan |
| **Figure 5.15** | - | Retaining Wall Plan View and Cross Section |
| | | **Chapter 6: Townscape and Visual** |
| **Figure 6.1** | - | TVIA Study Area |
| **Figure 6.2** | - | Townscape Designations |
| **Figure 6.3** | - | Townscape Character |
| **Figure 6.4** | - | Views and Visual Receptors |
| **Figure 6.5** | - | Cumulative Developments |
| **Figure 6.6** | - | ZTV – Red Bank Neighbourhood Outline Application (Application 4) |
| **Figure 6.7** | - | ZTV – Full Application Plots NT02 – NT04 (Application 5) |
| **Figure 6.8a – e** | - | Viewpoint 1 – St Michael's Flags and Angel Meadow Park |
| **Figure 6.9a – e** | - | Viewpoint 2 – Corporation Street |

| | | |
|---|---|---|
| **Figure 6.10a – e** | - | Viewpoint 3 – Manchester Cathedral |
| **Figure 6.11a – e** | - | Viewpoint 4 – Smithfield |
| **Figure 6.12a – e** | - | Viewpoint 5 – Ancoats |
| **Figure 6.13a – e** | - | Viewpoint 6 – Rochdale Road (Railway Bridge) |
| **Figure 6.14a – e** | - | Viewpoint 7 – Dantzic Street |
| **Figure 6.15a – e** | - | Viewpoint 8 – Sand Hills Park, Collyhurst |
| **Figure 6.16a – e** | - | Viewpoint 9 – Dalton Street |
| **Figure 6.17a – e** | - | Viewpoint 10 – Queens Road (near Metrolink) |
| **Figure 6.18a – e** | - | Viewpoint 11 – Queen's Park |
| **Figure 6.19a – e** | - | Viewpoint 12 – Miles Platting |
| **Figure 6.21a – e** | - | Viewpoint 13 – Manchester Fort |
| **Figure 6.22a – e** | - | Viewpoint 14 – North Street |
| **Figure 6.23a – e** | - | Viewpoint 15 – St Chad's Street |
| **Figure 6.24a – d** | - | Viewpoint 16 – Red Bank |
| **Figure 6.25a – e** | - | Viewpoint 17 – Rochdale Road |

| **Chapter 7: Ecology and Nature Conservation** | | |
|---|---|---|
| **Figure 7.1** | - | Phase 1 Habitat Survey Plan (Application 4) |
| **Figure 7.2** | - | Phase 1 Habitat Survey Plan (Application 5) |

| **Chapter 8: Cultural Heritage** | | |
|---|---|---|
| **Figure 8.1** | - | Designated Heritage Assets |
| **Figure 8.2** | - | Non-designated Heritage Assets |

| **Chapter 11: Transport and Access** | | |
|---|---|---|
| **Figure 11.1** | - | Walking Isochrones |
| **Figure 11.2** | | Cycling Isochrones |

| **Chapter 12: Air Quality and Dust** | | |
|---|---|---|
| **Figure 12.1** | - | Operational Receptors |
| **Figure 12.2 – 12.13** | - | Backgrounds |
| **Figure 12.14** | - | Dust Risk Assessment (Application 4) |
| **Figure 12.15 – 12.29** | - | Human Receptor Results |
| **Figure 12.30 – 12.41** | - | Detailed Isopleth Results |

| **Chapter 13: Noise and Vibration** | | |
|---|---|---|
| **Figure 13.1** | - | Noise Monitoring and Receptor Locations |

| **Chapter 14: Daylight, Sunlight and Overshadowing** | | |
|---|---|---|
| **Figure 14.1** | - | Study Area for the Assessment |
| **Figure 14.2** | - | Existing and Proposed Sensitive Receptors for the Assessment |
| **Figure 14.3** | - | Consented Sensitive Receptors Surrounding the Proposed Development |
| **Figure 14.4** | - | 3D Model for the Assessments – Baseline Configuration – SE Perspective |
| **Figure 14.5** | - | 3D Model for the Assessments showing the Outline Application within the existing surrounding – SE Perspective |

| | | |
|---|---|---|
| **Figure 14.6** | - | 3D Model for the Assessments showing the Full Application within the existing surrounding – SE Perspective |
| **Figure 14.7** | - | 3D Model for the Assessments showing both the Outline and Full Applications Together within the existing surroundings – SE Perspective |

**Chapter 15: Wind Microclimate**

| | | |
|---|---|---|
| **Figure 15.1** | - | Map of Receptors (Application 4, Scenario 1) |
| **Figure 15.2** | - | Map of Receptors (Application 4, Scenarios 2 – 9) |
| **Figure 15.3** | - | Map of Receptors and their Existing Usages (Application 5, Scenario 1) |
| **Figure 15.4** | - | Map of Receptors and their Existing / Proposed Usages (Application 5, Scenarios 2 – 9, Ground Level) |
| **Figure 15.5** | - | Map of Receptors and their Proposed Usages (Application 5, Scenarios 2 – 9, Podium Level) |
| **Figure 15.6** | - | Map of Receptors and their Proposed Usages (Application 5, Scenarios 2 – 9, Lower Balconies) |
| **Figure 15.7** | - | Map of Receptors and their Proposed Usages (Application 5, Scenarios 2 – 9, Upper Balconies and Terraces) |

**Chapter 18: Climate Change**

| | | |
|---|---|---|
| **Figure 18.1** | - | LETI Embodied carbon target alignment benchmarks and mapping with RIBA 2030 targets |
| **Figure 18.2** | - | IEMA (2021) Assessing Greenhouse Gas Emissions and Evaluating their Significance |
| **Figure 18.3** | - | Breakdown of total carbon Emissions from the development over the lifetime of the scheme (60 years) |
| **Figure 18.4** | - | Breakdown of total carbon Emissions from the development over the lifetime of the scheme (60 years) |
| **Figure 18.5** | - | Breakdown of total carbon Emissions from the development over the lifetime of the scheme (60 years) |

# 1. Introduction

## Introduction

1.1 FEC Northern Gateway Development Limited and Northern Gateway (FEC) No.11 Limited, together referred to in this ES as Far East Consortium Ltd. (FEC) is seeking to obtain planning permission for a residential-led, mixed-use development for the Red Bank Neighbourhood and part of the New Town Neighbourhood, as per the Victoria North Strategic Regeneration Framework (SRF). This includes, but is not limited to, residential dwellings, commercial / retail uses, cafes, restaurants, community uses, employment uses, and social infrastructure (including a primary school and health centre) (hereafter referred to as 'the Proposed Development').

1.2 Planning permission for the Proposed Development will be sought through two planning applications. Given that the two planning applications together form the "Development Project" for Environmental Impact Assessment (EIA) purposes, an EIA has been undertaken which assesses both planning applications together and a single Environmental Statement (ES) has been prepared. The two applications are referred to in the ES as 'Application 4 – Red Bank Neighbourhood Outline' (or simply 'Application 4') and 'Application 5 – Plots NT02-NT04 Full' (or simply 'Application 5'). These applications follow planning permission being granted for access, groundworks and utilities infrastructure works by Manchester City Council which are referred to in this ES as Applications 1, 2 and 3. Further detail regarding Applications 1, 2 and 3 and the assessment scenarios considered within this ES is provided in **Volume 2: Main Text, Chapter 2: Approach.**

1.3 An overview of the terminology used above is provided at **Table 1.1** below.

***Table 1.1**: Overview of Terminology*

| Term | Definition |
|---|---|
| Victoria North SRF | Formerly known as the 'Northern Gateway', the Victoria North Strategic Regeneration Framework (SRF) is endorsed by Manchester City Council as a material consideration in the determination of all future planning applications relevant to the Victoria North initiative area (a 155-hectare area to the north of Manchester City Centre and will seek to deliver approximately 15,000 new homes) |
| Housing Infrastructure Fund (HIF) Works | Includes Application 1 (HIF Advance Enabling |

| Term | Definition |
|---|---|
| | Works), Application 2 (HIF Infrastructure Works) and Application 3 (HIF Utility Works) |
| Application 1 | The HIF Advance Enabling Works, which included tree and vegetation removal, the creation of a temporary haul road and demolition of the Creamline Dairies buildings in the Red Bank Plateau area of the Site |
| Application 2 | The HIF Infrastructure Works, which included remediation and earthworks, change in site levels, the construction of a new road and priority junction from Red Bank, new drainage infrastructure, utility and services connections and diversions, tree and shrub clearance, demolition work and landscaping works to St Catherine's Wood |
| Application 3 | The HIF Utility Works, which included utility and services connections and diversions to Dantzic Street, Dalton Street and Collyhurst Road |
| Application 4 | The Red Bank Neighbourhood Outline application, containing: Plots RB01-07, RB12B, RB10, RB16 and RB17 |
| Application 5 | The NT02-04 Full application, containing Plots NT02, NT03 and NT04 |
| The Proposed Development | The combined proposals of Applications 4 and 5 |
| Development Project | The combined proposals of the HIF Works (Applications 1, 2 and 3), the Proposed Development (Applications 4 and 5) and the Victoria North SRF area |
| The Site | The combined area contained within the red line |

| Term | Definition |
|---|---|
| | boundaries of Application 4 and 5 |

1.4 The Site is located within the administrative authority of Manchester City Council (MCC), within the ward of Cheetham, on an area of land to the north-east of Victoria Station and to the south of Red Bank road; the Site (encompassing the combined application areas of Applications 4 and 5) is located within Red Bank and is immediately adjacent to Manchester City Centre and the Green Quarter neighbourhood.

1.5 The Site Location Plan for Application 4 is provided at **Figure 1.1** below (see **Volume 2a: Main Text Figures, Figure 1.1** for the figure in full) and the Site Location Plan for Application 5 is provided at **Figure 1.2** below.

***Figure 1.1**: Application 4 – Site Location Plan*

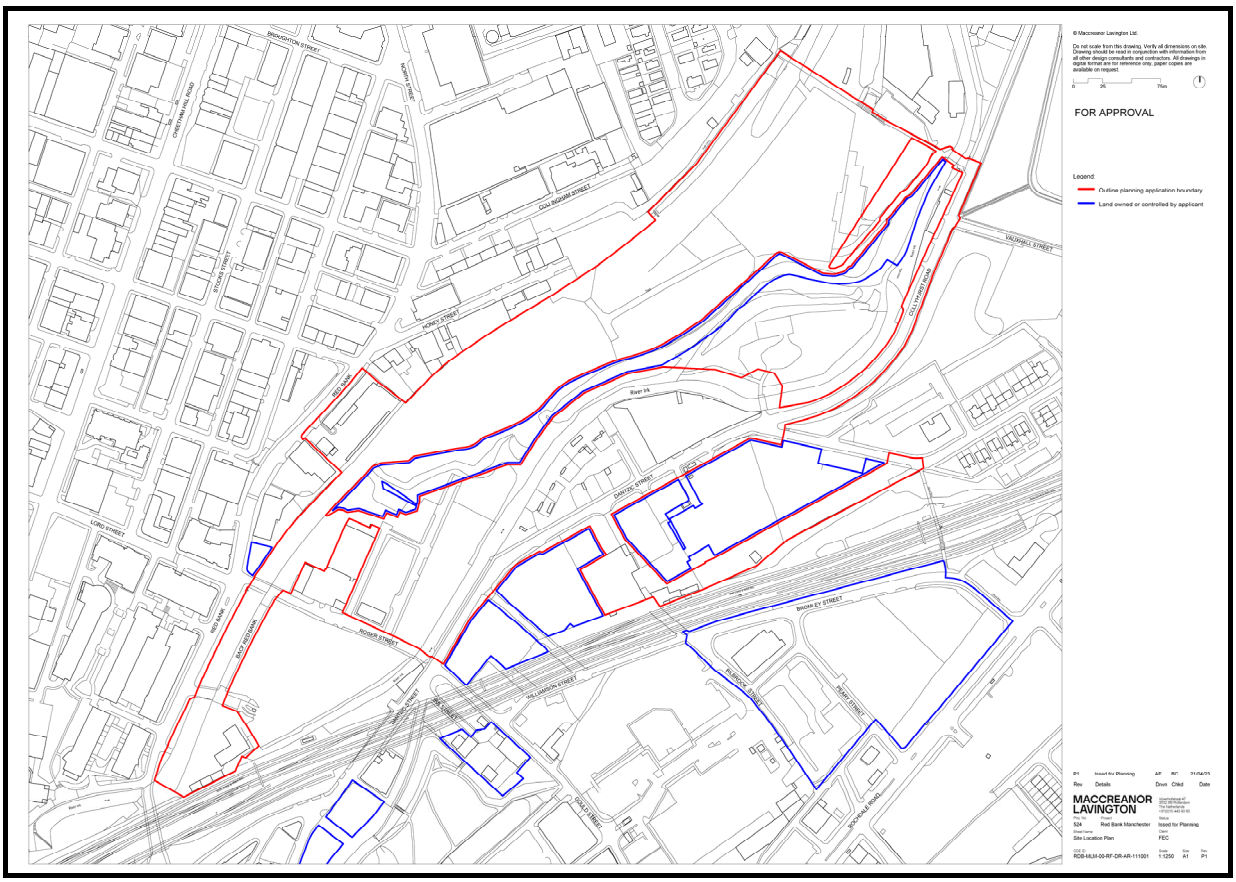
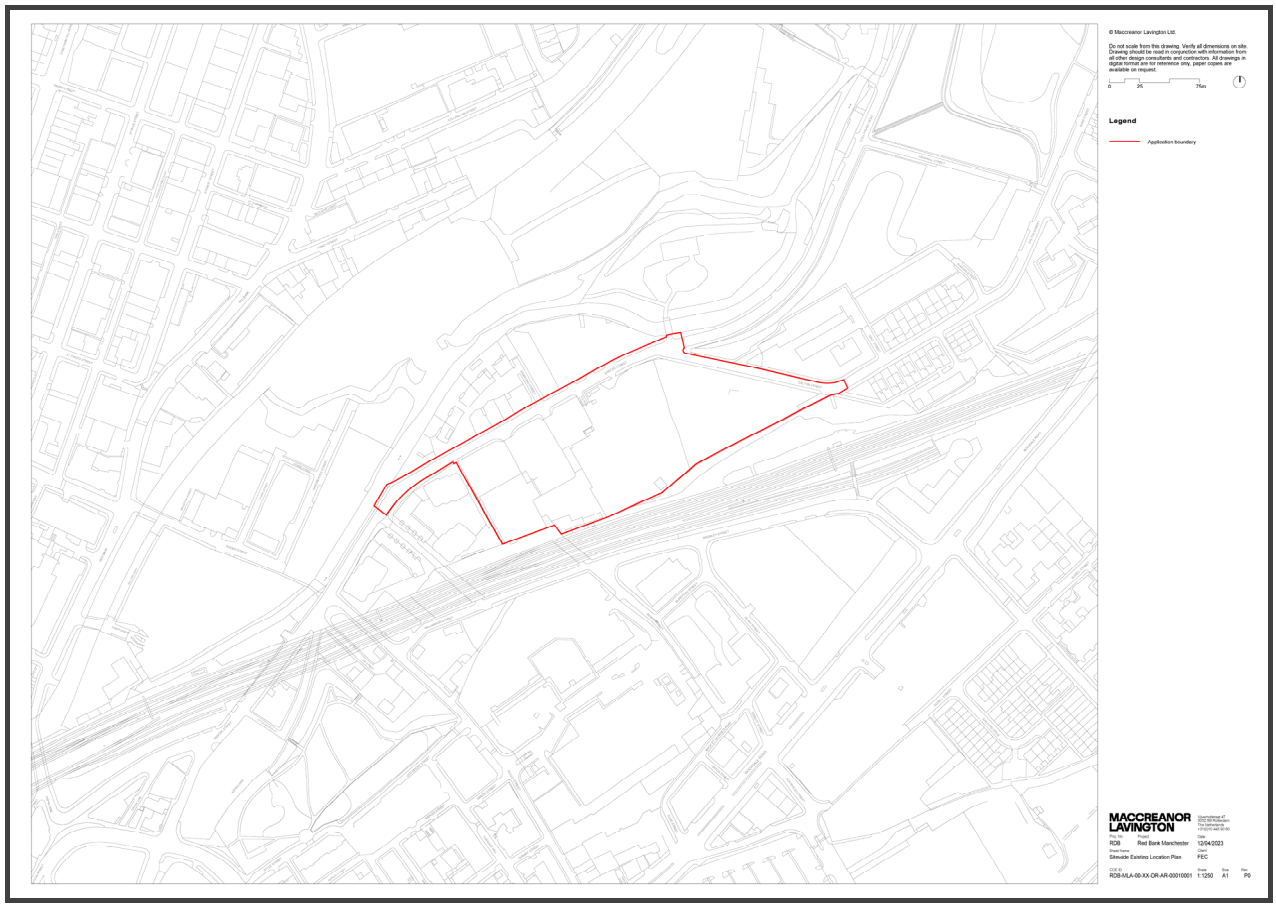


***Figure 1.2**: Application 5 – Site Location Plan*




1.6 The Site is described in detail in **Volume 2: Main Text, Chapter 3: Site Description**. A detailed description of the Proposed Development is provided in **Volume 2: Main Text, Chapter 5: The Proposed Development**, which is supported by a series of plans and drawings.

1.7 Avison Young, who are competent EIA experts, have been commissioned by the Applicant to co-ordinate the Environmental Impact Assessment (EIA) process and produce the ES for the Proposed Development. As such, this ES has been coordinated by Avison Young's Environmental Planning team who are members of the Institute of Environmental Management and Assessment (IEMA) EIA Quality Mark. This voluntary scheme demonstrates excellence in the field of EIA. Accreditation was achieved following the critical review of various ESs prepared by Avison Young and a raft of in-depth interviews regarding the Team's professional experience, activities, business functions and contribution to innovation in the sector. On-going accreditation will be subject to continued independent evaluation by IEMA and the fulfilment of ongoing professional commitments.

## The Site

1.8 The Site (comprising of the red line boundary areas of Applications 4 and 5) is irregular in shape and occupies a total area of approximately 12.74 hectares (ha).

1.9 The Site and its immediate vicinity have a legacy of more than 150 years of industrial uses and Victorian and pre-Victorian infrastructure, with the Red Bank viaduct being one of the Site's most prominent features.

1.10 A summary description of the Site and its surroundings (split by the area covered by each application) is provided below. The Site is described in more detail in **Volume 2: Main Text, Chapter 3: Site Description**.

## Application 4 Area

1.11 Application 4 covers an area of 11.21 ha; the extent of its red line boundary is shown in **Figure 1.1** above.

1.12 The northern and eastern extent of the Application 4 area of the Site contains a large area of hardstanding and prepared ground that has been cleared as part of the previous Housing Infrastructure Fund (HIF) works (see **Volume 2: Main Text, Chapter 2: Approach** for a timeline of the previous planning applications on-Site). As part of the Proposed Development, this would be the location of the 'Red Bank Plateau' neighbourhood. At the north-eastern Site boundary are the 'Lowry Steps' a footbridge that provides an existing Public Right of Way (PRoW) that links Collyhurst Road to Collingham Street.

1.13 The south of the Application 4 area contains an area of hardstanding and vacant commercial premises located along the eastern bank of the canalised River Irk, referred to as 'Travis Island'. As part of the Proposed Development, this would be the northern-most area of the 'New Town' neighbourhood. A small section of the River Irk is also included within the red line boundary for Application 4, beginning at Travis Island and ending at the HMG Paint complex.

1.14 The Application 4 area also includes an area of land south of Dantzic Street to the elevated railway line into Victoria Station and extends to Dalton Street to the east. Application 4 encloses, but excludes, the retained woodland area (St Catherine's Wood) within Red Bank.

1.15 The western extent of the Application 4 area, what would be the 'Red Bank Viaduct' neighbourhood comprises a railway viaduct (the arches of which are in commercial use), further hardstanding, a car park and a warehouse unit.

1.16 To the north, the Application 4 area of the Site is bound by existing commercial and industrial uses. To the north-east, the HMG Paint and P&P complex bounds the Application 4 area. To the east, the Application 4 area is bound by Collyhurst Road and an area of open greenspace. To the south, the Application 4 area is bound in part by Dantzic Street and the elevated railway line into Victoria Station, and the emerging Victoria Riverside development. To the south-west, the Application 4 area is bound by an area of hardstanding currently in-use as a car park and the Red Bank viaduct. To the west, the Application 4 area is bound by Red Bank (an existing highway), along which is a residential neighbourhood consisting of a number of mid-rise buildings located within the Green Quarter neighbourhood.

### Application 5 Area

1.17 Application 5 covers an area of 2.81 ha; the extent of its red line boundary is shown in **Figure 1.2** above. The Application 5 area of the Site largely consists of hardstanding and former industrial buildings with large areas of mounded earth and scrub along with prepared ground.

1.18 To the north, the Application 5 area of the Site is bound by Dantzic Street and, in part, the River Irk. To the east, the Application 5 area is bound by Dalton Street and a small number of two-storey homes and a mid-rise residential tower building. To the south, the Application 5 area is bound by the elevated railway line into Victoria Station. To the west, the Application 5 area is bound by the emerging Victoria Riverside development.

## Development Proposals

### The Development Project for EIA

1.19 For EIA purposes, the overall 'Development Project' comprises the HIF enabling (Application 1), and infrastructure and utilities (Applications 2 and 3) works identified above (which have been permitted through three planning permissions, the Proposed Development (two applications that are assessed in this ES) and the wider Northern Gateway SRF area. The three HIF permissions are in the process of being implemented and are anticipated to be largely completed by the time Applications 4 or 5 are implemented.

1.20 Further context relating to the EIA strategy, including the assessment approach presented in this ES to ensure a robust assessment, is presented in **Volume 2: Main Text, Chapter 2: Approach**.

### Overview of the Proposed Development

1.21 The full description of development on Application 4's planning application form is:

> *'Part full planning application proposing the demolition of existing buildings and structures and part outline planning application (with all matters reserved) for the erection of a phased residential led mixed use development across severable plots comprising residential (Use Classes C3 and C2); non-residential floorspace comprising commercial, business, service and community uses (Use Classes E, F and Sui Generis); residents amenity space including within clubhouse buildings; health centre (Use Class E); land for a primary school (Use Class F); the final surface finish of the highway and footpath consented under HIF permission ref: 133143/VO/2022; creation of new public realm and associated landscaping, car parking provision, cycle storage, and other associated works'*

1.22 The full description of development on Application 5's planning application form is:

> *'Full planning application proposing the demolition of existing buildings and structures and erection of a phased residential led mixed use development comprising residential (use class C3 and C2), flexible non-*

*residential floorspace comprising commercial, business, service and community uses (Use Classes E, F and Sui Generis); residential amenity space including within a clubhouse building, with associated car and cycle parking, hard and soft landscaping, improvement works to Dantzic Street, drainage infrastructure and associated engineering works'*

1.23 A detailed description of the Proposed Development can be found in **Volume 2: Main Text, Chapter 5: The Proposed Development** of this ES, including the presentation of a series of plans and drawings.

# Environmental Impact Assessment and the Environmental Statement

## EIA Context

1.24 EIA is a systematic process by which information about the scope and likely environmental effects of a proposed development are assessed and presented to the Local Planning Authority (LPA), relevant stakeholders and the public to inform the decision on whether the development should be granted planning permission.

1.25 The Proposed Development constitutes 'EIA development' under the Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (SI 2017/571)[1] as amended[2, 3] (hereafter referred to as the 'EIA Regulations'). Criteria for establishing the need for an EIA are set out in Schedules 1 and 2 of the EIA Regulations. The Proposed Development falls under Schedule 2, Category 10 'Infrastructure Projects', Subsection (b) 'Urban Development Projects', and this ES has been prepared as the Proposed Development is likely to give rise to one or more significant environmental effects.

1.26 This document is the ES which reports the findings of the EIA and supports the planning applications for the Proposed Development. It has been prepared by Avison Young with technical contributions from a range of specialist consultants experienced in EIA. The organisations and their roles in the Project Team are listed in **Table 1.2** below. See **Volume 3: Appendices, Appendix 1.1: Competent EIA Experts** for the EIA Technical Team's professional qualifications and experience in respect of EIA.

***Table 1.2**: The Project Team*

| Discipline | Company |
|---|---|
| Client | FEC |
| Project Management | Arcadis |

[1] HMSO. The Town and Country Planning (Environmental Impact Assessment) Regulations. 2017.
[2] HMSO. The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018.
[3] Amended by the Exiting The European Union Environmental Protection Town And Country Planning Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018

| Discipline | Company |
|---|---|
| Architect(s) | Maccreanor Lavington<br><br>Hawkins Brown |
| Planning | Asteer Planning<br><br>Avison Young |
| EIA Co-ordination | Avison Young |
| Townscape and Visual | Optimised Environments (OPEN) |
| Ecology and Nature Conservation | The Environment Partnership (TEP) |
| Cultural Heritage | WSP |
| Ground Conditions | WSP |
| Flood Risk and Drainage | WSP |
| Transport and Access | WSP |
| Air Quality and Dust | WSP |
| Noise and Vibration | WSP |
| Daylight, Sunlight and Overshadowing | WSP |
| Wind Microclimate | WSP |
| Socio-economics | WSP |
| Health and Wellbeing | WSP |
| Climate Change | WSP |

1.27 The ES is divided into three volumes and the contents outlined below:

- **Volume 1: Non-Technical Summary** – A document providing a synopsis of the ES without utilising technical language. The summary includes a description of the Proposed Development, the potential environmental effects associated with the Proposed Development and the measures proposed to mitigate these effects.
- **Volume 2: Main Text** - This volume contains the main body of text of the ES, split into chapters. It provides an introduction, the approach to assessment, the assessment of alternatives, a description of the Proposed Development, technical assessment relating to topics scoped into the ES, cumulative and

combined effects and a summary of residual effects. Further details regarding the assessment scenarios assessed by each technical assessment are provided in **Volume 2: Main Text, Chapter 2: Approach.**

- **Volume 2a**: **Main Text Figures** – This volume contains the figures associated with the chapters in **Volume 2: Main Text**.
- **Volume 3: Appendices** – This volume contains supporting information and a collection of technical reports upon which the conclusions of the ES are based.

1.28 A list of Chapter presented as part of Volume 2: Main Text are as follows:

- Chapter 1 – Introduction;
- Chapter 2 – Approach;
- Chapter 3 – Site Description;
- Chapter 4 – Alternatives;
- Chapter 5 – The Proposed Development;
- Chapter 6 – Townscape and Visual
- Chapter 7 – Ecology and Nature Conservation;
- Chapter 8 – Cultural Heritage;
- Chapter 9 – Ground Conditions;
- Chapter 10 – Flood Risk and Drainage;
- Chapter 11 – Transport and Access;
- Chapter 12 – Air Quality and Dust;
- Chapter 13 – Noise and Vibration;
- Chapter 14 – Daylight, Sunlight and Overshadowing;
- Chapter 15 – Wind Microclimate;
- Chapter 16 – Socioeconomics
- Chapter 17 – Health and Wellbeing;
- Chapter 18 – Climate Change;
- Chapter 19 – Effect Interactions; and
- Chapter 20 – Schedule of Additional Mitigation.

1.29 It is considered that this ES provides sufficient environmental information to enable MCC, as the Local Planning Authority (LPA), to make an informed decision on the likely environmental effects of the two applications separately and in combination to inform its decision whether to grant planning permission for each planning

application. The ES relates to the planning applications which are defined by the description of the development and the plans for development that accompany the applications. The scope of this ES has been agreed with MCC through a formal scoping process.

## Environmental Statement Availability

1.30 The Non-Technical Summary, ES and Appendices are available for viewing at MCC Offices and on the MCC website[4]. Further copies of the ES and Appendices are available on CD at a cost of £25 from Avison Young. Contact details are as follows:

| | |
|---|---|
| **Avison Young** | **Manchester City Council** |
| 65 Gresham Street | Town Hall Extension |
| London | Lloyd Street |
| Greater London | Manchester |
| EC2V 7NQ | M2 5DB |
| | |
| Contact: Patrick Duffy | Contact: Jennifer Atkinson |
| Tel: 020 7911 2678 | Tel: 0161 234 4651 |

[4] Manchester City Council (2023) Planning Application Portal. Available at: https://pa.manchester.gov.uk/online-applications/

# 2. Approach

## Introduction

2.1 This chapter describes the methodology used to undertake the EIA in accordance with the Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (SI 2017/571)[1] as amended[2] (referred to as the '2017 EIA Regulations') and National Planning Practice Guidance (NPPG)[3].

2.2 The chapter begins with a description of the general approach to assessment and EIA regulatory compliance, including how the planning applications and EIA sit in the context of the wider development project, giving assurance in respect of the approach to ensure the assessment is robust. An overview of the consultation process is provided, which is responsive to the overarching planning and EIA strategy employed.

2.3 The EIA procedure and methodology is presented before the spatial and temporal scope of the assessment is discussed. Following this, the criteria used for impact prediction, assessing significance and implementing and securing mitigation measures are explained, along with any limitations and assumptions.

## EIA Strategy

### Victoria North and Planning Application Sequencing

2.4 The Victoria North initiative (formerly referred to as 'Northern Gateway') is an area of approximately 155 hectares to the north of Manchester City Centre and Victoria Station offering an opportunity to deliver approximately 15,000 new homes over the next 15-20 years, along with a range of employment, social, community, cultural and ancillary uses. Victoria North will establish a series of new, sustainable and integrated residential neighbourhoods, seeking a balanced mix of housing types and tenures, making it a desirable place for a variety of new and existing Manchester residents. Victoria North is one of the largest regeneration projects in the UK as well as being the largest single opportunity for residential redevelopment in Manchester, effectively a new town within the heart of an established, popular and growing city.

[1] HMSO. The Town and Country Planning (Environmental Impact Assessment) Regulations. 2017.

[2] HMSO. The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018.

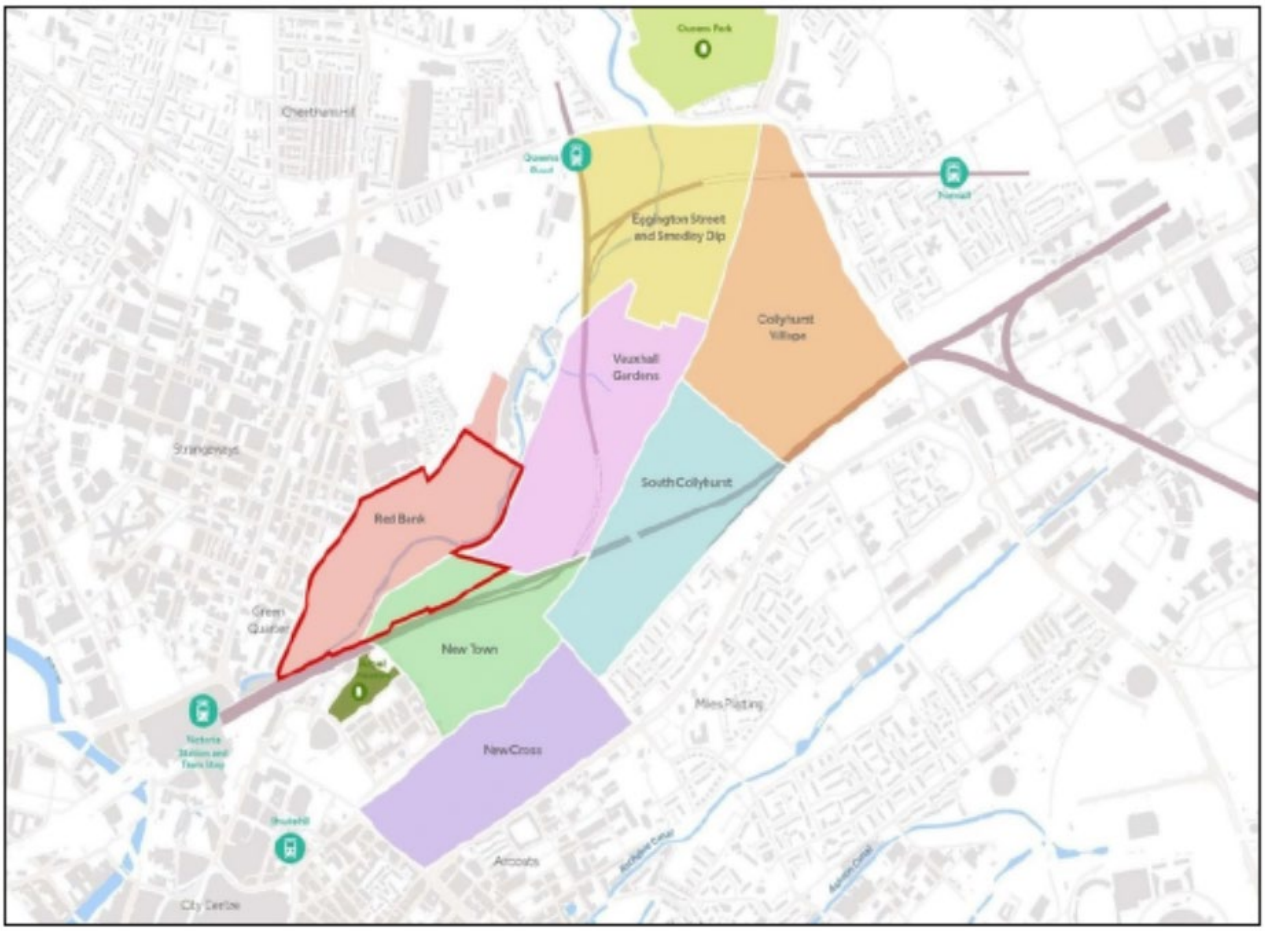
[3] Department for Levelling Up, Housing and Communities [formerly Ministry of Housing, Communities & Local Government] (2023) Planning Practice Guidance. Available at: https://www.gov.uk/government/collections/planning-practice-guidance

2.5 In April 2017, MCC appointed the Applicant (FEC) as its Joint Venture (JV) investment and delivery partner, to accelerate the delivery of the Victoria North opportunity. This appointment was the conclusion of an international marketing exercise that commenced in April 2016. Since making this appointment, MCC has endorsed the Northern Gateway Strategic Regeneration Framework (SRF)[4], which provides an updated vision, core objectives and development framework to guide the regeneration of Northern Gateway (now known as Victoria North), with a focus on the provision of housing and supporting infrastructure investment. In February 2019, MCC Executive endorsed the Northern Gateway SRF as a material consideration in the determination of all future planning applications relevant to the area.

2.6 **Figure 2.1** presents the extent of the Victoria North initiative, inclusive of the seven neighbourhoods identified within the SRF and an 'Initial Development Area'. This Initial Development Area (comprising land owned / controlled by MCC, FEC and third-party landowners) has been identified by the JV as having the potential to deliver an estimated 5,500 residential units across 21 development plots. The Initial Development Area shown is inclusive of the infrastructure enabling works and the subsequent neighbourhood development. FEC and MCC have created a First Phase within the Initial Development Area and within this first phase it is intended to deliver approximately 4.000 dwellings on land controlled / owned by the JV. It is worth noting the Initial Development Area spans two of the Northern Gateway SRF neighbourhood areas, encompassing the majority of the Red Bank area, together with the northernmost part (north of the railway line) of the New Town area.

[4] MCC and FEC (2019) Northern Gateway Strategic Regeneration Framework. Available at: http://northerngatewaymanchester.co.uk/framework/

***Figure 2.1**: Indication of the Initial Development Area in the context of the Victoria North initiative*




2.7 The Initial Development Area comprises an area of approximately 20 hectares (ha). It is located within the Lower Irk Valley. The location has a history of more than 150 years of industrial uses and Victorian / pre-Victorian infrastructure. As a result, a comprehensive programme of infrastructure investment is required to facilitate development as works cannot be taken forward on a piecemeal, site by site basis, and are not viable for the private sector to fund in isolation.

2.8 To unlock the full potential of the area, MCC has secured £51.6m of Government Funding through the Housing Infrastructure Fund (HIF) to deliver critical infrastructure and enabling works within the Initial Development Area. Practical completion of the infrastructure and enabling works is expected by March 2024.

2.9 Concurrent to the delivery of the infrastructure and enabling works, JV investment focuses on plot development and housing delivery, whilst also addressing challenges / opportunities in adjoining neighbourhoods to ensure the delivery of the wider Victoria North Initiative, in accordance with the aspirations and timescales of the SRF.

2.10 The infrastructure and enabling works, and the plot development on land controlled and owned by MCC and FEC at Red Bank (within the Initial Development Area) constitutes the 'Development Project'. Due to the HIF funding

programme requirements, the delivery of the Development Project is being brought about through a number of separate planning applications. Five planning applications (including the two of which this ES concerns) have been submitted, as shown in **Table 2.1** and **Figure 2.2**.

2.11 In addition, it is anticipated that there will be future detailed and / or Reserved Matters planning applications within the areas of Applications 4 and 5.

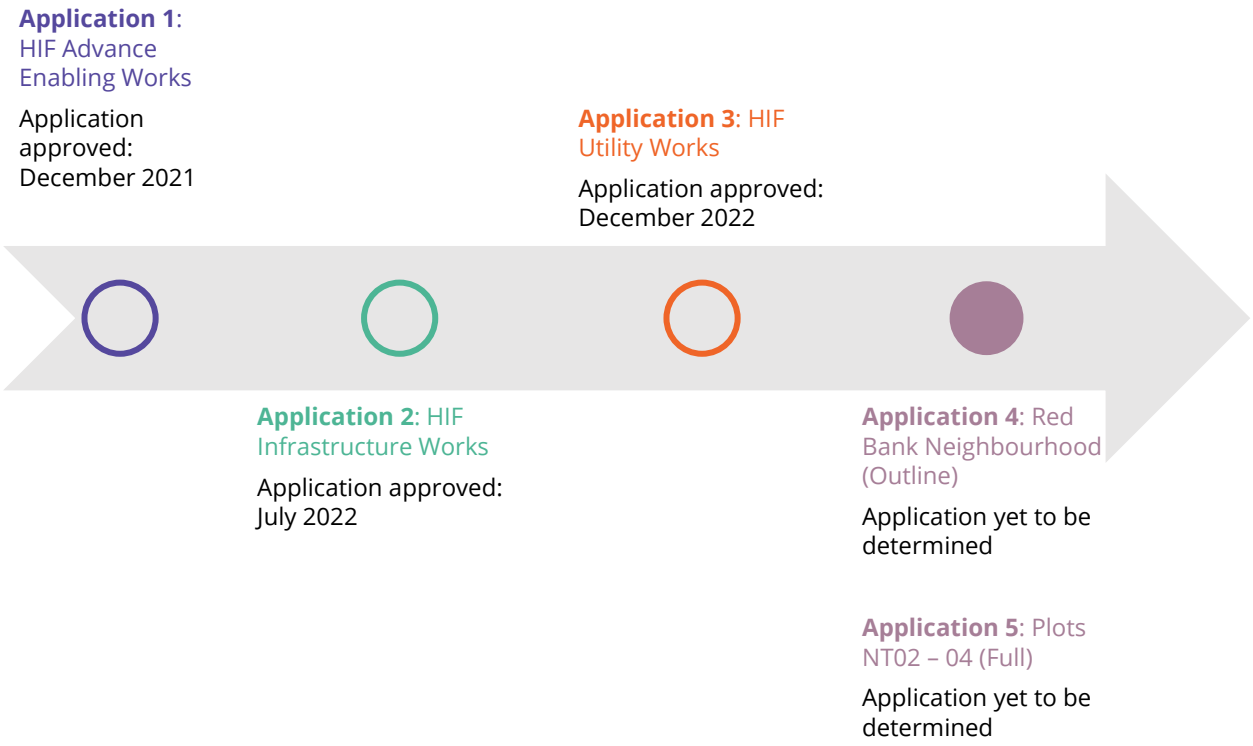
***Table 2.1**: Overview of Planning Application Submissions for Red Bank*

| Application | Description of Development | Applicant | Planning Application Ref. | Status | Assessed in this ES? |
|---|---|---|---|---|---|
| **Application 1: HIF Advance Enabling Works** | City Council Development for enabling works including tree and vegetation removal, creation of a temporary haul road and demolition of the Creamline Dairies buildings in association with the future delivery of the new Red Bank Neighbourhood | MCC | 132252/VO/2021 | Application approved: December 2021 | No – assessed in previous ES and assumed to be in place for the purposes of this ES. |
| **Application 2: HIF Infrastructure Works** | City Council Development for the creation of development platforms, including remediation and earthworks, and change in site levels, to allow delivery of future residential-led development at the Red Bank Neighbourhood, together with the construction of a new road and priority junction from Red Bank, new drainage infrastructure, utility and services connections and diversions, preparatory tree and shrub clearance, and demolition of certain existing structures, along | MCC | 133143/VO/2022 | Application approved: July 2022 | No – except for the ground conditions assessment these are assessed in previous ES and assumed to be in place for the purposes of the assessment of Application 4 in this ES (See Assessment Approach below). |

| Application | Description of Development | Applicant | Planning Application Ref. | Status | Assessed in this ES? |
|---|---|---|---|---|---|
| | with the creation of new and improved green infrastructure and landscaping including the improvements of St Catherine's Wood to form part of a City River Park, and other associated works | | | | |
| **Application 3: HIF Utility Works** | City Council Development for utility and services connections and diversions to Dantzic Street, Dalton Street and Collyhurst Road associated with the delivery of future residential-led development at the Red Bank Neighbourhood, Victoria North | MCC | 135190/VO/2022 | Application approved: December 2022 | No – except for the ground conditions assessment these are assessed in previous ES and assumed to be in place for the purposes of the assessment Application 4 in this ES (see Assessment Approach below). |
| **Application 4: Red Bank Neighbourhood (Outline)** | Part full planning application proposing the demolition of existing buildings and structures and part outline planning application (with all matters reserved) for the erection of a phased residential led mixed use development across severable plots comprising residential (Use Classes C3 and C2); non-residential floorspace comprising commercial, business, service and community uses (Use Classes E, F and | FEC | Not yet available | Application yet to be determined | Yes |

| Application | Description of Development | Applicant | Planning Application Ref. | Status | Assessed in this ES? |
|---|---|---|---|---|---|
| | Sui Generis); residents amenity space including within clubhouse buildings; health centre (Use Class E); land for a primary school (Use Class F); the final surface finish of the highway and footpath consented under HIF permission ref: 133143/VO/2022; creation of new public realm and associated landscaping, car parking provision, cycle storage, and other associated works | | | | |
| **Application 5: Plots NT02 – 04 (Full)** | Full planning application proposing the demolition of existing buildings and structures and erection of a phased residential led mixed use development comprising residential (use class C3 and C2), flexible non-residential floorspace comprising commercial, business, service and community uses (Use Classes E, F and Sui Generis); residential amenity space including within a clubhouse building, with associated car and cycle parking, hard and soft landscaping and improvement works to Dantzic Street | FEC | Not yet available | Application yet to be determined | Yes |

***Figure 2.2:*** *Timeline of Planning Application Submissions for Red Bank*




2.12 It is noted that, although Applications 4 and 5 are given numbered references, this does not necessarily depict the order in which the applications are to be determined and does not denote a pre-determined sequencing of delivery.

2.13 The Site that is the focus of this ES, relates to Application 4 and 5, and is shown in full at **Volume 3: Appendices, Appendix 1.1**.

## EIA Strategy for the Delivery of the Initial Development Area

2.14 The EIA Regulations and case law provide the legal framework for the process of EIA and contents of ESs, and this has established that EIA cannot be avoided by breaking down a large development project which is EIA development into a series of smaller phases or developments (so-called "salami slicing"). Indeed identifying "the project" for the purposes of the EIA Regulations is a key component of the assessment process.

2.15 A review of applicable case law has been undertaken to identify the appropriate EIA strategy in respect of the five applications for the delivery of the Initial Development Area, as described above. Specifically, the aim of this review has been to identify an approach that ensures a robust assessment approach is undertaken, whilst still allowing for applications to be made and approvals gained to enable the necessary infrastructure and enabling works to be

carried out in accordance with the HIF funding timescale and for these works to be followed by the delivery of the Proposed Development.

- Each of the planning applications for the HIF Works (Applications 1 – 3, as identified in **Table 2.1** above) have been accompanied by an ES. It has been necessary to prepare separate ESs for the HIF works applications and the Proposed Development as it has been necessary to bring forward Applications 1 – 3 in advance of Applications 4 and 5 in order to meet the necessary timescales to fulfil the requirements of the HIF.

2.16 However, each ES not only set out the assessment of the effects of the works comprised in the relevant application, but also an assessment of impacts associated with the wider development project as could be envisaged at that time, including for all of the associated planning applications. The timescales for Applications 4 and 5 are such that these two applications, that form part of the overall development project, can be assessed individually and in-combination in a single ES as well as with the impacts of the wider SRF and other Cumulative Schemes.

## EIA Screening

2.17 The wider Development Project, including the Proposed Development, falls within Schedule 2, Category 10 Subsection (b) 'Urban Development Projects'. The threshold for which EIA could be triggered is whether the area of works exceeds one of the following criteria:

- The development includes more than 1 hectare of urban development which is not dwellinghouse development; or
- The development includes more than 150 dwellings; or
- The overall area of the development exceeds 5 hectares.

2.18 The Proposed Development exceeds each of the criteria thresholds listed above in respect of Schedule 2 of the EIA Regulations.

2.19 The exceeded development threshold and potential for significant effects, in addition to the need for a robust assessment approach, are full justification as to the requirement for EIA for the Proposed Development. In any case, it is accepted that the Proposed Development will constitute EIA development, because it is part of a wider project which constitutes EIA development. As such, it was agreed with MCC that an EIA was to be submitted to accompany Applications 4 and 5 without the necessity to undertake an EIA Screening exercise.

## EIA Scoping

2.20 Scoping is a process that, through research and consultation, identifies the environmental issues that require assessment as part of the EIA. This essentially refines the focus of the EIA on the environmental aspects which are

likely to result in significant environmental impacts whilst also ensuring that no potentially significant areas are overlooked.

2.21 In accordance with Regulation 15 of the 2017 EIA Regulations, a formal request for an EIA Scoping Opinion was made to MCC on 31st January 2022, accompanied by an EIA Scoping Report.

2.22 A formal EIA Scoping Opinion was issued by MCC on 16 March 2023. Responses received as part of the EIA Scoping exercise are noted in **Table 2.2** below. A copy of the EIA Scoping Report can be found at **Appendix 2.1** and a copy of the Scoping Opinion and associated scoping responses received from MCC and statutory consultees (in-full) can be found at **Appendix 2.2**.

2.23 The EIA Scoping process concluded that there were potentially significant environmental effects in relation to the below topics and that these should be included in the EIA:

- Townscape and Visual;
- Ecology and Nature Conservation;
- Cultural Heritage;
- Ground Conditions;
- Flood Risk and Drainage;
- Transport and Access;
- Air Quality and Dust;
- Noise and Vibration;
- Daylight, Sunlight and Overshadowing;
- Wind Microclimate;
- Socioeconomics;
- Health and Wellbeing; and
- Climate Change.

2.24 MCC's EIA Scoping Opinion confirmed that the proposed approach to each assessment was acceptable in principle.

2.25 Several topics were scoped out of the EIA as they had been identified as to not have the potential to give rise to impacts that would be significant in EIA terms. This approach was approved through MCC's EIA Scoping Opinion Response (see **Appendix 2.2**). A description of these topics and reasons for scoping these out of the EIA is provided in the EIA Scoping Report (see **Appendix 2.1**).

2.26 The responses provided within the EIA Scoping Opinion have been reviewed by all the technical assessors and, where appropriate, have been addressed in their assessments. **Appendix 2.3** provides a list of the comments received from the EIA Scoping Opinion and Avison Young's (AY) and the EIA Technical Team's response to said comments.

# EIA Procedure, Methodology and Assessment Scenarios

## Consultation

2.27 Consultation has been and continues to be as a critical part of the Proposed Development and their associated ES, as well as the wider Development Project. The influence of the consultation exercise upon the design evolution of the Proposed Development is described in further detail in **Volume 2: Main Text, Chapter 4: Alternatives**.

2.28 Consultation has been carried through the iterative design process through:

- Pre-application consultation with the LPA and statutory consultees;
- Community and stakeholder consultation; and
- Design Review Panels.

### Pre-Application Consultation with the LPA and Statutory Consultees

2.29 The Applicant and the design team for Applications 4 and 5 have regularly liaised with MCC during a series of pre-application meetings and correspondence in order to ensure that the evolving design meets the aspirations for the Site. Said engagement has covered: use, amount, layout, hard and soft landscaping, sustainability and wellbeing, car parking and transportation.

2.30 The following statutory consultees were consulted either directly by the Applicant's EIA Team or through the LPA as part of its own consultations:

- Manchester City Council (MCC);
  - Lead Local Flood Authority (LLFA);
  - MCC Highway Services;
  - MCC Environmental Health;
  - MCC Flood Risk Management; and
  - MCC Works and Skills.
- Natural England;
- Environment Agency (EA);

- Greater Manchester Ecology Unit (GMEU);
- Greater Manchester Archaeology Advisory Service (GMAAS);
- Transport for Greater Manchester (TfGM);
- Aerodrome Safeguarding.

2.31 All relevant comments from the consultees relating to the EIA, whether made directly to the Applicant's EIA Team or via the scoping responses, are addressed in **Volume 2: Main Text, Chapters 6** to **18**.

## Community and Stakeholder Consultation

### Consultation Timeline

2.32 Four stages of community consultation have been carried out to inform the design of the Proposed Development:

- **Stage 1**: October - November 2021
  - First stage of consultation to introduce the vision for Red Bank and MCC's emerging designs for the City River Park and the consultation process.
- **Stage 2**: December 2021 - January 2022
  - Second stage of consultation on the Red Bank masterplan principles and MCC's detailed design for the City River Park (ahead of submission of the main HIF planning application in March (application 2)).
- **Stage 3**: December 2022 - January 2023
  - Third stage of consultation on the updated masterplan and early design ideas for NT02-NT04.
- **Stage 4**: February - March 2023
  - Fourth and final stage of consultation on more detailed design proposals for NT02-04, ahead of outline and detailed planning submission.

2.33 In addition, a programme of significant community and stakeholder consultation was also carried out for Applications 1 – 3.

### Themes within the Feedback

2.34 There was support for various aspects of the Proposed Development, including:

- The proposals and the regeneration of Red Bank more generally, including the development of new homes;
- New green and open spaces generally, as well as the proposals for the City River Park and St Catherine's Wood more specifically; and
- Improvements to the River Irk as part of the park proposals.

2.35 A range of issues and considerations highlighted, including the need for the Proposed Development to:

- Protect and enhance existing biodiversity;
- Consider sustainability widely and at all stages;
- Provide new active travel routes and infrastructure, including suggestions for safe walking and cycling routes integrating into a wider network;
- Consider how to incorporate public transport connections and improvements;
- Consider parking and deliveries as part of the movement strategy;
- Provide new community facilities and infrastructure to support the new Red Bank neighbourhood;
- Consider and address wider issues affecting the area such as crime, safety and homelessness;
- Consider issues such as flood risk and contaminated land; and
- Deliver a high quality design incorporating a range of architectural styles.

2.36 A Statement of Community Involvement (SCI) has been prepared to support Applications 4 and 5 and provides further detail in this regard.

### Design Review Panels

2.37 A total of three Design Review Panels (DRP) have been held for the Proposed Development (two DRPs for Application 4 and one DRP for Application 5) to gather feedback to guide the iterative design process.

## Basis of Assessment

2.38 The EIA has been based upon the following information:

- The Site red line application boundaries;
- The written description of the Proposed Development, including construction timescales and proposed construction methods and management protocols;
- The quantum of development and Parameter Plans submitted for approval as part of Application 4;
- The Design Principles section of the Design and Access Statement (DAS) for Application 4;
- The detailed drawings submitted for approval for the Application 5;
- The Development Specifications for Applications 4 and 5; and
- The Victoria North Strategic Regeneration Framework (SRF).

2.39 Assessment on this basis allows the likely significant effects of the proposals to be fully assessed and appropriate mitigation measures to be secured.

2.40 The EIA Regulations, supported by UK case law, provide the legal framework for the process of EIA and contents of ES's. More specifically, as a result of legal cases relating to the grant of planning permission for the Kingsway Business Park, Rochdale, the 'Rochdale Envelope Principle' is an accepted methodology for assessing the impacts in outline applications (e.g. Application 4) before the full details are available.

2.41 The planning application for Application 4 will be defined by plans which set the parameters for the development. These parameter plans, along with the written description of the development set out in **Volume 2: Main Text, Chapter 5: The Proposed Development**, identify the development to be assessed for the purposes of the EIA process. This ensures the likely significant effects of the development will be assessed and appropriate mitigation measures identified.

2.42 In order to ensure that what is built will have been assessed in the EIA process, the parameter plans will be tied to the planning permission by conditions which will require any subsequent detailed application to conform with the parameter plans. In this way, the likely significant impacts of whatever is built will have been assessed in the ES. This is a robust approach to assessing development in outline planning applications, as established in the aforementioned Kingsway Business Park, Rochdale, cases.

## Assessment Approach

2.43 As set out above, the Proposed Development forms are a part of the wider Development Project (which, as defined in **Volume 2: Main Text, Chapter 1: Introduction**, comprises of the HIF applications (Applications 1 – 3), the Proposed Development (Applications 4 – 5) and the Victoria North SRF). The EIA approach is made as robust as possible by the presentation of a series of assessment scenarios to enable the worst case to be identified and assessed. These assessment scenarios are presented by way of an In-Combination Assessment (ICA) in the body of the ES technical assessment chapters.

2.44 The structure for the EIA to be presented within the ES for the Proposed Development (i.e. Applications 4 and 5) is that of a 'typical' assessment, that is, for each of the applications individually to be assessed allowing impacts, mitigation and residual effects to be identified for each along with the cumulative effects with other committed schemes.

2.45 This will then be followed by an assessment of the in-combination effects of the Proposed Development (Application 4 and Application 5 individually) in combination with the Development Project (being the development comprised in the SRF).

2.46 There is then an assessment of the in-combination effects of Applications 4 and 5 together (the 'Proposed Development') and then the effects of both applications in combination with the effects associated with the development of the SRF (the wider 'Development Project'). Given the lack of detailed information for the

development of the remainder of the SRF, a qualitative assessment has been undertaken using reasonable assumptions.

2.47 The EIA has assumed that the HIF works (Applications 1, 2 and 3) would be substantially complete as to enable Application 4 to be built out in due course as Application 2 establishes the levels on which most of Application 4 will be built (apart from the Travis Island area (see **Figure 3.1)**). Therefore for the purposes of the Application 4 construction assessments it is generally assumed that the works comprised in Applications 1, 2 and 3 have been completed before the Application 4 development starts. However, the Environment Agency has noted that at the point of submission of Application 4 the ground remediation works required under the HIF works may not have been undertaken and completed and so the Environment Agency has requested the Applicant to include in the Ground Conditions chapter of the ES an assessment which includes a consideration of the potential impacts of the Application 4 works against the baseline of *'existing ground conditions*'. As such, the **Volume 2: Main Text, Chapter 9: Ground Conditions** includes assessments on both bases.

2.48 There would be some overlap of the HIF works (completion year of 2024) with the Application 5 works (estimated starting year of 2023). However, the assessment has been undertaken on the reasonable assumption that the nature of the works on both the HIF Works site and the Application 5 sites will be limited. It is anticipated that, by the time of the start of the works in Application 5, the major earth moving works will have been completed on the HIF Works site with only final grading and localised works being undertaken and consequently construction traffic and activities associated with the HIF works will be limited. Conversely, it is reasonable to assume that the initial works on the Application 5 site would be those associated with site set up and initial remediation works. As a result the nature of the works on site that might overlap, and the associated traffic impacts, would be limited.

2.49 By the time the Application 5 works are complete, the HIF Works groundworks would be substantially complete. Therefore, in relation to the assessment of the operation of Application 5 the HIF works will be in place.

2.50 The approach of the EIA ensures that:

- The impacts of Application 4 and Application 5 are identified in isolation; and
- The impacts of the Proposed Development within the wider Development Project (inclusive of all related applications) are identified.

2.51 The assessment scenarios are presented in **Table 2.2**.

***Table 2.2**: Assessment Scenarios*

| Assessment | Scenario Reference | Considerations for Scenario |
|---|---|---|
| **Application 4** | Scenario 1a | Demolition, Groundworks, and Construction Effects |
| | Scenario 1b | Operational Effects |
| | Scenario 1c | Cumulative Effects with Identified Committed Schemes |
| | Scenario 1d | Cumulative Effects with Identified Committed Schemes + SRF |
| **Application 5** | Scenario 2a | Demolition, Groundworks, and Construction Effects |
| | Scenario 2b | Operational Effects |
| | Scenario 2c | Cumulative Effects with Identified Committed Schemes |
| | Scenario 2d | Cumulative Effects with Identified Committed Schemes + SRF |
| **In-Combination Effects of Applications 4 and 5** | Scenario 3a | Demolition, Groundworks, and Construction Effects |
| | Scenario 3b | Operational Effects |
| | Scenario 3c | Cumulative Effects with Identified Committed Schemes |
| **In-Combination of Applications 4 and 5 and SRF** | Scenario 4a | Demolition, Groundworks, and Construction Effects |
| | Scenario 4b | Operational Effects |
| | Scenario 4c | Cumulative Effects with Identified Committed Schemes |

## Cumulative Assessment

2.52 As shown in **Table 2.2**, a Cumulative Effects Assessment (CEA) is also presented for Scenarios 1c, 1d, 2c, 2d, 3c and 4c.

2.53 Schemes for consideration in the CEA were identified through a planning application search of MCC'S and Salford City Council's (SCC) planning portals. The Cumulative Schemes include for those approved projects within ~1km of the Site considered as having potential for cumulative impacts with the Proposed Development, as is typical for an CEA undertaken for an EIA within an urban area.

2.54 Within the EIA Scoping Report, a total of 38 Cumulative Schemes were initially identified. However, since the submission of the EIA Scoping Report a number of the identified Cumulative Schemes have either:

- Now reached completion; or
- Are nearing completion as of the writing of this ES, and as such are highly likely to be completed by the time in which the construction works for the Proposed Development are anticipated to begin on-Site (Q4 2023).

2.55 Because of this, 11 Cumulative Schemes have now been scoped-out of the CEA as they now form a part of the baseline or are highly likely to form a part of the baseline before construction works begin for the Proposed Development.

2.56 Additionally, one Cumulative Scheme identified within the EIA Scoping Report ('Bankside', planning ref.: 21/78474/REM) has now been merged with another Cumulative Scheme ('Cortland at Collier's Yard', planning ref: 19/74465/HYBEIA) to form a single Cumulative Scheme (see Cumulative Scheme No. 24 in **Table 2.3**) due to 'Bankside' being a Reserved Matters (RM) planning application to 'Cortland at Collier's Yard'. Both applications will be assessed within the CEA.

2.57 In total, 26 Cumulative Schemes have been scoped into the CEA. Aside from the changes noted above, which are seen as reasonable updates, the list of Cumulative Schemes has been agreed with MCC through the EIA Scoping process.

2.58 The list of Cumulative Schemes considered as part of the CEA are presented in **Table 2.3**, and a map of the Cumulative Schemes is presented within **Figure 2.3**.

***Table 2.3**: List of Cumulative Schemes 'Scoped-into' the CEA*

| Scheme No. | Planning Ref. | Description of the Proposal | Approx. Distance and Direction from the Site | Known Status |
|---|---|---|---|---|
| ***Manchester City Council (MCC)*** | | | | |
| **1** | 129393/VO/2021 | **Collyhurst Village**<br><br>City Council Development for the erection of 168, three and four storey dwellinghouses (Use Class C3a) and two, five and six storey apartment buildings to form 76 residential apartments (Use Class C3a) with associated ground floor flexible commercial unit (162 sqm) (Use Class E); and the creation of a new public park; all with associated car and parking, refuse storage, landscaping, public realm and other associated works and infrastructure following demolition of 29 existing residential dwellinghouses, the Collyhurst Village Store and associated car parking | 650m north-east | Application approved: 21 June 2021<br><br>Groundworks started |
| **2** | 127971/FO/2020 | **Osborne Yard**<br><br>Erection of a 6 storey building to form 90 residential apartments (Use Class C3a) following demolition of existing structures with associated access, car parking, amenity space, landscaping and other associated works | 950m east | Application approved: 07 May 2021<br><br>Construction not yet started |
| **3** | 128248/FO/2020 | **The Gasworks**<br><br>Erection of 9 buildings ranging from 8 to 34 storeys in height to form 1202 residential apartments (Use Class C3a) and ground floor commercial uses (Use Class E) (192 sqm) together with associated car parking, new vehicular and pedestrian access, public realm, landscaping and other associated works following demolition of existing structures and buildings \| Land Bound By Gould Street, Williamson Street, Bromley Street And Bilbrook Street Manchester M4 4DD | 45m south | Application approved: 03 June 2021<br><br>Construction not yet started |
| **4** | 116366/FO/2017 | **MeadowSide**<br><br>Erection of four residential buildings (22 storey building, 17 storey building, 40 storey building and part 12, part 9 storey building) to form 756 residential apartments (Use Class C3a) together | 90m south | Application approved: 25 August 2017<br><br>Three of the Scheme's four buildings are now complete and occupied; |

| Scheme No. | Planning Ref. | Description of the Proposal | Approx. Distance and Direction from the Site | Known Status |
|---|---|---|---|---|
| | | with ground floor commercial uses (616 sqm) (Use Classes A1, A2, A3, A4, A5, D1 and B1) with associated car parking, landscaping, amenity areas, creation of new public realm following the closure of Aspin Lane, Mincing Street and Irk Street and other associated works following demolition of existing structures \| Land Bounded By Dantzic Street & Aspin Lane, Land Bounded By Gould Street & Angel Meadows And Land Bounded By Old Mount Street, School Street, Naples Street & Ludgate Street Manchester | | the fourth building (the 40-storey 'The Peak') has yet to start construction |
| **5** | 127537/FO/2020 | **25 Rochdale Road**<br><br>Erection of a 11 storey 229 bedroom hotel (Use Class C1) with ancillary ground floor bar/restaurant together associated public realm and other associated works \| 25 Rochdale Road Manchester M4 4HT | 340m south | Application approved: 19 October 2020<br><br>Construction not yet started |
| **6** | 124973/FO/2019 | **2 and 3 Angel Square**<br><br>Erection of an 11 storey building and a 12 storey building with plant rooms above to form a mixed use development comprising 39,184 sq.m (NIA) of Class B1a office use and commercial units of 1,286 sqm (NIA) (Use Classes A1, A2, A3, A4, B1a and D1) along with associated lower ground level car parking, hard and soft landscaping and associated works, including the creation of a new pedestrian route between Angel Street and Miller Street. \| Land Bounded By Co-op Headquarters Miller Street And Angel Street Manchester | 260m south | Application approved: 12 February 2020<br><br>Construction not yet started |
| **7** | 126944/FO/2020 | **Victoria Riverside**<br><br>Erection of a residential-led mixed use development comprising 3 no. towers (37, 26 and 18 storeys) and podium levels (6 storey) to form 634 residential apartments and townhouse accommodation (Use Class C3) together with commercial accommodation (1222 sqm) (Use Classes A1,A2,A3,A4,A5,B1, D1 and D2)); with associated residential amenity areas, refuse storage, plant (including substation), car parking, cycle storage, landscaping and new public realm including the re-instatement of Bromley Street and other associated works | 0m south (adjacent to Site boundary) | Application approved: 24 September 2020<br><br>Under construction |

| Scheme No. | Planning Ref. | Description of the Proposal | Approx. Distance and Direction from the Site | Known Status |
|---|---|---|---|---|
| **8** | 131708/FO/2021 | **87 Rochdale Road**<br><br>Erection of a part 11, part 13 storey building to form residential apartments (Use Class C3a) together with the erection of two blocks of 3 storey townhouses (Use Class C3a) to form 237 residential homes in total with associated commercial floor (Use Class E) (132 sqm), basement car parking, landscaping and public realm, and associated engineering and infrastructure works following demolition of existing buildings and structures | 200m south | Application approved: 18 February 2022<br><br>Construction not yet started |
| **9** | 128997/FO/2020 | **40 Swan Street**<br><br>Erection of a ground plus 9-storey building to form 118 no. residential apartments (Use Class C3), including amenity areas, ground floor food and beverage/ commercial units (Sui Generis/ Use Class E), public realm and landscaping, with supporting infrastructure and associated works following demolition of existing building | 560m south | Application approved: 22 September 2021<br><br>Construction not yet started |
| **10** | 121380/FO/2018 | **Swan House**<br><br>Erection of a part 31, part 13, part 5 storey building to form 373 residential apartments (Use Class C3a) and 12 serviced apartments (Use Class C1) together with a ground floor commercial unit (408 sqm) (Use Class A1, A2 or A3) with associated car parking, public realm and other associated works following demolition of existing buildings | 510m south | Application approved: 24 October 2019<br><br>Under construction |
| **11** | 124888/FO/2019 | **New Cross Central**<br><br>Erection of a 6-9 storey residential building (Use Class C3) comprising 80 no. dwellings including 9 no. townhouses and 71 no. apartments with residents lounge, refuse, plant, new substation, cycle storage, an internal landscaped courtyard and improvements to the adjacent footways | 665m south | Application approved: 16 January 2020<br><br>Under construction |
| **12** | 121375/FO/2018 | **20 – 36 High Street**<br><br>Construction of a 22 storey building comprising 361 residential apartments (122 x 1 bed 2 person, 119 x 2 bed 3 person, 94 x 2 bed 4 person, 21 x 3 bed 5 person and 5 x 3 bed 6 person (34% 1 bed, 59% 2 | 720m south | Application approved: 02 October 2020<br><br>Construction not yet started |

| Scheme No. | Planning Ref. | Description of the Proposal | Approx. Distance and Direction from the Site | Known Status |
|---|---|---|---|---|
| | | bed and 7% 3 bed) ground floor commercial floorspace (Use Classes A1 (Shop), A3 (Restaurant and Cafe), A4 (Drinking Establishment) and A5 (Hot Food Take-away) associated landscaping, including new public realm and pedestrian route, together with servicing, cycle parking, access and other associated works following demolition of buildings at 20-22 and 24-26 High Street and 5 market stalls to Church Street. | | |
| **13** | 125678/FO/2019 | **Peeler's Yard**<br><br>Erection of 8-storey residential building (Use Class C3) comprising 73 residential units, with ground floor commercial use (Classes A1, A2, A3, B1 and D1 (excluding Places of Worship)) (205 sqm); alterations to the retained perimeter wall and chimney including the introduction of a light box; disabled car parking, highways, landscaping and other associated works | 480m south | Application approved: 18 December 2020<br><br>Site secured, construction not yet started |
| **14** | 132416/FO/2021 | **Great Ducie Street**<br><br>Erection of two buildings part 27, 20, 17 storeys and part 11 and 10 storeys to form a mixed use development comprising of 461 residential apartments (Use Class C3a) and ground floor commercial uses (Use Class E) (718 sqm) together with public realm including courtyard pocket park, landscaping, car parking and other associated works | 390m south-east | Application approved: 30 June 2022<br><br>Construction not yet started |
| **15** | 122280/FO/2019 | **Mirabel Street**<br><br>Erection of new mixed-use development to comprise of one 10 storey building fronting Mirabel Street to accommodate 45 no. Use Class C3 residential apartments (9 no. 1-bed studios, 27 no. 2-bed 3 person apartments and 9 no. 2-bed 4 person apartments) and 7 no. residential car parking spaces at ground level and one part 10, part 14 storey building fronting Great Ducie Street to accommodate 84 no. Use Class C3 residential apartments (31 no. 1-bed 2 person apartments, 26 no. 2-bed 3 person apartments, 18 no. 2-bed 4 person apartments and 9 no. 3-bed 5 person apartments) and 345 sq. m of commercial floor space at ground level (flexible use Use Class A1 shop, Use Class A2 financial and professional services and Use Class A3 cafe/restaurant) together | 450m south-east | Application approved: 17 December 2020<br><br>Construction not yet started |

| Scheme No. | Planning Ref. | Description of the Proposal | Approx. Distance and Direction from the Site | Known Status |
|---|---|---|---|---|
| | | with creation of roof terrace amenity space, cycle parking, access, servicing and associated works following demolition of existing building \| Land Bounded By Great Ducie Street And Mirabel Street Manchester M3 1PJ | | |
| **16** | 127901/FO/2020 | **Manchester Arena Expansion**<br><br>Expansion of Manchester Arena from 21,000 seats to 24,000, making it Europe's largest indoor arena. Improvement of access from Hunt's Bank and Victoria station. | 290m south-east | Application approved: 16 April 2021<br><br>Construction not yet started |
| **17** | 131314/FO/2021 | **39 Deansgate (Speaker's House)**<br><br>Erection of a 17 storey building comprising office use (Use Class E(g)(i)) and flexible ground floor commercial units (Use Classes E(a),(b),(c) and sui generis 'drinking establishment'), new electricity sub-station, basement cycle parking and rooftop plant enclosure, together with access, servicing and associated works following demolition of the existing building | 820m south-east | Application approved: 21 January 2022<br><br>Construction not yet started |
| **18** | 130553/FO/2021 | **Island, John Dalton Street**<br><br>Demolition of the existing buildings and structures and the erection of a 10-storey plus basement office building (Use Class E(g)), with flexible ground floor and basement uses (Use Class E) and rooftop amenity space, works to facilitate the pedestrianisation of the southern part of Ridgefield and other associated works. | 1.1km south-east | Application approved: 27 September 2021<br><br>Construction started |
| **19** | 130354/FO/2021 | **Eliza Yard**<br><br>Erection of an 8 storey building to form 118 residential apartments (Use Class C3) and ground floor commercial floorspace (Use Class E (a),(c),(g)(i)) (583 sqm) together with amenity space, car and cycle parking provision, hard and soft landscaping, access, servicing and other associated works | 870m south-east | Application approved: 30 July 2021<br><br>Construction not yet started |
| **20** | 130627/FO/2021 | **Ancoats Mobility Hub** | 770m south-east | Application approved: 30 July 2021 |

| Scheme No. | Planning Ref. | Description of the Proposal | Approx. Distance and Direction from the Site | Known Status |
|---|---|---|---|---|
| | | Erection of an 8 storey building to form Mobility Hub including ground floor commercial unit (Use Class E(b)) (221 sqm), delivery hub, 150 cycle spaces and 408 car parking spaces with associated landscaping, access and other associated works following demolition of existing structures | | Groundworks started, currently in the early stages of construction |
| **21** | 113914/FO/2016 | **1 Lord Street**<br><br>Erection of a 16 storey building to form 192 residential apartments (Use Class C3a) together with ground floor commercial unit (172 sqm) (Use Class A1, A2, A3 or B1) with associated vehicular access from Fernie Street, car parking and hard and soft landscaping following demolition of existing buildings | 140m west | Application approved: 21 November 2016<br><br>Construction not yet started |
| ***Salford City Council (SCC)*** | | | | |
| **22** | 18/71330/FUL | **Uptown**<br><br>Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south-west | Application approved: 01 October 2018<br><br>Under construction |
| **23** | 20/76134/FUL | **Maldron Hotel, Chapel Street**<br><br>Erection of 16-storey building plus plant comprising a hotel (Use Class C1) with ancillary bar and restaurant uses, access, servicing, landscaping and other associated works | 1km south-west | Application approved: 28 July 2021<br><br>Under construction |
| **24** | 19/74465/HYBEIA | **Cortland at Collier's Yard / Bankside**<br><br>Hybrid planning application for demolition of existing buildings on the site and comprehensive redevelopment to create between 1,407 and 1,521 dwellings, comprising of: (a) Phase 1 (submitted in full with no matters reserved) for development of a 50-storey residential building; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new public park; highways and public realm improvements and other associated works; and, (b) Phases 2 and 3 (submitted in outline with all matters reserved) for the development of two residential buildings up to 42 storeys in height; commercial floor-space (Use Classes A1, A2, A3, A4, | 960m south-west | Application approved: 27 March 2020<br><br>Under construction |

| Scheme No. | Planning Ref. | Description of the Proposal | Approx. Distance and Direction from the Site | Known Status |
|---|---|---|---|---|
| | | A5, B1, D1 and D2); new highways; a public square; public realm improvements and other associated works. (EIA development, accompanied by Environmental Statement) \| Land Bound By Greengate, Collier Street, Queen And King Street And Gravel Lane M3 7BN | | |
| | 21/78474/REM | Application for approval of Reserved Matters (Access, Appearance, Landscaping, Layout and Scale) pursuant to Outline Planning Permission 21/78473/HYBEIA for Plot C, comprising the demolition of existing buildings and a residential-led development of a 42-storey (plus ground) building containing 444 apartments together with associated residents' amenities, ground floor commercial floorspace, basement parking, public realm improvements including the delivery of Boulevard West, Collier Square and Collier Street, and other associated infrastructure works. (EIA Development Application accompanied by an Environmental Statement Addendum) \| Land Bound By Greengate And Trinity Way And Collier Street And Intersected By Boond Street And Caygill Street M3 7BN | 960m south-west | Application approved: 02 March 2022<br><br>Under construction |
| **25** | 15/66806/FUL | **Embankment Exchange**<br><br>Demolition of existing factory walls and river walk way to provide mixed use development comprising of 2 blocks ranging from 15 to 34 storeys in height total of 300 residential units with associated off street parking , together two commercial units comprising of 474sqm of floor space (A1, A2, A3 and B1) at ground floor level. | 640m south-west | Application approved: 03 December 2015<br><br>Under construction |
| **26** | 19/74205/FULEIA | **Waterloo Place**<br><br>Erection of a mixed-use development comprising a single building with two blocks (14 and 55 storeys) to include: 542 residential apartments, associated residents' facilities and basement parking; and 3 no. commercial units (use classes A1, A2, A3, B1 & D1) with associated landscaping and public realm works. | 620m south-west | Application approved: 23 January 2020<br><br>Site secured, construction not yet started |

***Figure 2.3**: Map of Cumulative Schemes 'Scoped-into' the CEA*




2.59 The Victoria Riverside scheme (application ref. 126944/FO/2020) has been identified as a Cumulative Scheme for EIA purposes because in simple terms it will add to the existing environment in due course along with the Proposed Development. However, it is anticipated that Victoria Riverside will be completed and occupied while the Application 5 development moves towards completion and while construction works are underway on Application 4. It will therefore form part of the future baseline and as it located adjacent to the Proposed Development it has been treated as a sensitive receptor within the EIA.

2.60 For completeness, a list of the 'scoped-out' Cumulative Schemes has been provided in **Table 2.4**.

***Table 2.4**: List of Cumulative Schemes 'Scoped-out' of the CEA*

| Planning Ref. | Description of the Proposal | Approx. Distance and Direction from the Site | Known Status |
|---|---|---|---|
| 118120/FO/2017 | **Ancoats Gardens**<br><br>Erection of a part 15, part 9, part 7 storey building to form 155 residential apartments together with ground floor commercial uses (Use Classes A1, A3 and B1) (288 sqm) with associated car parking, access arrangements and other associated works following the demolition of existing buildings and structure and the closure of Hatter Street \| Land Bounded By Thompson Street / Mason Street / Bendix Street And Rochdale Road Manchester | 360m south | Application approved: 23 May 2018<br><br>Nearing completion |
| 123437/FO/2019 | **4 Angel Square**<br><br>Demolition of existing buildings to facilitate construction of an 11 storey building with external terrace to form a mixed use development comprising office use (Use Class B1) and ground floor commercial units (Use Classes A1, A2, A3, A4, B1 and D2); creation of a new public square and associated landscaping, undercroft car and cycle parking, provision of plant and servicing and related access and highways' works and associated works. \| 4 Angel Square Corporation Street Manchester M4 4DU | 110m south | Application approved: 26 July 2019<br><br>Nearing completion |
| 111777/FO/2016/C1 | **New Victoria**<br><br>Erection of two residential buildings of a maximum 21 and 26 storeys to accommodate 520 apartments (178 x 1 bed, 286 x 2 bed and 56 x 3 bed apartments) (Use Class C3). Erection of one office building of maximum eight storeys comprising up to 11,647 sq. m (GIA) of office accommodation. Ground floor commercial space (Use Class A1, A2, A3 and B1), lower ground level car parking, access and servicing arrangements, alterations to Corporation Street, new public realm and other associated works. \| New Victoria Land At Corporation Street Manchester M3 1NX | 190m south-east | Application approved: 29 September 2016<br><br>Nearing completion |
| 126638/FO/2020 | **Glassworks**<br><br>Erection of part 17 storey (plus roof top plant behind parapet), part 6 storey building and the conversion with single-storey rooftop extension of the existing building at 1 & 3 Back Turner Street to comprise office accommodation (Class B1(a)) with front of house and commercial floorspace at ground floor Class A1 (Shop), A2 (Financial and Professional Services), A3 (Café and Restaurant), A4 (Drinking Establishment) B1 (Office) and D2 (gym and cinema) use with associated landscaping and other works following demolition of existing buildings at 30 & 32 Shudehill and 1 & 3 Nicolas Croft. | 550m south | Application approved: 26 June 2020<br><br>Nearing completion |

| Planning Ref. | Description of the Proposal | Approx. Distance and Direction from the Site | Known Status |
|---|---|---|---|
| 125686/FO/2019 | **Oldham Road (Mulbury City)**<br><br>Erection of a 12-storey residential building (Use Class C3) comprising 144 residential units, with ground floor commercial use (Use Class A1, A2, A3, B1, and /or D1 (excluding Places of Worship)) (144 sqm) or ancillary residents lounge, disabled car parking, with highways, landscaping and other associated works following demolition of existing buildings. \| Site Bound By Oldham Road To The South East, Marshall Street To The North East, Chadderton Street To The North West, And Addington Street To The South West Manchester | 550m south | Application approved: 18 December 2020<br><br>Nearing completion |
| 125681/FO/2019 | **Bendix Street (Mulbury City)**<br><br>Erection of a ground plus 12-storey residential building (Use Class C3) comprising 161 residential units, with ground floor commercial use (Use Class A1, A2, A3, B1, and / or D1 (excluding Places of Worship)) (160sqm) or ancillary residents lounge, disabled car parking, with highways, landscaping and other associated works following demolition of existing buildings | 520m south | Application approved: 23 April 2021<br><br>Nearing completion |
| 110074/FO/2015/C2 | **The Quarters**<br><br>Demolition of existing building and site structures and construction of 2no. mixed use buildings (Buildings A and B). Building A - Part 4, part 5, part 6 and part 8 storey building including ground floor and plus basement with ancillary facilities services and commercial use (A1, A3, B1) at ground floor and basement levels, 72 residential apartments (C3) above and 2 green roofs. Building B - Part 3 and part 5 storey building including ground floor and plus basement with 100 cycle parking spaces, building services and commercial space at basement level and 9 car parking spaces, ancillary facilities and services and commercial space (A1, A3, B1) at ground floor level and 28 residential apartments (C3) above and 1 green roof. \| Land At 76 - 82 Oldham Street And Land Bounded By Spear Street, Warwick Street And Houldsworth Street Ancoats Manchester M4 1LF | 720m south | Application approved: 30 August 2016<br><br>Completed |
| 119731/FO/2018 | **Deluna, 32 – 38 Oldham Road**<br><br>Erection of 7 storey building to form 38 apartments and ground floor retail unit (Class A1) together with associated car and cycle parking following demolition of existing building | 625m south | Application approved: 15 November 2018<br><br>Completed |
| 124995/FO/2019 | **Manchester College Strangeways Campus**<br><br>Erection of a five storey educational building (18495 sqm) (Use Class D1) with associated access, servicing, landscaping, public realm and other associated works following removal of existing car park | 360m south-east | Application approved: 19 December 2019 |

| Planning Ref. | Description of the Proposal | Approx. Distance and Direction from the Site | Known Status |
|---|---|---|---|
| | | | Completed |
| 20/74637/FUL | **55 Queen Street**<br><br>Demolition of existing building and erection of a new building (ground plus 17 storeys) comprising 115 residential units (Use Class C3) with associated residents' facilities at ground floor and other ancillary functions; associated access, public realm and other associated works. \| 55 Queen Street Blackfriars Salford M3 7DQ | 920m south-west | Application approved: 05 March 2020<br><br>Completed |
| 18/72242/FUL | **The Copper Works**<br><br>Demolition of existing and former light industrial / commercial units, and the construction of a residential-led mixed-use development. Erection off a building ranging from 7-14 storey high comprising 104 residential apartments (C3 use) with ancillary communal spaces, a commercial unit (A1, A2, A3, B1, D1), together with associated parking and amenity space. \| 28 King Street And 49-51 Queen Street Blackfriars Salford M3 7DG | 900m south-west | Application approved: 17 January 2019<br><br>Completed |

## Effect Interactions

2.61 It is common practice for an ES to acknowledge effect interactions; that is, the combination of different environmental effects resulting from one project upon individual sensitive receptors, or a set of sensitive receptors.

2.62 The likely significant effect interactions arising from the Proposed Development are considered for the construction phase and for the completed and operational Development. The assessment of effect interactions as presented in **Volume 2: Main Text, Chapter 19: Effect Interactions** draws from the results of the assessments presented in **Volume 2: Main Text, Chapters 6** to **18**.

## Assessment Assumptions and Limitation

2.63 As previously detailed in this Chapter, Applications 1, 2 and 3 (the HIF Works) have already been granted planning permission and are being carried on-Site. For the purposes of the EIA, the works delivered through Applications 1, 2 and 3 are assumed to form a part of the baseline environmental conditions of the Site as described above. The anticipated phasing of delivery of the HIF works and Applications 4 and 5 is described in the 'Demolition and Construction' section of **Volume 2: Main Text, Chapter 5: The Proposed Development**.

2.64 Assessment Scenarios 4a, 4b and 4c will provide an in-combination assessment of Application 4, Application 5 and the SRF. The SRF-wide and neighbourhood Design and Development principles (Section 5 and 6 of the Northern

Gateway SRF) provide a general overview of the whole framework area, and information with regards to urban form and scale, land use, movement and public realm, and these plans were used as the basis of the assessment.

2.65 Any assumptions made or limitations relating to individual technical assessments are presented, where applicable, in the relevant technical chapters.

## Consistency

2.66 To assist the reader in understanding the technical assessments a consistent approach has been adopted throughout the EIA to ensure that likely significant effects are identified and evaluated in a transparent manner. Each environmental assessment topic has adopted the following approach:

- Baseline Assessment and Identification of the Study Area;
- Identification of Sensitive Receptors;
- Identification of Embedded Mitigation Measures;
- Identification of Potential Effects during Construction and Operation of the Proposed Development (including indirect, direct, adverse and beneficial);
- Assessment of Impact Significance;
- Identification of Impact Significance;
- Identification of Mitigation Measures;
- Assessment of Residual Effects;
- Assessment of in-combination impacts (see **Table 2.2** for the assessment scenarios); and
- Assessment of Cumulative Effects.

## Spatial and Temporal Scope of Assessment

2.67 The spatial extent of the EIA is described by the geographical area potentially affected by the Proposed Development and will need to take into account:

- The physical extent of the Proposed Development defined by the limits of land to be used both during construction and operation (temporary and permanent);
- The position of sensitive receptors within or outside of the Site boundaries; and
- The nature of the baseline environment and the way in which the impacts are likely to be propagated.

2.68 The environmental baseline studies undertaken as part of the EIA in relation to Application 4 will consider the Site as it will exist with the consented HIF (Applications 1 – 3) works implemented (unless otherwise stated in the

chapter) and each technical chapter will contain a description of the relevant study area that may be affected by the Proposed Development. The baseline for Application 5 will include the HIF works in the process of being implemented.

2.69 With reference to the future baseline conditions with the HIF works implemented, the impact assessment will address effects arising from the construction and operation of the Proposed Development as follows:

- Demolition and construction effects may arise directly from demolition and construction activities but also from the temporary use of land (e.g. construction sites).
- Operational effects may arise from the permanent operational activities and ongoing use of the Proposed Development and new infrastructure.

2.70 The significance of the effects that will arise in each of these phases is based on any changes compared to the baseline conditions (i.e. those conditions which would exist if the Proposed Development did not go ahead) and the sensitivity of the receptor.

2.71 Given its nature the Proposed Development is expected to have a design life of at least 60 years and would be maintained and upgraded as required. Therefore, the EIA does not cover the decommissioning of the Proposed Development. In addition, the likely impact of any decommissioning, maintenance and upgrade works would be no worse than those discussed for the construction phase of the Proposed Development.

## Impact Prediction

2.72 The 2017 EIA Regulations state that an ES should include:

*"A description of the likely significant effects of the development on the environment resulting from inter alia:*

*(a) The construction and existence of the development, including, where relevant, demolition works;*

*(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;*

*(c) the emission of pollutants, noise, vibration, light, heat and radiation the creation of nuisances, and the disposal and recovery of waste;*

*(d) The risk to human health, cultural heritage or environment (for example accidents and disasters);*

*(e) The cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;*

*(f) The impact of the project on climate (for example nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;*

*(g) The technologies and substances used."*

2.73 Predictions of environmental impacts are carried out using quantitative methods, or in some cases, qualitative terms using expert opinion. All assumptions used and any areas of uncertainty are defined in the relevant chapters.

2.74 The following types of effect are considered:

- Direct impacts that arise from activities that form an integral part of the Proposed Development (e.g. new infrastructure / land take);
- Indirect impacts that arise from activities not explicitly forming part of the Proposed Development (e.g. noise changes due to changes in road traffic flows on existing roads resulting from the operation of the scheme);
- Secondary impacts that arise as a result of an initial effect of the Proposed Development;
- Permanent impacts that result from an irreversible change to the baseline environment (e.g. land take) or impacts which persist for the foreseeable future (e.g. visual impact);
- Temporary impacts that persist for a limited period only, for example, due to particular construction activities (e.g. noise from construction plant);
- Beneficial impacts that have a positive influence;
- Adverse impacts that have a negative influence; and
- In-combination impacts.

## Significance Criteria

2.75 The significance of effect is assessed by looking at what the changes will be against the existing or predicted baseline as a result of both the construction and operation of the schemes. It is a product of the sensitivity of the receptor, and the magnitude of the impact upon it. The criteria used to define the sensitivity of a receptor and magnitude of impact is provided in **Table 2.5** and **Table 2.6** below. These criteria are used as a guide only and the specific criteria for each technical assessment will be presented within each chapter.

***Table 2.5**: Description of the Sensitivity of an Environmental Receptor*

| Sensitivity | Typical Descriptors |
|---|---|
| **Very High** | Very high importance and rarity, international scale and very limited potential for substitution. |
| **High** | High importance and rarity, national scale, and limited potential for substitution. |
| **Medium** | High or medium importance and rarity, regional scale, limited potential for substitution. |
| **Low** | Low or medium importance and rarity, local scale. |
| **Negligible** | Very low importance and rarity, local scale. |

***Table 2.6**: Description of the Magnitude of an Impact*

| Magnitude of Impact | Impact Type | Typical criteria descriptors |
|---|---|---|
| **Very Large** | Adverse | Loss of resource and / or quality and integrity of resource; severe damage to key characteristics, features or elements |
| | Beneficial | Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality |
| **Large** | Adverse | Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements |
| | Beneficial | Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality |
| **Medium** | Adverse | Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements |
| | Beneficial | Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring |

| Magnitude of Impact | Impact Type | Typical criteria descriptors |
|---|---|---|
| **Small** | Adverse | Very minor loss or detrimental alteration to one or more characteristics, features or elements |
| | Beneficial | Very minor benefit to or positive addition of one or more characteristics, features or elements |
| **No change** | N/A | No loss or alteration of characteristics, features or elements; no observable in either direction. |

2.76 A typical significance of effects assessment matrix is provided in **Table 2.7** below.

***Table 2.7**: Typical Matrix for the Assessment of the Significance of Effects*

| | | Magnitude of Impact | | | | |
|---|---|---|---|---|---|---|
| | | No Change | Small | Medium | Large | Very Large |
| Sensitivity / Value of Receptor | Very High | Negligible | Minor | Major or moderate | Major | Major |
| | High | Negligible | Minor | Moderate or minor | Major or moderate | Major |
| | Medium | Negligible | Minor or negligible | Minor | Moderate or minor | Major or moderate |
| | Low | Negligible | Minor or negligible | Minor or negligible | Minor | Moderate or minor |
| | Negligible | Negligible | Negligible | Minor or negligible | Minor or negligible | Minor |

Effects labelled in orange would be significant in EIA terms, whether adverse or beneficial.

## Identification of Significant Effects

2.77 Based on the sensitivity and magnitude criteria set out above, specific significance criteria have been used in each technical assessment and these are explained in the methodology sections within each technical chapter. Often, these are based on clearly defined criteria from published best practice guidance. However, wherever possible, the following terminology has been utilised:

- Major Beneficial;

- Moderate Beneficial;
- Minor Beneficial;
- Negligible;
- Minor Adverse;
- Moderate Adverse; and
- Major Adverse.

2.78 Where potential environmental impacts have been found, further to assessment which are of no significance, they are said to have no effect.

2.79 The assessment of likely significant effects has been undertaken for all potential effects to determine their relative importance. This has taken into account the following considerations:

- Magnitude (size of impact);
- Sensitivity of the surrounding environment and receptors;
- Spatial extent (size of the area affected);
- Duration (short, medium or long term);
- Nature of the effect (direct or indirect, reversible or irreversible);
- Inter-relationships and combination effects;
- International, national or local standards; and
- Relevant policy guidance.

## Mitigation

2.80 The development of measures designed to avoid, reduce or offset significant adverse environmental effects associated with a proposal is one of the key elements of EIA. Measures to mitigate environmental effects of the Proposed Development can take two forms;

- **Embedded mitigation** – is the consideration of mitigation embedded into the fixed scheme (as per the detailed plans) with the aim where possible, of avoiding, reducing or offsetting significant adverse effects, determined during the course of the assessment; and
- **Additional mitigation** – is the mitigation that is not embedded into the Proposed Development, and which requires additional action than what is already proposed.

2.81 Where environmental mitigation measures have not been integrated into the proposals through design, it is expected that all other requisite measures or 'additional mitigation' will be secured by appropriate planning

conditions or obligations. Descriptions of these mitigation measures are included in the appropriate technical chapters and summarised in **Volume 2: Main Text, Chapter 20: Schedule of Mitigation**.

# 3. Site Description

## Introduction

3.1 This chapter provides a description of the Site including a description of the location, a brief site history and a description of its surrounding area and context. It also summarises the potential environmental constraints to the redevelopment of the Site. The 'Site' is the combined application areas of Applications 4 and 5.

## Site Location

3.2 The Site comprising of the red line boundary areas of Applications 4 and 5) is irregular in shape and occupies approximately 12.74 ha of land to the north-east of Victoria Station and to the south of Red Bank, Manchester, within the ward of Cheetham.

3.3 The Site is bound by existing commercial, industrial and residential (located in the Green Quarter neighbourhood) uses to the north; hardstanding car park, existing commercial units to the west; a mix of low-rise and medium-rise residential development along Dalton Street to the east; and existing commercial units to the north-east, including the HMG Paint complex; and the railway line viaduct into Victoria Station to the south, south-west and south-east.

3.4 The Site Location Plans for Applications 4 and 5 are presented at **Figure 1.1** and **Figure 1.2**, respectively.

## Site Description

### Application 4 (Red Bank Neighbourhood - Outline)

3.5 Application 4 covers an area of 11.21 ha; the extent of its red line boundary is shown in **Figure 1.1**.

3.6 The northern and eastern extent of the Application 4 area of the Site contains a large area of hardstanding and prepared ground that has been cleared as part of the previous Housing Infrastructure Fund (HIF) works. As part of the Proposed Development, this would be the location of the 'Red Bank Plateau' neighbourhood, as shown on **Figure 3.1** below. At the north-eastern Site boundary are the 'Lowry Steps' a footbridge that provides an existing Public Right of Way (PRoW) that links Collyhurst Road to Collingham Street.

3.7 The south of the Application 4 area contains an area of hardstanding and vacant commercial premises located along the eastern bank of the canalised River Irk, referred to as 'Travis Island'. As part of the Proposed Development, this would be the northern-most area of the 'New Town' neighbourhood. A small section of the

River Irk is also included within the red line boundary for Application 4, beginning at Travis Island and ending at the HMG Paint complex.

3.8 The western extent of the Application 4 area, what would be the 'Red Bank Viaduct' neighbourhood comprises of a railway viaduct (the arches of which are in commercial use), further hardstanding, a car park and a warehouse unit.

3.9 The Application 4 area also includes an area of land south of Dantzic Street to the elevated railway line into Victoria Station and extends to Dalton Street to the east. Application 4 encloses, but excludes, the retained woodland area (St Catherine's Wood) within Red Bank. Permitted through Application 2, the St Catherine's Wood area is currently undergoing extensive landscaping and infrastructure works in order to deliver the initial phase of the City River Park which will form a part of the future baseline as these works form part of the HIF Works.

3.10 To the north, the Application 4 area of the Site is bound by existing commercial and industrial uses, as well as the Fairholme Caravan Site on Collingham Street. To the north-east, the HMG Paint and P&P complex bounds the Application 4 area. To the east, the Application 4 area is bound by Collyhurst Road and an area of open greenspace. To the south, the Application 4 area is bound in part by Dantzic Street and the elevated railway line into Victoria Station, and the emerging Victoria Riverside development. To the south-west, the Application 4 area is bound by an area of hardstanding currently in-use as a car park and the Red Bank viaduct. To the west, the Application 4 area is bound by Red Bank (an existing highway), along which is a residential neighbourhood consisting of a number of mid-rise buildings located within the Green Quarter neighbourhood.

***Figure 3.1**: Areas within the Red Bank Neighbourhood (N.B. the 'New Town' area also includes the Victoria Riverside scheme that is currently under construction which does not form part of Applications 4 or 5)*




## Application 5 (NT02-04 - Full)

3.11 Application 5 covers an area of 2.81 ha; the extent of its red line boundary is shown in **Figure 1.2**.

3.12 The Application 5 area of the Site is located within the proposed 'New Town' neighbourhood and largely consists of hardstanding and former industrial buildings with large areas of mounded earth and scrub along with prepared ground. A warehouse is present in south-west corner of the Application 5 area that currently functions as a meanwhile use.

3.13 To the north, the Application 5 area of the Site is bound by Dantzic Street and, in part, by the River Irk. To the east, the Application 5 area is bound by Dalton Street and a small number of two-storey homes and a mid-rise residential tower building. To the south, the Application 5 area is bound by the elevated railway line into Victoria Station. To the west, the Application 5 area is bound by the emerging Victoria Riverside development.

# Site History

3.14 The Site and its immediate vicinity are affected by the legacy of more than 150 years of industrial uses and Victorian / pre-Victorian infrastructure. Historically the area was used as railway sidings, following the route of

the former Prestwich Branch of the Lancashire and Yorkshire Railway which started at Victoria Station to the south-west before heading north-west. This is now disused and forms a plateau above the River Irk valley to the south-east.

3.15 The HIF Works described in Chapter 2 of this ES include works to remediate contamination on the Red Bank Plateau and Viaduct areas that resulted from the previous uses on these areas.

# Environmental Context

## Townscape and Visual

3.16 The Site is not located in an Area of Outstanding Natural Beauty (AONB) or any other area designated for its landscape value.

3.17 The Site is located within the National Landscape Character Area 55: Manchester Conurbation. The Character Area covers a number of settlements primarily within the M60 ring road. The conurbation is centred on low hills, crossed by several river valleys that thread through the urban fabric. River valleys form important corridors of semi-natural habitats and natural greenspace – with open grassland, woodland and wetland – linking urban centres with open countryside. The industrial heritage now provides sites of wildlife interest in the urban environment. The history of the landscape is evident through the legacy of industrial archaeology, particularly relating to the textile industry.

3.18 The environmental baseline in the context of townscape and visual amenity is described in further detail within **Volume 2: Main Text, Chapter 6: Townscape and Visual**.

## Ecology and Nature Conservation

3.19 The habitats within the Application 4 area of the Site include circa 0.16 ha of semi-natural woodland, plantation broadleaved woodland, dense and scattered scrub, scattered trees and running water associated with the River Irk. The remainder of the Application 4 area is either hardstanding, hardstanding / bare ground with ephemeral vegetation growth on previously developed land, introduced shrub or buildings.

3.20 The habitats within the Application 5 area of the Site include running water associated with the River Irk, dense and scattered scrub, scattered broadleaved trees. A significant portion of the Application 5 area contains hardstanding, bare ground with ephemeral vegetation growth or buildings.

3.21 There are no areas designated for their ecological value within the Site. There is one internationally designated site for nature conservation within 10km of the Site, this is the Rochdale Canal Special Area of Conservation (SAC) and is located 4.3km north-east of the Site. There is one nationally designated site within 5km of the Site. This is the Rochdale Canal Site of Special Scientific Interest (SSSI), which is located 4.3km north-east of the Site. There

are no statutory locally designated sites within 2km of the Site, though four non-statutory locally designated sites lie within 2km, the closest of which is Rochdale Canal Stott's Lane – Ducie Street Basin Site of Biological Interest (SBI) which is located 0.9km south of the Site.

3.22 The environmental baseline in the context of ecology and nature conservation is described in further detail within **Volume 2: Main Text, Chapter 7: Ecology and Nature Conservation.**

## Cultural Heritage

3.23 There is a single designated heritage asset located adjacent to the Site, the Grade-II listed 'Union Bridge' (NHL 1255163) which spans the River Irk and is situated at the south-eastern Site boundary. As a surviving 18th-century bridge, it is the earliest surviving structure within the Site. There are no Scheduled Monuments, Conservation Areas, Registered Parks and Gardens or Registered Battlefields within the Site boundary.

3.24 A total of seven non-designated heritage assets are situated within the Site:

- Five non-designated heritage assets are situated within the Application 4 area:
  - The 'Caves (site of) at Red Bank' (MGM11114) is dated to the prehistoric period';
  - The site of 'Travis Isle Mill' (MGM11058) is dated to the post-medieval period; and
  - The site of 'Collyhurst Dye Works' (MGM10846), the site of 'Iron and Red Liquor Works' (MGM17185), and the Manchester, Whitefield and Radcliffe railway line 'Viaduct' (WSP001) from Victoria Rail Station are all dated to the industrial period.
- Additionally, two non-designated heritage assets are situated within the Application 5 area:
  - 'Flag Row Terraced Housing' (MGM17178) and 'Portland Street Glassworks' (MGM13681) are dated to the post-medieval period.

3.25 Within 500m Study Area of the Proposed Development, there are 36 Listed Buildings comprising one Grade I, one Grade II* and 33 Grade II, and three Conservation Areas. The nearest Conservation Area is the Shudehill Conservation Area, located approximately 300m southwest of the Site.

3.26 Within the 300m Study Area, there are 68 non-designated heritage assets.

3.27 The environmental baseline in the context of archaeology and heritage is described in further detail within **Volume 2: Main Text, Chapter 8: Cultural Heritage**.

## Ground Conditions

3.28 According to British Geological Survey (BGS) maps the superficial deposits on site comprise Devensian Glacial Till, and the underlying bedrock is that of the Chester Formation (sandstone). A review of the Coal Authority Mining

Risk GIS System indicates the Site is located within a coal mining reporting area though is not located within a Development High Risk zone.

3.29 The Application 4 site is characterised by the legacy of more than 150 years of industrial uses and Victorian / pre-Victorian infrastructure, including most notably two decommissioned gasworks (at Red Bank Plateau and Travis Island) and a large area of dismantled railway sidings (between River Irk and Red Bank Road) of the former Prestwich Branch of the Lancashire and Yorkshire Railway.

3.30 Visual and olfactory evidence of contamination was encountered at the former gas works area and infilled former meander bend (Red Bank Plateau) and at identified infilled reservoirs (adjacent to Red Bank Viaduct). Hydrocarbon odours, discoloration oily sheens on perched groundwater, deposits of metallic blue sand and evidence of volatile contaminants have been identified on site.

3.31 Application 5 is a brownfield site and has been occupied historically by various industrial uses. These include a Paint Works, Foundry, Asphalt Works, Tripe Works, Rubber Works, a skip hire and waste handling company, a scrap metal works and a print works.

3.32 Visual and olfactory evidence of contamination was encountered including solvent and hydrocarbon odours and material suggestive of an informal domestic waste landfill. Asbestos, heavy metals, PAHs, volatile organic compounds were found in the made ground on site.

3.33 The environmental baseline in the context of ground conditions is described in further detail within **Volume 2: Main Text, Chapter 9: Ground Conditions.**

## Flood Risk and Drainage

3.34 The River Irk flows through the Application 4 area of the Site traversing around Travis Island within the south-central area of the Site. The Red Bank Plateau area, being located away from the river and at an elevated ground level relative to the river, is entirely within Flood Zone 1 (having less than a 1 in 1,000 annual probability of flooding). However, the Red Bank Viaduct area, being lower lying than the Plateau area and adjacent to the river, is predominantly within Flood Zone 2 (i.e. between a 1 in 100 and 1 in 1,000 annual probability of flooding) with a small area along the river edge and along Roger Street within Flood Zone 3 (i.e. having a greater than 1 in 100 annual probability of flooding). An area in the north-west corner of the Application 5 site (New Town area) is within Flood Zone 2 with a small area adjacent to Dantzic Street and the river being in Flood Zone 3.

3.35 Surface water flooding is assumed to occur due to localised low points, most notably within the south-western area of Application 4 area of the Site where surface water flood risk ranges from Low to High risk. The initial geotechnical investigation indicates that infiltration rates varies due to large areas of made ground beneath the Site, which may also contribute to surface water flooding.

3.36 The environmental baseline in the context of flood risk and drainage is described in further detail within **Volume 2: Main Text, Chapter 10: Flood Risk and Drainage**.

## Transport and Access

3.37 A number of major and minor roads run through or immediately adjacent to the Site, these include: Red Bank; Dantzic Street (leading to Collyhurst Road); Collyhrust Road (up to Fitzgeorge Street); Cheetham Hill Road (up to North Street); Rochdale Road (between Angel Street / Addington Street junction and Whitley Road); Trinity Way (between the A56 and Cheetham Hill Road); A664 / Angel Street; and Honey Street; Roger Street; Lord Street (between Cheetham Hill Road and Red Bank); Dalton Street; and Gould Street.

3.38 Manchester Victoria Station is the nearest rail station and is located approximately 320m south-west of the Site. The station predominantly provides local and regional mainline services to the north of England. Also situated within the station is the Manchester Victoria Tram Stop, which is served by the Green (Altrincham – Bury), Yellow (Manchester Piccadilly – Bury), Pink (East Didsbury – Rochdale Town Centre), Blue (Manchester Airport – Manchester Victoria) and Brown (East Didsbury – Shaw and Crompton) lines.

3.39 The nearest bus stops are situated along Cheetham Hill Road (with the nearest stops being 'Park Place' and 'St Chad's Church', approximately a 6-minute walk from the Site) and Rochdale Road (with the nearest stops being 'Gould Street' and 'Rochdale Road / Angel Street', approximately a 6-minute and 7-minute walk from the Site respectively). Cheetham Hill Road is served by the 41 and 135 Buses, which provide connections to Manchester, Middleton and Bury. Rochdale Road is served by the 17 / 17a, 18, 56 / 156, 81, 112 / 113, 117, 118 / 119 and 163 Buses, which provide connections to Manchester, Middleton, Rochdale and Oldham. There are no dedicated public transport facilities or services that use Red Bank or Dantzic Street.

3.40 The Site is situated within a short cycle ride to Manchester City Centre and within a 15-minute journey, areas as far as Trafford, Hulme, Salford and Monsall can be reached by cycle. Overall, the Site is located within a highly accessible by cycle.

3.41 The Site is also highly accessible for pedestrians, with a number of key sustainable transport facilities (i.e. Victoria Rail and Metrolink Station, Shudehill Bus Station and Exchange Square, Shudehill and Market Street tram stops) being situated within a short distance to the Site which have the potential facilitate multi-modal trips.

3.42 The environmental baseline in the context of transportation and accessibility is described in further detail within **Volume 2: Main Text, Chapter 11: Transport and Access**

## Air Quality

3.43 The southern extent of Site lies within the Greater Manchester Combined Authority (GMCA) Air Quality Management Area (AQMA). This AQMA covers the city centre and its arterial routes.

3.44 The environmental baseline in the context of air quality is described in further detail within **Volume 2: Main Text, Chapter 12: Air Quality and Dust.**

## Noise

3.45 The existing noise climate is dominated by road traffic noise emanating from the surrounding highway network and train lines associated with Victoria Station.

3.46 The environmental baseline in the context of noise and vibration is described in further detail within **Volume 2: Main Text, Chapter 13: Noise and Vibration.**

## Socioeconomics

3.47 The Site at current does not include any homes. Several of the Site's existing businesses are situated within the railway viaduct arches within the west of the Application 4 area, all of which would be retained as part of the Proposed Development. Additionally, there are a number of existing meanwhile uses situated at Plots RB10 (a bakery), RB17 (a former timber yard used by contractors on the Victoria Riverside scheme) and NT02 (an events space known as the 'Love Factory' located within a former warehouse). The environmental baseline in the context of socioeconomics is described in further detail within **Volume 2: Main Text, Chapter 16: Socioeconomics**.

# Summary

3.48 This chapter has presented a description of the Site including a description of the location, a brief site history and a description of its surrounding area. Based upon the information presented in this chapter, the main environmental characteristics of the Site have been identified as follows:

- The Site is not located in close proximity to any statutory ecological designations;
- The Site is located in Flood Zones 1, 2 and 3a;
- There are localised areas of low, medium and high risk of surface water flooding;
- There are no designated heritage assets located within the Site boundary and 36 Listed Buildings within 500m of the Site;
- The Site is located in a highly accessible location within Manchester City Centre;
- The Site is not located within the Greater Manchester AQMA. However, it does lie immediately adjacent to the AQMA; and
- The noise climate on-Site is primarily attributed to transport-related noise from the surrounding road network as well as train lines associated with nearby Victoria Station.

3.49 These identified constraints have been taken into account in the development of the proposals to ensure a thorough iterative design process and through the identification of appropriate mitigation measures as presented in **Volume 2: Main Text, Chapter 5: The Proposed Development**.

# 4. Alternatives

## Introduction

4.1 A statutory requirement for inclusion in an ES is the reporting of alternatives which have been considered by the Applicant in the development and evolution of a proposal. Schedule 4 of the EIA Regulations states that an ES is required to provide:

> *"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."*

4.2 This chapter describes the alternatives that were studied by the Applicant for the Proposed Development and the process of design evolution in response to the EIA process.

4.3 Firstly, the chapter considers the 'no development' option, which describes the likely conditions at the Site in the absence of implementing the Proposed Development.

4.4 Secondly, the constraints and opportunities identified in relation to the Site have been considered and have influenced the design of the Proposed Development. The Applicant and the design team have undertaken a continuous review process to improve the design, taking into account the views of key consultees, stakeholders and the public. This design evolution process is described in detail and the reasons for the selection of the preferred option stated.

## Development Context

4.5 The statutory planning framework for development in this area is currently provided under the Manchester Local Plan[1], the Core Strategy of which was adopted in 2012. As discussed in **Volume 2: Main Text, Chapter 2: Approach**, the Northern Gateway SRF is also a material consideration for the planning applications.

4.6 An alternative site has not been considered for the Proposed Development due to the following reasons:

- The Site is already under the control of the Applicant.
- The Site is identified within the Northern Gateway SRF (a material consideration for any planning applications on the Site) and as such, the Proposed Development has been specifically designed to meet the aspirations and vision as set out in the SRF.

[1] https://www.manchester.gov.uk/info/200074/planning/6572/local_plan

- A series of infrastructure works (Applications 1 – 3) to facilitate the delivery of new homes proposed in Application 4 & 5 are now permitted.

# No Development Option

4.7 The 'no development option' evaluates the likely environmental conditions at the Site in the absence of implementing the Proposed Development. Schedule 4 of the EIA Regulations states that the assessment provide "*an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed*". A description of the baseline scenario is set out in **Volume 2: Main Text, Chapter 3: Site Description**.

4.8 In the absence of the SRF the Proposed Development (including the HIF Works) would not come forward. In this scenario the baseline environment is not anticipated to change from the existing conditions as the Site would remain in use for a range of industrial, and temporary uses with large areas of vacant land with a generally poor-quality environment. This is considered further below. However, the Site is identified within the Northern Gateway SRF, and as such, it is highly likely that the Site will be developed regardless of whether the current proposal was implemented, such that the 'no development' scenario is unlikely. Indeed, if the permitted HIF Works implemented make it more likely that the Site will be subject to further development whether that is through Applications 4 and 5 or another application in the future.

4.9 Notwithstanding this, should the Proposed Development not be implemented, it would be expected that the existing site conditions which were pre-existing before the commencement of the HIF Works would remain until another proposal is permitted. As such, a review was undertaken of the environmental topic areas scoped into this ES, to determine the implications in terms of evolution of the environmental baseline conditions if the Proposed Development were not to come forward.

## Townscape and Visual

4.1 In the 'no development' scenario, the Site would remain as predominantly comprising brownfield land. As such, the existing townscape and visual conditions would remain and there would be no effects on townscape characteristics or visual amenity.

4.2 Details of existing landscape and visual conditions and attributes relevant to the Site are provided in **Volume 2: Main Text, Chapter 6: Townscape and Visual.**

## Ecology and Nature Conservation

4.3 In the 'no development scenario', before the commencement of the HIF Works the ecological condition of the Site would remain as it is and, by association, no potential for Biodiversity Net Gain beyond that which may emerge through natural ecological succession.

4.4 Details of existing landscape and visual conditions and attributes relevant to the Site are provided in **Volume 2: Main Text, Chapter 7: Ecology and Nature Conservation.**

## Cultural Heritage

4.5 In the 'no development scenario' before the commencement of the HIF Works, the setting of the surrounding heritage assets would remain unchanged. Should the Proposed Development not go ahead, any unknown archaeological remains would remain in situ.

4.6 An assessment of the potential effects of the Proposed Development upon archaeological remains and heritage is included in **Volume 2: Main Text, Chapter 8: Archaeology and Heritage**.

## Ground Conditions

4.7 In the absence of the Proposed Development and before the commencement of the HIF Works the existing site conditions outlined in chapter 3 of this ES would remain as no remediation works would have been undertaken and as such the Site would continue to pose a risk to the environment through the potential for mobilisation of contamination and the potential for further contamination to be caused through the uses on the site.

4.8 An assessment of the potential effects of the Proposed Development upon ground conditions is included in **Volume 2: Main Text, Chapter 9: Ground Conditions**.

## Flood Risk and Drainage

4.9 In the absence of the Proposed Development and before the commencement of the HIF Works there would be no change to the drainage patterns or risk of negative impact on water quality. By association, in respect of the wider development project, there would be no potential improvement in water quality of the River Irk or surface water flooding risk.

4.10 An assessment of the potential effects of the Proposed Development upon ground conditions is included in **Volume 2: Main Text, Chapter 10: Flood Risk and Drainage**.

## Transport and Access

4.11 In the Site's largely vacant form, there are very few vehicle trips generated. Should the Proposed Development not come forward, it is expected that traffic conditions would not materially changed from their current state. Development of the Site will result in an increase of trips on the strategic road network.

4.12 An assessment of the potential effects of the Proposed Development upon traffic conditions is included in **Volume 2: Main Text, Chapter 11: Transport and Access**.

## Air Quality and Dust

4.13 Should the Proposed Development including the HIF Works not occur at the Site, it is expected that the ambient air quality would remain in the current situation. Due to the nature of the Site, it does not significantly contribute to the existing air pollution in the area. Air quality is generally expected to improve with time, particularly through the introduction of more stringent vehicle emissions standards. Air quality conditions at the Site would therefore be expected to improve, even taking into account traffic relating to Cumulative Schemes in the surrounding area, and this is reflected in the predicted future baseline concentrations presented in the air quality assessment of the Proposed Development, provided in **Volume 2: Main Text, Chapter 12: Air Quality and Dust**.

## Noise and Vibration

4.14 Should the Proposed Development including the HIF Works not be built out, the ambient noise environment (including vibration) is not anticipated to alter from the current baseline. The Site does not currently emit noise with any regularity.

4.15 Over the longer term, it is conceivable that the advancement of 'quiet technologies' could lead to reduced road traffic noise (i.e. from electric vehicles) and reduced noise from the operation of building plant and machinery. Noting that the main source of noise within the Site is attributable to road traffic noise, in the absence of the Proposed Development, there could well be a reduction in ambient noise within and in the locality of the Site, and beyond.

4.16 An assessment of the potential effects of the Proposed Development upon noise and vibration is included in **Volume 2: Main Text, Chapter 13: Noise and Vibration**.

## Daylight, Sunlight and Overshadowing

4.17 Should the Proposed Development including the HIF Works not be built out, daylight, sunlight and overshadowing conditions across the Site would be expected to remain largely as they exist now. It will be affected by the building out of permissions around the Site such as the Victoria Riverside development which may have localised effects upon overshadowing and sunlight to the Site.

4.18 An assessment of the potential effects of the Proposed Development upon daylight, sunlight and overshadowing is included in **Volume 2: Main Text, Chapter 14: Daylight, Sunlight and Overshadowing**.

## Wind Microclimate

4.19 Should the Proposed Development including the HIF Works not be built out the wind microclimate across the Site would also be expected to remain largely as it exists at present. It will be affected by the building out of permissions around the Site such as the Victoria Riverside scheme which may have very localised effects on parts of the Site.

4.20 An assessment of the potential effects of the Proposed Development upon daylight, sunlight and overshadowing is included in **Volume 2: Main Text, Chapter 14: Daylight, Sunlight and Overshadowing**.

### Socioeconomics

4.21 Should the Proposed Development including the HIF Works not come forward, the socioeconomics benefits (including its contribution to construction and operational employment and GVA, contribution to housing delivery, additional household expenditure and additional council tax receipts) of the Proposed Development would not be realised.

4.22 An assessment of the effect of the Proposed Development upon socioeconomics is provided **in Volume 2: Main Text, Chapter 16: Socioeconomics**.

### Health and Wellbeing

4.23 Should the Proposed Development including the HIF Works not come forward, the new health centre on the Site would not be delivered and the site would continue to pose the risks identified above regarding the potential for mobilisation of contamination.

4.24 An assessment of the effect of the Proposed Development upon health and wellbeing is provided **in Volume 2: Main Text, Chapter 16: Socioeconomics**.

### Climate Change

4.25 In the absence of the Proposed Development including the HIF Works, there would be no potential for additional or avoided GHG emissions associated with demolition, construction and operation. The Site would remain in its current largely undeveloped state and would continue to contribute minimally to greenhouse gas emissions.

4.26 Over the longer term it could be expected that technological advances to reduce greenhouse gas emissions and a strong behavioural / social agenda to reduce greenhouse gas emissions, it is conceivable that over the long-term greenhouse gas emissions in the wider area could well reduce.

4.27 A climate change assessment of the Proposed Development is provided in **Volume 2: Main Text, Chapter 18: Climate Change**.

## Design Evolution

4.28 The evolution of the design of the Proposed Development has been guided by feedback gathered through:

- **Pre-Application Consultation with the LPA and Statutory Consultees** – The Applicant and the design team for Applications 4 and 5 have regularly liaised with MCC during a series of pre-application meetings and correspondence in order to ensure that the evolving design meets the aspirations for the Site. This

engagement has covered use, amount, layout, hard and soft landscaping, sustainability and wellbeing, car parking and transportation, all of which has been considered during the continuous design evolution of the Proposed Development.

- **Community and Stakeholder Consultation** – A total of four public consultation events have been held to gather feedback on the early design ideas and detailed proposals for the Proposed Development. A range of key issues and considerations were highlighted through the public consultation, such as biodiversity, sustainability, active travel, public transportation, parking, community facilities and infrastructure, crime and safety, flood risk and contamination land & the need for high quality designs and diverse architectural styles.
- **Design Review Panels** – A total of three Design Review Panels (DRP) have been held for the Proposed Development (two DRPs for Application 4 and one DRP for Application 5). In response to Panel's feedback the amount of open space between Plots RB16 and RB17 has been increased; additionally, the illustrative element of Application 4 now places greater emphasis on stepping heights toward City River Park, particularly along the Ridge View Promenade, where the building datum remains at 5-6 storeys, to support a human-scale character along the park and to help define its edges. The continuity of this datum also helps accentuate the level changes across the valley.

## Summary

4.29 The consideration of alternatives has included the evaluation of a "no development" option and the alternative design options which have been considered by the Applicant during the evolution of scheme design. The design of the scheme has evolved through consultation with MCC, key stakeholders and the public and the findings of the series of studies that make up the EIA. A detailed description of the development proposals is presented in **Volume 2: Main Text, Chapter 5: The Proposed Development**.

# 5. The Proposed Development

## Introduction

5.1 Schedule 4, Part 1 of the 2017 EIA Regulations outlines the information that should be provided within an ES which includes:

> *(a) "A description of the location of the development;*
>
> *(b) A description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land use requirements during the construction and operational phases;*
>
> *(c) A description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;*
>
> *(d) An estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases)."*

5.2 The information presented in this chapter, alongside the documents submitted for approval for Applications 4 and 5, define the Proposed Development that has been assessed through the EIA process and provides the level of detail required to enable the assessment of environmental effects in line with the 2017 EIA Regulations.

## Documents Assessed by the EIA

5.3 With the exception of the 'Anticipated Phasing Delivery Plan' all of the documents listed below are submitted for approval. The Anticipated Phasing Delivery Plan has been provided by the Applicant to the EIA Technical Team in order for the ES to able to consider the implications of a phased development programme upon receptors within, and in proximity to, the Site.

### Application 4 Documents

- Parameter Plans (see **Volume 3: Appendices, Appendix 5.1**);
- The following sections of the Supporting Planning Statement (SPS):
    - Development Specification; and

- Blue & Green Infrastructure Statement.

- Lighting Strategy (for approval) provided within the Design and Access Statement (DAS) (not for approval).
- Local Labour Agreement; and
- Drainage Strategy (see **Volume 3: Appendices, Appendix 10.1**).

### Application 5 Documents

- Detailed Planning Drawings (see **Volume 3: Appendices, Appendix 5.2**);
- The following sections of the SPS:
  - Development Specification; and
  - Blue and Green Infrastructure Statement.
- The following sections of the DAS:
  - External Lighting Strategy (within Section 6.2); and
  - Waste Management.
- Drainage Strategy (see **Volume 3: Appendices, Appendix 10.1**); and
- Environmental Standards Statement.

### Application 4 and 5 Documents

- Anticipated Phasing Delivery Plan (see **Figure 5.13**); and
- Demolition Plan (see **Figure 5.14**).

5.4 This chapter and the accompanying figures define the application area, the proposed land uses, the quantum of development proposed, the means of access proposals and describes the Proposed Development in line with Schedule 4 of the EIA Regulations. A description of the broad construction methods and processes is presented towards the end of this chapter.

## Description of the Development

### The Planning Applications

5.5 The Proposed Development, the Red Bank Neighbourhood Masterplan, would be delivered through two planning applications – Application 4 (Red Bank Neighbourhood – Outline) and Application 5 (Plots NT02 – 04 – Full).

5.6 The description of developments for Applications 4 and 5, as they appear on each respective planning application are:

- **Application 4** – *'Part full planning application proposing the demolition of existing buildings and structures and part outline planning application (with all matters reserved) for the erection of a phased residential led mixed use development across severable plots comprising residential (Use Classes C3 and C2); non-residential floorspace comprising commercial, business, service and community uses (Use Classes E, F and Sui Generis); residents amenity space including within clubhouse buildings; health centre (Use Class E); land for a primary school (Use Class F); the final surface finish of the highway and footpath consented under HIF permission ref: 133143/VO/2022; creation of new public realm and associated landscaping, car parking provision, cycle storage, and other associated works'*; and
- **Application 5** – *'Full planning application proposing the demolition of existing buildings and structures and erection of a phased residential led mixed use development comprising residential (use class C3 and C2), flexible non-residential floorspace comprising commercial, business, service and community uses (Use Classes E, F and Sui Generis); residential amenity space including within a clubhouse building, with associated car and cycle parking, hard and soft landscaping, improvement works to Dantzic Street, drainage infrastructure and associated engineering works'*.

## Application 4

5.7 As detailed within **Volume 2: Main Text, Chapter 2: Approach**, the outline Application 4 seeks to establish the principles of its respective elements of the Proposed Development. Full details of layout, access, scale, appearance and landscaping would be submitted for approval at the detailed planning application stage whether this is delivered through the making of reserved applications pursuant to the Outline Planning Permission or through the submission of detailed "drop-in" planning applications (hereafter referred to as the 'detailed planning applications').

5.8 A series of parameters have therefore been devised which set the context for subsequent detailed design. These take the form of a series of spatial Parameter Plans which detail the use and amount of development which Application 4 seeks to secure across its 13 Development Plots (RB01, RB02, RB03, RB04, RM05A, RB05B, RB05C, RB06, RB07, RB10, RB12B, RB16 and RB17). It is intended that the details of the development, which would be the subject to future detailed planning applications, would be contained within the parameters laid down by the outline planning application and upon which the Environmental Impact Assessment (EIA) has been based.

5.9 The Parameter Plans are provided in full in **Volume 3: Appendices Appendix 5.1** and comprise:

- Parameter Plan P1 – Development Plot and Public Realm (drawing reference: RDB-MLM-00-00-DR-AR-211417 Rev P1);
- Parameter Plan P2 – Movement (drawing reference: RDB-MLM-00-00-DR-AR-211418 Rev P1);
- Parameter Plan P3 – Use (drawing reference: RDB-MLM-00-ZZ-DR-AR-211419 Rev P1);
- Parameter Plan P4 – Building Heights (drawing reference: RDB-MLM-00-RF-DR-AR-211420 Rev P1) and

- Parameter Plan P5 – Site Levels (drawing reference: RDB-MLM-00-00-DR-AR-211421 Rev P1).

### Application 5

5.10 Application 5 seeks approval for the detailed design elements of the Proposed Development through a series of drawings and documents. A full list of the Application 5 drawings is provided in **Volume 3: Appendices, Appendix 5.2.** These drawings include matters in regard to layout, access. scale, appearance and landscaping across its three Development Plots (NT02-04).

## Quantum of Development

### Applications 4 and 5

5.11 A breakdown of the proposed floorspace and residential unit numbers for Applications 4 and 5 is provided in **Table 5.1** below.

***Table 5.1**: Proposed Floorspace and Residential Unit Numbers*

| Application | Land Use and Classes | Gross External Area (GEA) (sqm) | Gross Internal Area (GIA) (sqm) | Number of Residential Units | Residential Mix |
|---|---|---|---|---|---|
| **Application 4** | Residential (C2 and C3) | N/A | N/A | Up to 3,250 | 1 Bedroom = Up to 813 (25%)<br><br>2 Bedroom = Up to 2,047 (63%)<br><br>3 Bedroom = Up to 390 (12%) |
| | Clubhouse residential amenity (Sui Generis) | Up to 3,600 | Up to 3,250 | N/A | N/A |
| | Non-residential (E, F and Sui Generis) | Up to 7,000 | Up to 6,300 | | |
| | Health centre uses (E) | Up to 3,600 | Up to 3,250 | | |
| | Primary school (F1(a)) | Up to 3,000 | Up to 2,750 | | |

| Application | Land Use and Classes | Gross External Area (GEA) (sqm) | Gross Internal Area (GIA) (sqm) | Number of Residential Units | Residential Mix |
|---|---|---|---|---|---|
| **Application 5** | Residential (C3) | N/A | N/A | 1,551 | 1 Bedroom = 642 (41%)<br><br>2 Bedroom = 828 (54%)<br><br>3 Bedroom = 81 (5%) |
| | Clubhouse – Residential amenity (Sui Generis) | 1794 | 1,711 | N/A | N/A |
| | Clubhouse – Non-residential (E, F, Sui Generis) | 452 | 434 | | |
| | Non-residential (E, F and Sui Generis) | 2,246 | 2,145 | | |
| **Applications 4 and 5 Total** | | | | Up to 4,801 | 1 Bedroom = 30%<br><br>2 Bedroom = 60%<br><br>3 Bedroom = 10% |

## Use, Layout and Arrangement

### Application 4

5.12 The outline planning application is seeking approval for up to 3,250 residential units (Use Classes C3 and C2) across the Site.

5.13 Parameter Plan P3 provides detail of the Use Classes applied for under this application. The plan, and its supporting key, illustrates that all bar one of the development plots will comprise predominantly Use Class C3 or C2. The aspiration is that the majority of the residential will be within Use Class C3 however the Parameter Plan provides flexibility for development within Use Class C2 to be delivered to provide residential accommodation for the elderly and for people in need of care. A flexible land use plot is proposed at development Plot RB05C. It is proposed that Plot RB05C could be either a primary school or a residential development. The specific details of

the quantum of residential development proposed for each plot will be defined at the detailed planning application stage.

5.14 A detailed Proposed Site Plan is not available for Application 4; rather, Parameter Plan P1 provides the location of each Development Plot within Application 4 and the maximum extent to which each individual Plot could be built out.

5.15 The Application 4 area of the Site contains the following areas, which in themselves comprise a number of Development Plots:

- **Red Bank Plateau** – comprising Plots RB01, RB02, RB03, RB04, RB05A, RB05B, RB05C and RB12B;
- **Red Bank Viaduct** – comprising Plots RB06, RB07 and RB10; and
- **New Town** – comprising Plots RB16 and RB17.

5.16 The lower lying areas of New Town and Red Bank Viaduct are the locations of the proposed taller buildings. The Plots on the Red Bank Plateau are laid out in a linear form with Plots RB01 to RB05C being contiguous (with routes between them to be determined through subsequent applications) and Plots RB05A and RB05B, being separate Plots, allow for the formation of a highway circulation route at the northern end of the Red Bank Plateau area around RB05A and allowing Plot RB05B to back onto the retained woodland area.

5.17 The New Town area provides two Plots (RB16 and RB17) which will be separated by a service corridor and the Red Bank Viaduct area provides two contiguous Plots (RB6 and RB07) with the single RB10 Plot located at the south-western extent of the Site.

5.18 The Plots are located within areas of public realm including rights of way, emergency access, car parking, sustainable urban drainage systems and infrastructure servicing the Plots. This public realm area includes six key public open spaces (identified on the Parameter Plans). Two of these key public open spaces are to be located within each of the Red Bank Plateau, Red Bank Viaduct and New Town areas identified. The two within the Red Bank Plateau area would be located near the entrance to the Site and adjacent to the retained woodland to the south of the plateau area. The two within the Travis Island area would be located to the west and east of the Plots between Dantzic Street and the River Irk. The wo within the Red Bank Viaduct area would be located in the southwestern part of this area adjacent to Plot RB10 and between Plots RB06 and RB07 and the River Irk.

## Application 5

5.19 The Proposed Site Plan for Application 5 is shown at **Figure 5.1** below (or in full at **Volume 3: Appendices Appendix 5.2**).

5.20 The buildings across NT02-04 have been arranged to define the street edges of the existing Dantzic Street and Dalton Street and the new Dulwich Street and the Travis Square. The buildings situated on Plot NT03 and NT04

would form an enclosed courtyard space with openings positioned to benefit from sunlight, views and level access and to link the green infrastructure of the space to the wider ecological network in Red Bank.

***Figure 5.1**: Application 5 – Proposed Site Plan*




5.21 Visualisations of the elevations of the various buildings within Plots NT02 and NT03 (see **Figures 5.2** and **5.3** below) & Plot NT04 (see **Figures 5.4** and **5.5** below) taken from the submission drawings identified in **Volume 3 Appendices: Appendix 5.2** are provided below.

***Figure 5.2**: NT02 and NT03 – Elevation 1 (North / Dantzic Street and East / Dulwich Street)*

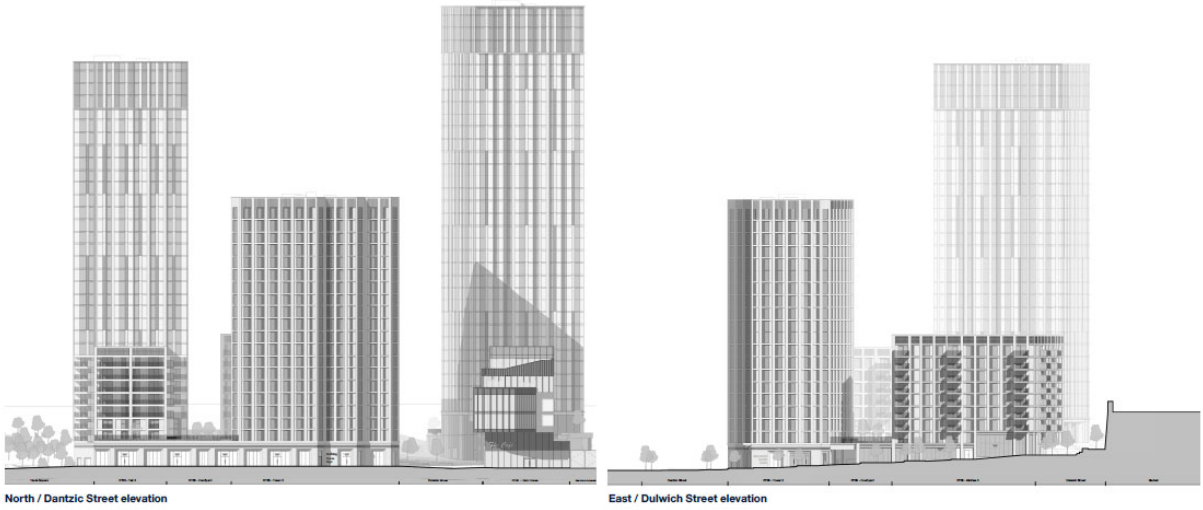



***Figure 5.3**: NT02 and NT03 – Elevation 2 (South / Dulwich Street and West / Travis Square)*

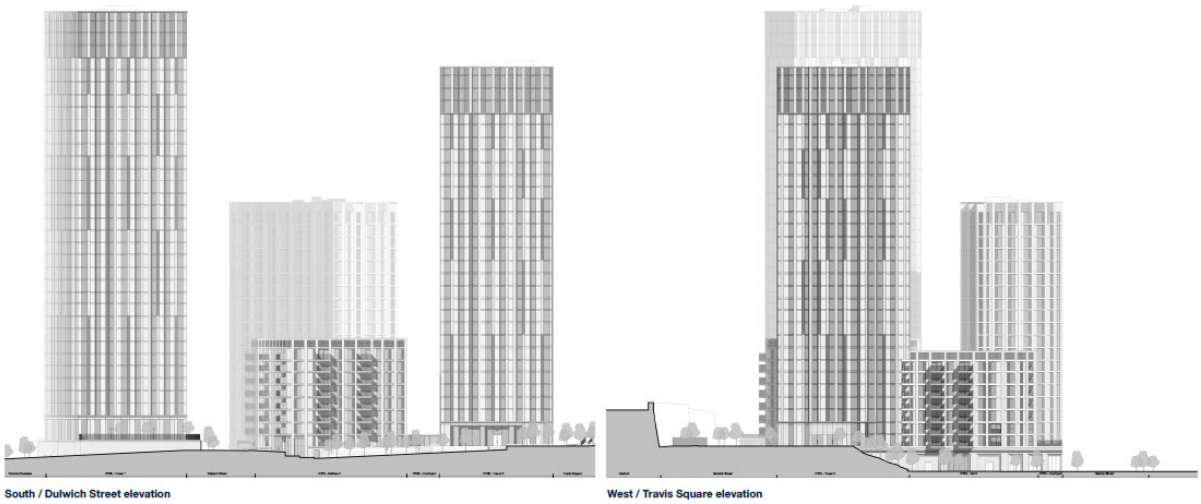


***Figure 5.4**: NT04 – Elevation 1 (Travis Square and Dantzic Street)*

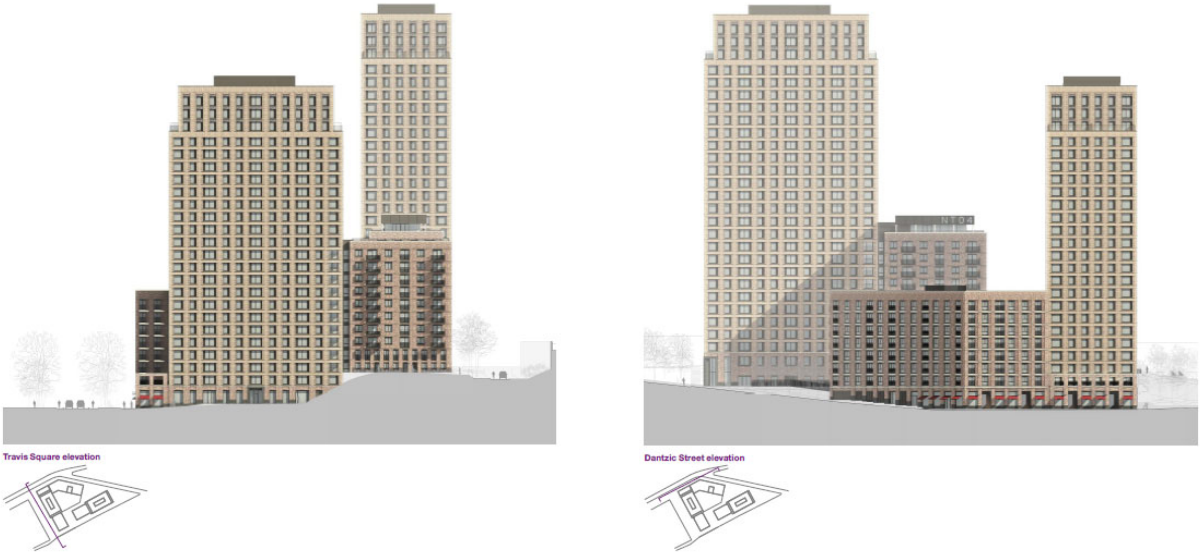



***Figure 5.5**: NT04 – Elevation 2 (Dalton Street and Dulwich Street)*



## Building Heights

### Application 4

5.22 Parameter Plan P4 – Building Heights sets out the maximum building height for each plot within Application 4. Maximum heights within the Red Bank Plateau area would vary between up to 73m AOD (up to 8 storeys) and up to 123m AOD (up to 24 storeys). Building heights in this area of the Site are generally below those of the other areas of the Site. Maximum building heights in the Red Bank Viaduct area would vary between up to 124m AOD (up to 27 storeys) and up to 211m AOD (up to 55 storeys). This would contain among the tallest buildings within Application 4. Building heights in the Travis Island area would be between 95m AOD and 155m AOD. Therefore the taller buildings on the Site would be located on the less elevated areas of the Site adjacent to the river.

### Application 5

5.23 The tallest building within Application 5, located on Plot NT02, would have a maximum height of 34 storeys and would step down to 6 storeys at its interface with Dantzic Street. The proposed buildings on Plot NT03 would have a maximum height of 31 storeys along the viaduct, before stepping down to 20 storeys along Dantzic Street, set within mid-rise blocks of at 8-9 storeys along Dulwich Street and Travis Square. Plot NT04 includes a 27-storey and a 24-storey building each with a connecting 10-storey shoulder and a separate mid-rise block of 8 storeys along Dantzic Street.

5.24 **Figure 5.6** below shows the variation in building height across Application 5 (NT02-04), with the building labelled "VR" being the Victoria Riverside scheme that is already permitted (planning ref: 126944/FO/2020) and is currently under construction. Landscaping shown is illustrative only.

***Figure 5.6**: Building Heights Across Application 5 (NT02-04)*




## Appearance, Materials and Colour

### Application 4

5.25 For the outline Application 4, details regarding the materiality and colour palette of the built structures within the Application 4 area are not provided for planning approval, and as such are not assessed within the EIA. Information regarding this aspect of the Proposed Development will become available at subsequent applications.

### Application 5

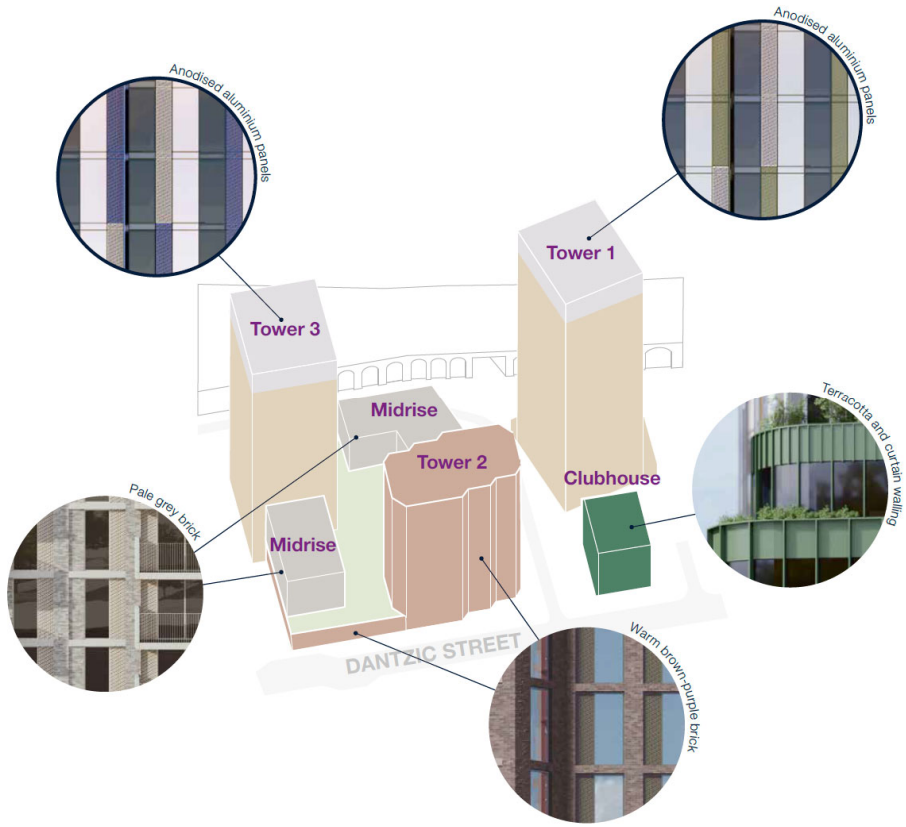
Plots NT02 and NT03

5.26 The primary material for the two tallest towers (shown as Tower 1 and Tower 3 on **Figure 5.7** below) would be anodised aluminium in a range of panel types, with the addition of colour, texture and fins to express verticality and provide visual variety through the 30+ storeys. The upper levels of the anodised towers would be finished with a subtle 'crown' detail where the colour drops back to provide a lighter variation of the base material. Tower 2 would use a warm brown-purple brick in contrast with the taller towers.

5.27 The mid-rise buildings would use a primary palette of pale grey brick. The Clubhouse, a six-storey amenity building set amongst residential buildings, would contrast in its material make-up. The primary elevations of the Clubhouse would mainly consist of green, textured, terracotta panels, and "baguette" terracotta fins affixed to glass curtain walling. The storeys step back at the upper levels to provide planted green terraces.

5.28 Active frontage is prioritised throughout the ground floor, to promote a lively and engaging street environment. Large, glazed openings would provide a unified streetscape, housing commercial units and residential lobbies.

***Figure 5.7**: NT02 and NT03 – Building Material and Colour Choice*

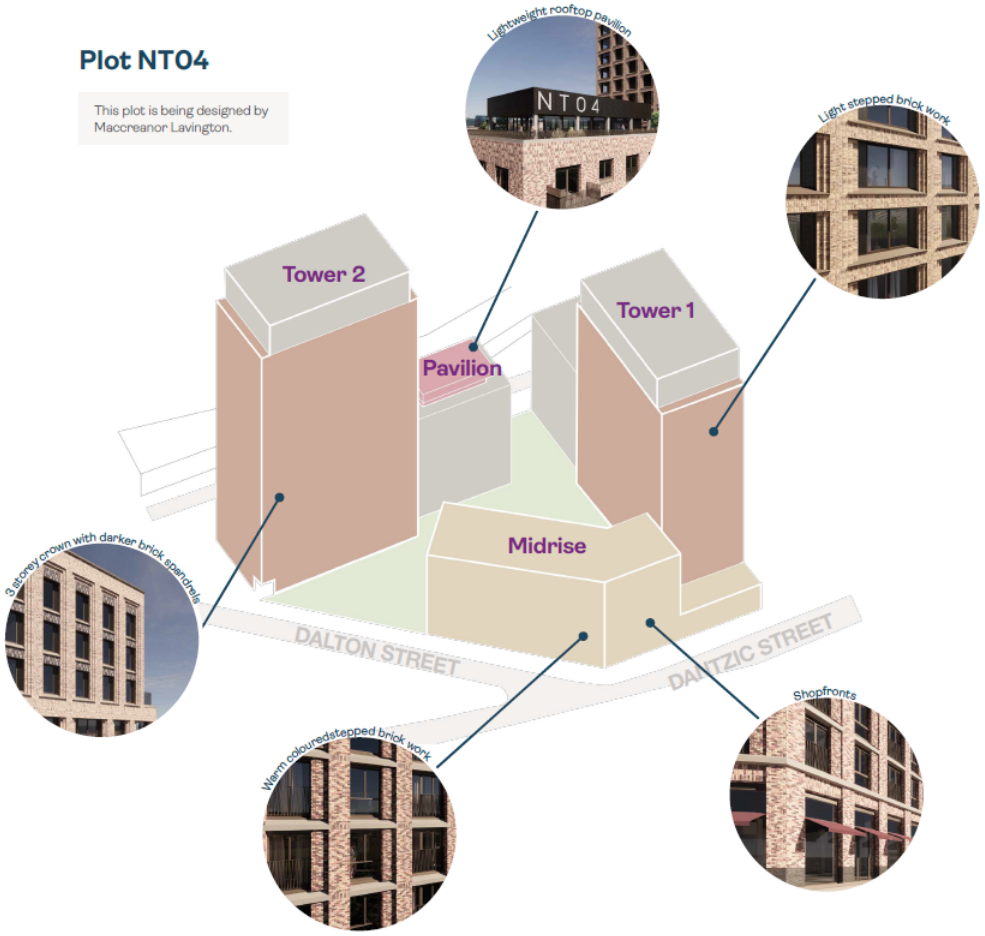



## Plot NT04

5.29 The primary material for all of the facades within NT04 would be brickwork – with the primary palette consisting of two brick tones, a light yellow / buff brick mix and a contrasting yellow / red brick mix. The tower volumes would utilise the lighter of the two mixes, with the mid-rise elements utilising the darker mix.

In addition to the primary materials, a limited palette of accent materials is proposed. This consists of two darker brickwork tones for contrasting elements in the plinths and tops of the buildings, precast concrete elements for sills, and dark bronze coloured metalwork.

***Figure 5.8**: NT04 – Building Material and Colour Choice*




## Landscaping, Green Infrastructure and Public Realm

### Application 2

5.30 It should be noted that the Housing Infrastructure Fund (HIF) works permitted through Application 2 provides the proposed enhancement of the adjacent St Catherine's Wood to provide a host of improvements in relation to biodiversity and opportunities for leisure, play and enjoyment of the local landscape and wildlife. For the purposes of this EIA, it has been assumed that these works will form a part of the future baseline scenario and will have been completed before the delivery of Application 4. However they have been considered in the Ground Conditions assessment.

### Application 4

5.31 **Volume 3: Appendices, Appendix 5.1** presents Parameter Plan P1 – Development Plots and Public Realm which sets out the maximum developable zone for each plot within Application 4 as well as the location of a number of areas of public realm space which would include for rights of way, emergency access, car parking, sustainable urban drainage system (SuDS) components and infrastructure. Visible on Parameter Plan P1 are the locations of

six key public spaces, along with a number of areas for 'public realm' that form an uninterrupted band of open / green space. Large areas of designated open / green space are present within each major Development Area across Application 4, including a linear band along the Red Bank Plateau area that extends down into the Red Bank Viaduct area and connects into St. Catherine's Wood and to the Travis Island / New Town area situated along Dantzic Street.

5.32 The detailed design of the landscaping, green infrastructure and public realm within Application 4 will be determined through subsequent applications. While not being sought for approval, the 'illustrative scheme' section of the Design and Access Statement (DAS) does provide the reader with an overview of how the landscaping, green infrastructure and public realm across Application 4 may be realised, however for the purposes of the EIA, the 'illustrative scheme' has not been assessed.

## Application 5

5.33 The General Arrangement Site Wide Public Realm plan for Application 5 is provided at **Figure 5.9** below (or in full at **Volume 3: Appendices, Appendix 5.2**).

***Figure 5.9**: Application 5 – General Arrangement Site Wide Public Realm*




5.34 The main elements of the Landscape Masterplan are summarised below:

- Improvements to quality of public realm along Dantzic Street and Dalton Street; including the narrowing of the existing Dantzic Street carriageway to 6.2 metres, implementation of paved footways and pedestrian crossings, rain gardens and planting and integrated cycle routes;
- The creation of 'Dulwich Street', a pedestrian-friendly fully accessible (1:21) street which would allow for vehicle access for residents, deliveries and servicing;

- The creation of private external amenity for NT02 and private courtyards at NT03 and NT04 which are designed as enclosed green spaces with views framed out to the surrounding streetscape and Irk River Valley; and
- The creation of Travis Square, a green ecological corridor which would include significant areas of new planting, integrated seating, informal play spaces and wildlife habitats;
- The placement of green roofs, green roof terraces and brown roofs across the roofs of NT02-04. The green roofs would be inaccessible and low maintenance, sown with a native wildflower mix to be attractive to invertebrates and foraging birds and bats. The green roof terraces would be accessible to Site users and would include herbaceous perennial and shrub planting. The brown roofs would be located on the highest roofs of NT02-04 and would comprise a low-nutrient substrate left to self-vegetate via wind-blown or bird dispersal creating a natural habitat.
- The public realm of NT02-04 would comprise of a number of 'Launch Pads' which are approximately 25m$^2$ areas equivalent to that of two car parking spaces that are designed to reduce the number of on-street car parking while providing space for one of three types of uses: commercial, recreational and ecological. The Launch Pads would be situated along the proposed Dulwich Street.

## Lighting

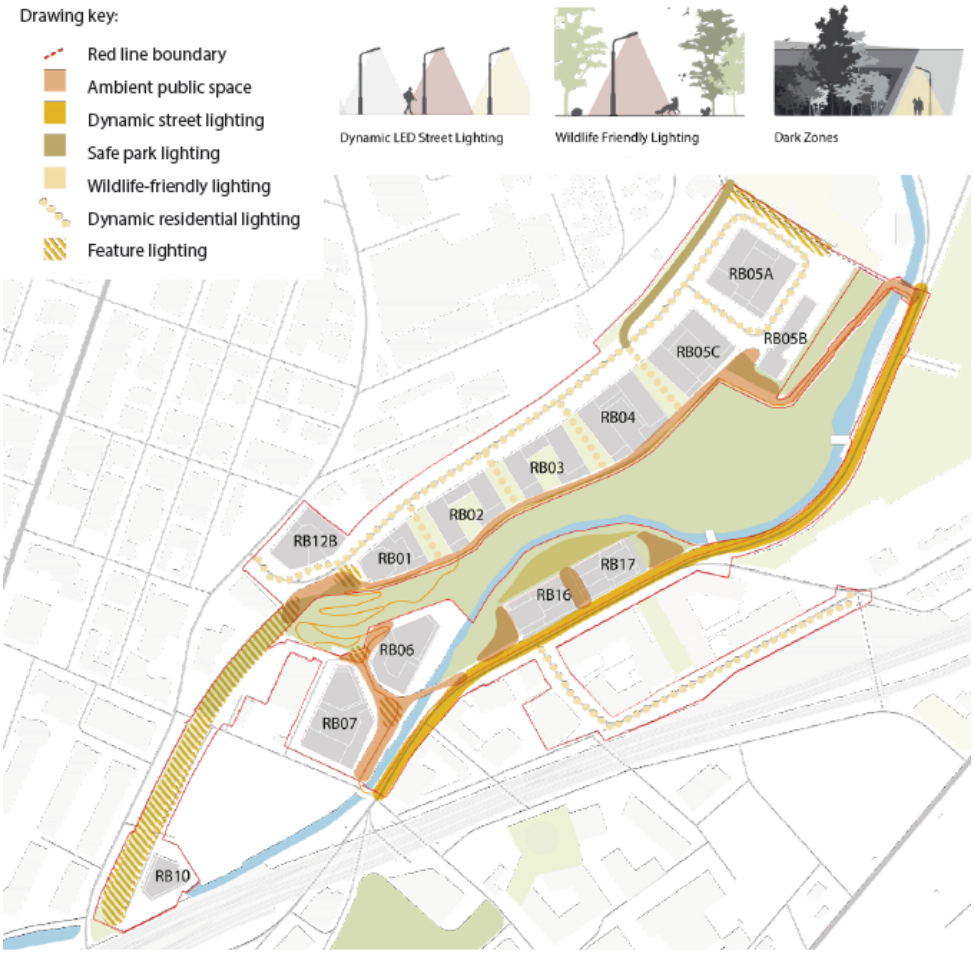
### Application 4

5.35 An Outline Lighting Strategy for the Application 4 has been prepared and is provided at **Figure 5.10** below. The plot developments shown are illustrative to aid the understanding of the application of the strategy.

5.36 The Outline Lighting Strategy has been developed to meet the objectives of the Institution of Lighting Professionals' (ILP) 'Guidance Note 1 for Reduction of Obtrusive Light' (2021) and 'Guidance Note 8 Bats and Artificial Lighting' (2018).

5.37 Measures within the Outline Lighting Strategy to reduce the impact upon wildlife, while maintaining a safely lit environment for Site users would include dynamic LED street lighting to provide variation in colour, temperature and intensity to pre-programmed time and seasonal settings, and the use of a reduced spectrum of light and 'dark zones' within and along St Catherine's Wood to provide areas of complete darkness where nocturnal animals would be able to seek refuge and forage undisturbed.

***Figure 5.10**: Outline Lighting Strategy for Application 4*




## Application 5

5.38 Dantzic Street and Dalton Street will be lit with column lightings (specification to be agreed with Manchester City Council). Smaller scale lighting columns will provide lighting to Dulwich Street. Overhead catenary lights are proposed between the buildings either side of the lower end of Travis Square. Within the courtyards, paths will be lit by low level bollard lighting.

5.39 Additional feature lighting including uplighters and strip lighting will be incorporated to light furniture, signage and trees in key locations.

# Movement, Circulation and Access

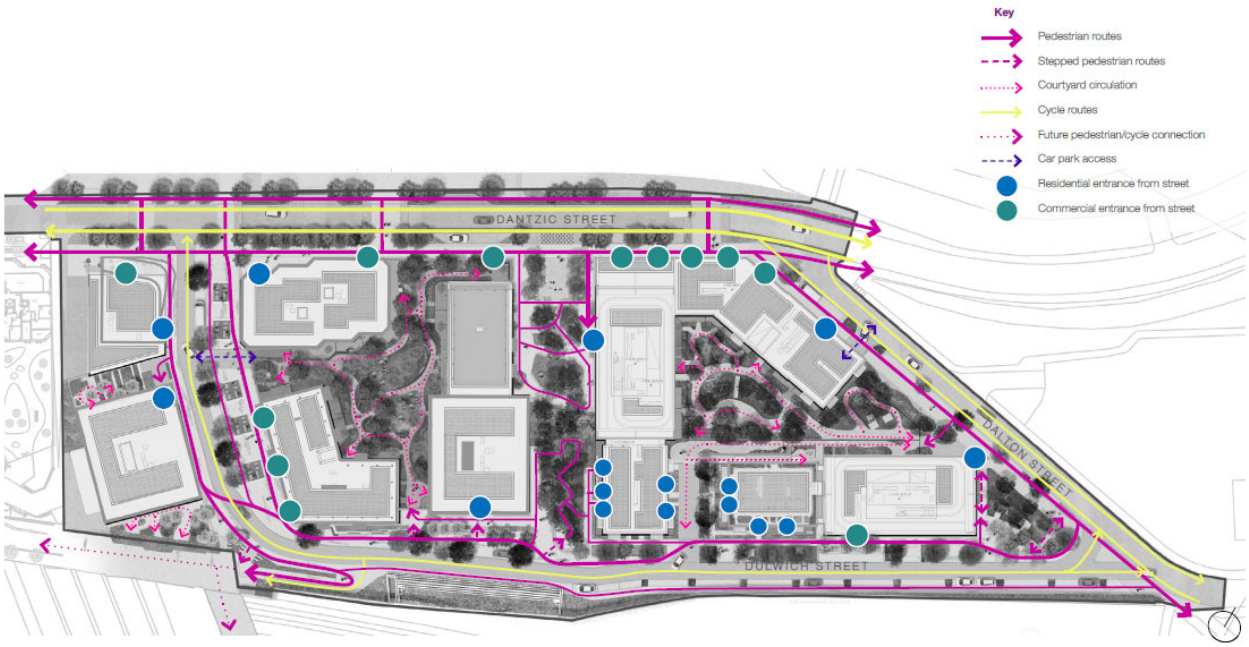
## Applications 4 and 5

5.40 Vehicular access to the Plots RB12B, RB01, RB02, RB03, RB05C, RB05A and RB05B would be from Red Bank; access to Plots RB07 and RB06 would be from Roger Street; and access to plots RB16, RB17 and NT02, NT03 and NT04 would be from Dantzic Street.

5.41 Parameter Plan P2 – Movement defines the location of routes, their function and the location of access points across the area in which Application 4 applies.

5.42 **Figure 5.11** below presents the vehicle movement plan for plots NT02-04, to which Application 5 applies.

***Figure 5.11:*** *Application 5 – Vehicle Movement Plan*




## Parking

### Car Parking

5.43 As part of Application 4, the following amount of car parking space would be provided:

- Up to 325 car parking spaces for residents of the residential development proposed by Application 4 (10% car parking ratio);
- Up to 25 car parking spaces for users of the non-residential development proposed by Application 4; and
- 52 car parking spaces for residents of the residential development proposed by Application 5.

5.44 As part of Application 5, the following amount of car parking space would be provided (see **Table 5.2** below). A total of 106 spaces are proposed on-site, as set out in the Development Specification and below. These are either within building podiums or on-street along Dulwich Street. All these spaces will be for the use of residents only. The balance of the requirement (i.e. a further 52 spaces) will be provided off-site at a location within the outline planning application area. Initially, this offsite car parking provision will be provided in a temporary location within the outline planning application area until a more permanent solution is delivered as part of the

residential led mixed use development proposed by the separate but interrelated outline planning application. The exact location will be chosen based on proximity to the NT02-04 development and the ease and suitability of the walking route.

***Table 5.2**: Car Parking Provision for Application 5*

| Plot | Podium (Residents only) | | Dulwich Street (Private estate – Residents only) | | Total Residential Car Parking Spaces (%) | Dulwich Street (Private estate – Visitors) | | Dantzic & Dalton St. (Adopted highways – Visitors) | | Total Visitor Spaces |
|---|---|---|---|---|---|---|---|---|---|---|
| | Standard | Accessible | Standard On-Street | Accessible On-Street | | Standard On-Street | Accessible On-Street | Standard On-Street | Accessible On-Street | |
| NT02 | 0 | 0 | 0 | 0 | 0 (0%) | 0 | 1 | 0 | 0 | 1 |
| NT03 | 37 | 3 | 0 | 0 | 40 (7%) | 0 | 1 | 0 | 1 | 2 |
| NT04 | 41 | 2 | 16 | 5 | 66 (10%) | 0 | 0 | 9 | 1 | 10 |
| ***Total*** | ***78*** | ***5*** | ***16*** | ***5*** | ***106 (7%)*** | ***0*** | ***2*** | ***9*** | ***2*** | ***13*** |

### Cycle Parking

5.45 As part of Application 4, up to 3,250 cycle parking spaces would be provided, equating to 1 secure cycle space per residential property.

5.46 As part of Application 5, a total of 1551 cycle parking spaces would be provided. The per-plot split would equal:

- NT02 = 316 cycle parking spaces;
- NT03 = 579 cycle parking spaces; and
- NT04 = 656 cycle parking spaces.

## Utilities and Infrastructure

5.47 The Proposed Development will require new electric, water (portable and foul) and telecommunications connections. The electricity supply would be delivered through the permitted Application 2. Other utility provision outside of the HIF scope would be delivered on a plot-by-plot basis. More specifically these works would include:

- New drainage installation including the creation of SuDS;
- Utilities and services connections for all new development plots and park / landscape / public realm areas and highways;

- Utilities diversion and new installations on Dantzic Street and new drainage installation; and
- Diversion of medium pressure gas main on NT02-03; and
- Street Works for new utilities incorporating two trenches for HV ducting from Queens Park substation to the north-east of the Site, and additional utilities needs within existing streets local to the Initial Development Area.

### Sewerage and Foul Drainage

5.48 During the pre-application stage, a United Utilities (UU) combined public sewer was identified to be present beneath Warford Street (Plots RB16 and RB17 within the Site). Due to a combination of the depth and the technical difficulty of diverting of the sewer, a 'no-build zone' has been incorporated into Plots RB16 and RB17 on the Parameter Plans which would create a 6m easement around the sewer line.

5.49 New primary drainage infrastructure is being installed as part of the HIF works, with the foul drainage provision being adopted by UU. The foul drainage from the proposed plots will connect to the HIF installed drainage via one connection per plot. The HIF drainage is proposed to connect to the existing UU combined sewerage network at two locations, to the existing sewer in Chase Street to the west of the Site and to the existing combined sewer beneath the River Irwell flowing towards Warford Street.

5.50 A new foul drainage network is proposed for Plots NT02 to NT04 which consists of new carrier drains and chambers with connections provided to the proposed structures on site. The new foul drainage system is proposed to connect on to the existing 1550mm diameter UU combined sewer.

### Drainage Strategy

5.51 Previous industrial usage has resulted in significant depths of made ground across the majority of the Site, with a large section of the north bank of the River Irk having been filled to accommodate the construction of railway sidings. The presence of made ground is prohibitive to drainage through infiltration because of the potential contaminants harboured within the infilled ground. It is therefore anticipated that soakaways and other means of infiltration will largely not be feasible as a means of disposing surface water runoff within the Proposed Development.

## Application 2

5.52 As part of the primary infrastructure works to be carried out by Application 2 in preparation for the Proposed Development adoptable foul and surface water drainage systems will be implemented across the Site.

### Application 4

5.53 The Drainage Strategy has been developed on a worst-case basis of assuming a 100% hard surface with below ground attenuation sized accordingly and discharge at 'green field' runoff rates into the Site-wide infrastructure provided through Application 2.

5.54 Surface water from Red Bank Plateau is to be discharged to the River Irk via the proposed adoptable site wide HIF drainage system:

- Plots RB5a to RB5c will discharge to Outfall 1.
- Plots RB01to RB04; RB06; RB08 & RB12b will discharge to Outfall 2.
- Plot RB07 will discharge to Outfall 3.
- Plot RB10 will discharge to the River Irk via a new outfall. This outfall will not be provided as part of the HIF proposals and will therefore need to be designed, detailed and approved by the EA as part of the design development of the plot.
- Ploys RB16 and RB17 sit south of the River Irk. It is currently anticipated that these plots will drain to the River Irk via a new surface water carrier drain in Dantzic Street provided as part of Application 5.

### Application 5

5.55 All the plots that sit within Application 5 will ultimately drain to the River Irk. A new adoptable surface water carrier drain will be installed in Dalton Street and Dantzic Street which discharges to the River Irk to the west of Plot RB16.

## Flood Risk

### Application 4

5.56 The following works to the River Irk would be carried out as part of Application 4:

- Formation of terraced wetlands along Travis Island to provide compensatory flood storage and offset the impact of the buildings within the floodplain at this location;
- Flood defence wall along the edge of the Plot to the west of Plot RB16 parallel to Dantzic Street; and
- Terracing along Plots RB06, RB07 and RB10 river frontage.

5.57 The proposed flood strategy that has been discussed with the EA and is summarised as follows:

- The FFL of all vulnerable uses is to be set above the design flood level.

- The only uses below the design flood level will be car parking, cycle parking, temporary outdoor market use or any other non-vulnerable use including bin storage.
- Minimum FFL's being proposed for the outline application do not include 300mm allowance for freeboard above the design flood level.
- Flood resistance / resilience to be provided to 600mm above the FFL and design flood level.
- Where residential lobbies are indicated below the design flood level, they will be provided with alternative means of escape which is above the design flood level.

5.58 The proposed FFLs for Plots RB06, RB07, RB10, RB16 and RB17 are listed below and these have been set at a minimum of the design flood level including an allowance for climate change but without freeboard:

- RB06 – 31.20m AOD;
- RB07 – 31.20m AOD;
- RB10 – 30.34m AOD;
- RB16 – 31.36m AOD; and
- RB17 – 31.36m AOD.

### Application 5

5.59 The finished floor level (FFL) for Plot NT02 (31.55m AOD) will be more than 300mm above the design flood level (30.88m AOD) and would also be above the 1 in 1,000-year flood level (31.32m AOD) which has negated the need for additional flood resilience measures across Plot NT02.

5.60 The finished floor level for residential access to NT03 is 32.35m AOD with commercial units being at 31.84m AOD and 31.72m AOD. The FFL of NT03 is therefore 270mm above the worst-case design flood level including and allowance for climate change and is also above the 1000-year flood level for NT03 which is 31.79m AOD. As is the case for NT02, this has removed the need for additional flood resilience measures across Plot NT03.

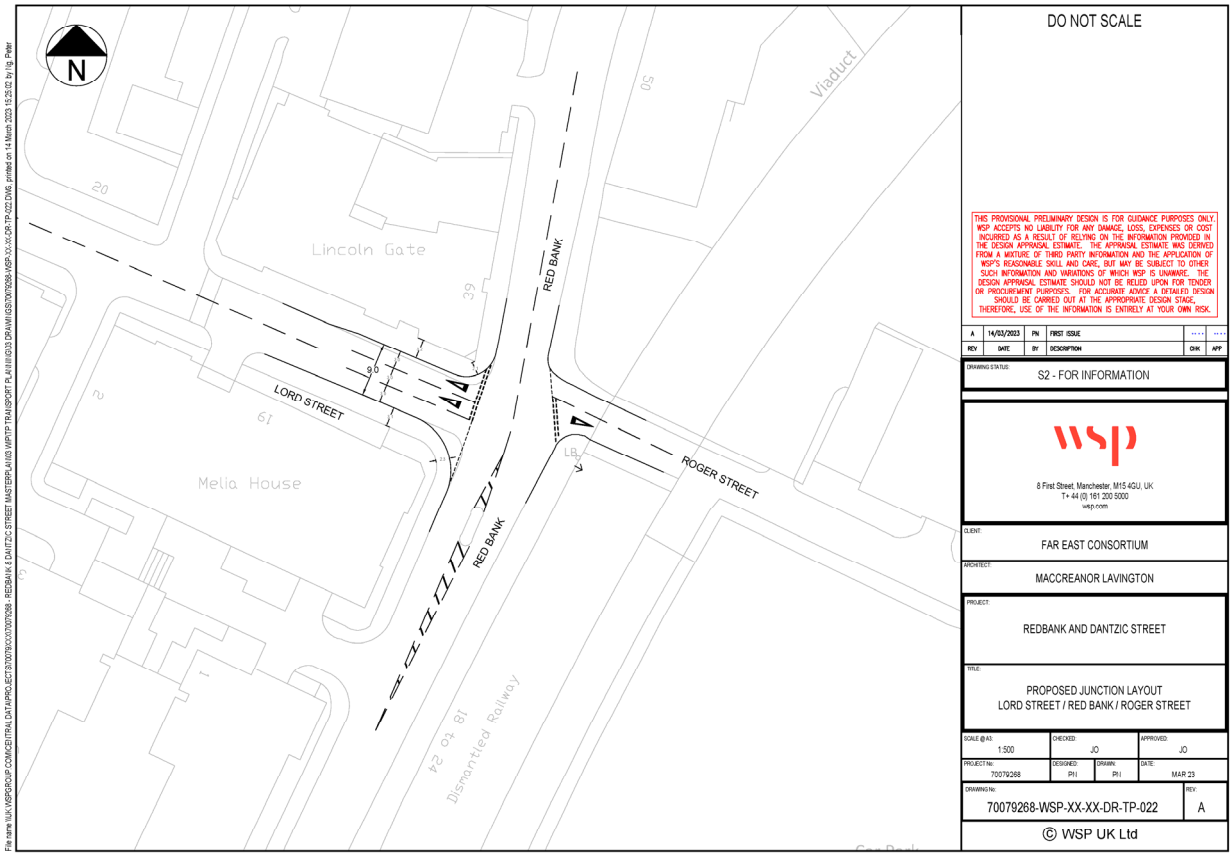
5.61 The design flood level at NT04 including an allowance for climate change is 31.50m AOD. The FFL for the residential access of NT04 is 32.23m AOD which is 300mm above the design flood level and is also above the 1000-year flood level which is 31.93m AOD. The lowest FFL for plot NT04 is shown to be 30.955m AOD – this is associated with the less vulnerable commercial usages along Dantzic Street.

## Highways

5.62 As part of the additional mitigation measures recommended by **Volume 2: Main Text, Chapter 11: Transport and Access**, the following off-Site junction mitigation measures would be necessary in relation to Application 4:

- Amendments to signal timings at Cheetham Hill Rd / Lord St junction including addition of a right turn arrow turning right into Lord St. Physical works would be limited to changing the traffic signal heads and potential road marking changes, there would be no kerb line changes or works outside the adopted highway; and
- Minor amendments to kerb lines at the Redbank / Lord St junction, as per drawing **Figure 5.12** below. All works are within adopted highway.

**Figure 5.12**: Proposed Junction Layout Lord Street / Red Bank / Roger Street

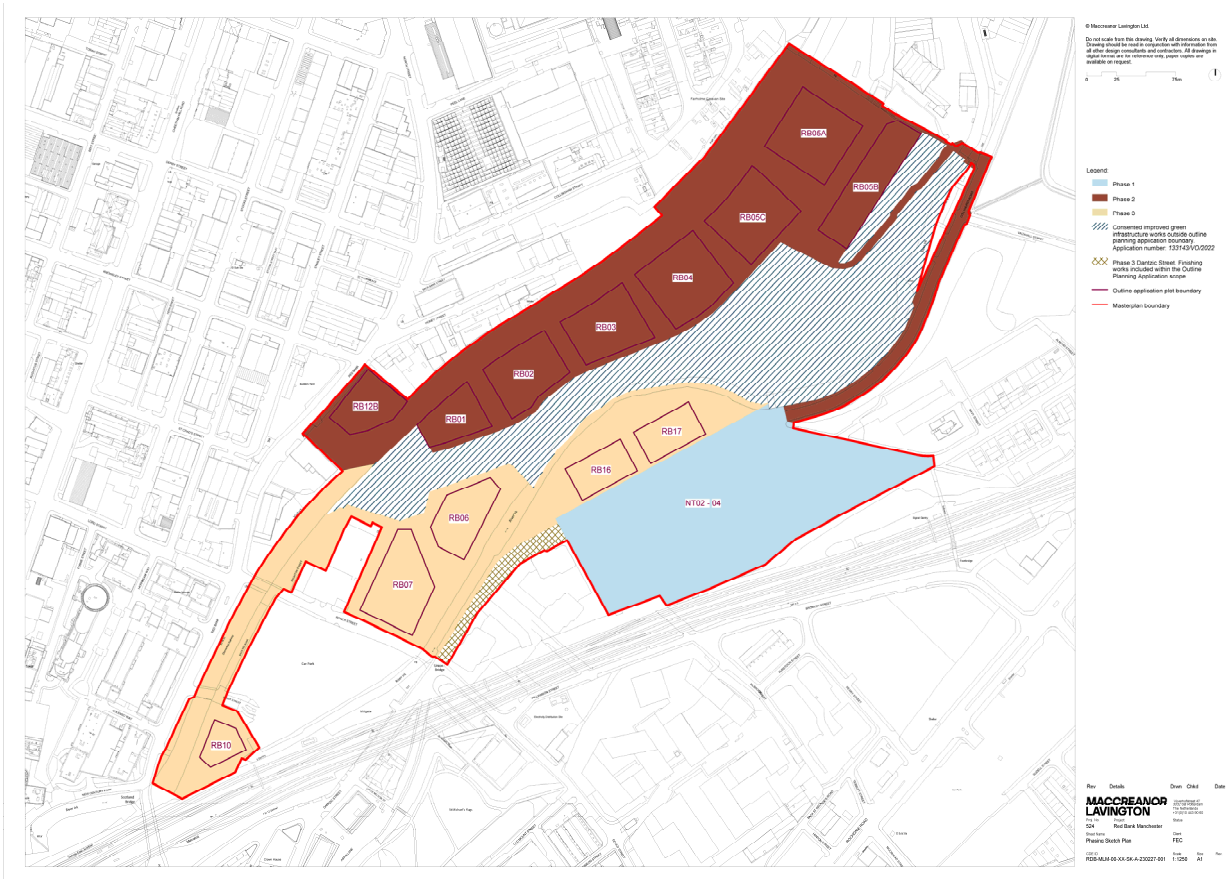



# Demolition and Construction Works

## Construction Programme

5.63 To allow for the consideration of any intra-Development effects (i.e. what the effect of the construction phase of one plot may be on the operational phase of another plot (and therefore its receptors)), an Anticipated Phasing Delivery Plan has been produced (shown in **Figure 5.13** below) to indicate the sequence in which the various plots of the Proposed Development (grouped by area into three phases) are anticipated to be built out.

***Figure 5.13**: Anticipated Phasing Delivery Plan*




5.64 Phase 1 of the construction works would see Plots NT02-04 (included within Application 5) across multiple sub-phases, the precise details of which are expected to be conditioned. Phase 1 is anticipated to begin in Q4 2023, and to be completed by Q4 2029.

5.65 Phase 2 which would see Plots RB01-05 and RB12B built out (included within Application 4), is anticipated to begin in Q1 2025 and finish by Q4 2029.

5.66 Phase 3 would also see Plots RB16. RB17, RB06, RB07 and RB10 built out (included within Application 4) and is anticipated to begin in Q3 2027 and finish by Q4 2032.

5.67 There would be a degree of overlap of the HIF works (Applications 1 – 3) with the construction works for NT02-04 works (Application 5) due to ground works being scheduled for completion in 2024. For the purposes of this EIA, it is assumed that the HIF works would be substantially complete by the time that works on the NT02-04 begin. The HIF works will also be completed to enable the Application 4 to commence as they establish the levels on which a vast majority of Application 4 will be built upon. The exception to this will be the 'Travis Island' section of

the New Town area that comprises Plots RB16 and RB17, where groundworks are anticipated to be undertaken in Phase 3.

5.68 Analysis of the proposed works to the river indicates that as mitigation measures are associated with Plots RB16 and RB17 and with Plots RB06 and RB07 it would be possible to bring forward either of these Plot pairs (RB16 and RB17 or Plots RB06 and RB07) and the associated mitigation in advance of the other and in advance of RB10. It would also be possible to bring forward RB10 with either of these Plot pairs. However, it would not be possible to bring forward RB10 in advance of these plot pairs as, while the effects on flood risk would be small, there are no mitigation measures associated with Plot RB10. It is the intention of the applicant to seek a planning condition to this effect that would require detailed flood risk assessment when the details of the plots comes forward.

## Description of the Works

5.69 The following sections describe the key activities that would take place from the inception of works throughout the construction process in order to implement the Proposed Development (Applications 4 and 5).

### Pre-commencement and Enabling Works

5.70 The following pre-commencement and enabling works activities would be carried out (as required) prior to the commencement of the construction works for the Proposed Development:

- Preparation of a Construction Environmental Management Plan (CEMP) and approval by MCC.
- Securing of construction site boundaries via the use of hoardings.
- Set-up of contractor welfare and site accommodation.
- Implementation of site investigation works and any required remediation works.
- Archaeological geophysical surveys (if required), evaluations and building record surveys (refer to **Volume 2: Main Text, Chapter 8: Cultural Heritage**).
- Protection of existing trees to be retained within and adjacent to the proposed areas of development via the implementation of appropriate fenced off Root Protection Zones (RPZs) in accordance with the requirements of BS5837:2012 'Trees in Relation to Design, Demolition and Construction'[1] (refer to **Volume 2: Main Text, Chapter 7: Ecology and Nature Conservation**).
- Appropriately timed tree and vegetation clearance (refer to **Volume 2: Main Text, Chapter 7: Ecology and Nature Conservation**).
- Implementation of any necessary service infrastructure works, such as re-routing existing utility works; and

[1] BSI Standards Publication BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations

- An asbestos survey would be undertaken in all the buildings. Once this survey is complete, the project team would be able to determine the extent of works involved with asbestos removal. Following the completion of building strip out and removal of internal furnishings, demolition would commence from the roof down using breakers working in accordance with relevant legislation.

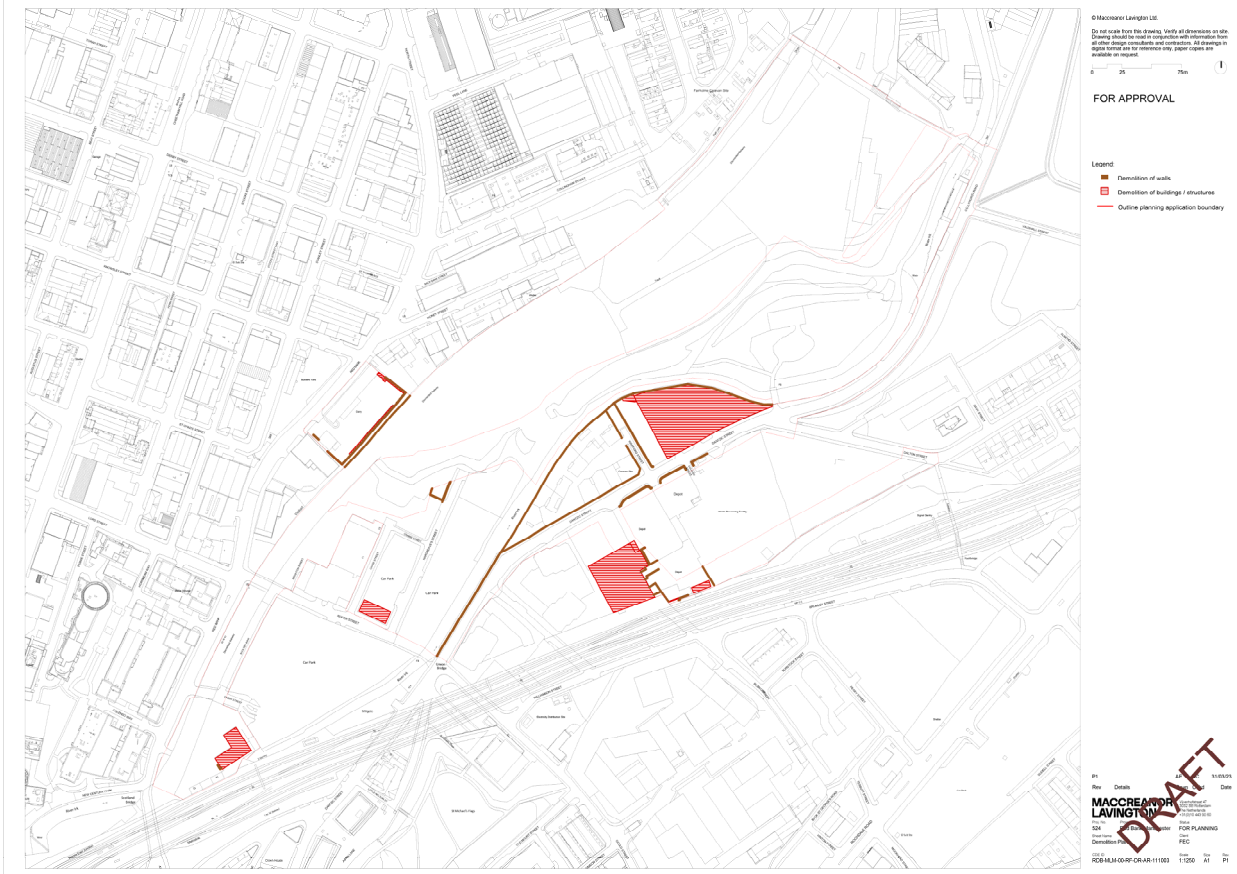
## Demolition Works

5.71 For Applications 4 and 5, demolition works would be required to a number of buildings and sections of wall across the Site that are currently located on Plots RB07, RB10, RB12B, RB17 and NT02.

5.72 In addition to the demolition of the buildings, where present, below ground structures and obstructions such as drains, hardstanding, relic foundations, service ducts and pipelines would be removed to facilitate construction of the Proposed Development.

5.73 The structures proposed to be demolished are shown on **Figure 5.14** below.

***Figure 5.14**: Demolition Plan*



## Site Preparation and Groundworks

### Remediation

5.74 Any further remediation works identified as being required in order to ensure the Site is suitable for use in accordance with the requirements of Part IIA of the Environmental Protection Act 1990[2] following the site investigation works would be implemented at this stage. Any geotechnically and / or chemically unsuitable soils encountered during the earthworks would be treated for re-use within the Site or removed for off-site disposal to a suitably licensed waste disposal facility.

### Earthworks

5.75 An earthworks exercise would be undertaken to create formation levels for the Proposed Development. For Plots RB01, RB02, RB03, RB04, RB05A, RBO5B, RB05C and RB12 formation levels will have been provided through the HIF works. It is anticipated that this would be undertaken in three stages across the Site, preceding the outset of the construction works of each of the three phases identified in **Figure 5.13**. It is assumed that all land within the development zones would be subject to earthworks and material movements. There would be areas where levels would reduce (areas of cut) and areas where levels would increase (area of fill). It is assumed that a broad cut and fill balance would be achieved within the Site and no significant import or export of material would be required. The presence of unstable and compressible ground may also be identified during the ground investigations and enabling works prior to the commencement of the main construction activities. The results of the ground investigations would be used to design appropriate remedial measures to address any issues with unstable and compressible ground during the construction stage. All earthworks would be undertaken in accordance with relevant industry guidance including CIRIA Report C572: Treated ground engineering properties and performance[3], British Research Establishment document FB75: Building on Fill - Geotechnical Aspects[4] and British Standard 6031:2009: Code of Practice for Earthworks[5]. In addition, all proposed buildings and their foundations would be designed in accordance with Building Regulations Approved Document A - Structure[6]. It is assumed that movement of materials would adhere to the guidance set out in the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites[7].

[2] Environmental Protection Act 1990.

[3] CIRIA (2002) C572: Treated ground engineering properties and performance.

[4] British Research Establishment (2015) Document FB75: Building on Fill - Geotechnical Aspects.

[5] British Standard 6031:2009: Code of Practice for Earthworks.

[6] HM Government (2013) Approved Document A - Structure (2004 Edition incorporating 2004, 2010 and 2013 amendments).

[7] DEFRA (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites [online] Available at: https://www.gov.uk/government/uploads/system/uploads/ attachment _data/file/69308/pb13298-code-of-practice-090910.pdf.

### NT03 Viaduct Retaining Wall

5.76 As part of Application 5, the existing National Rail mound located on Plot NT03 would be excavated in order to facilitate construction works on the Site. Either side of the existing National Rail mound are masonry wing walls which retain the sides of the mound as it interfaces the northern elevation of the railway viaduct.

5.77 A new retaining structure, comprised of a 45.7m long, contiguous piled retaining wall with a gabion retaining wall above, would be built prior to the removal of the National Rail mound in order to maintain stability to the railway viaduct.

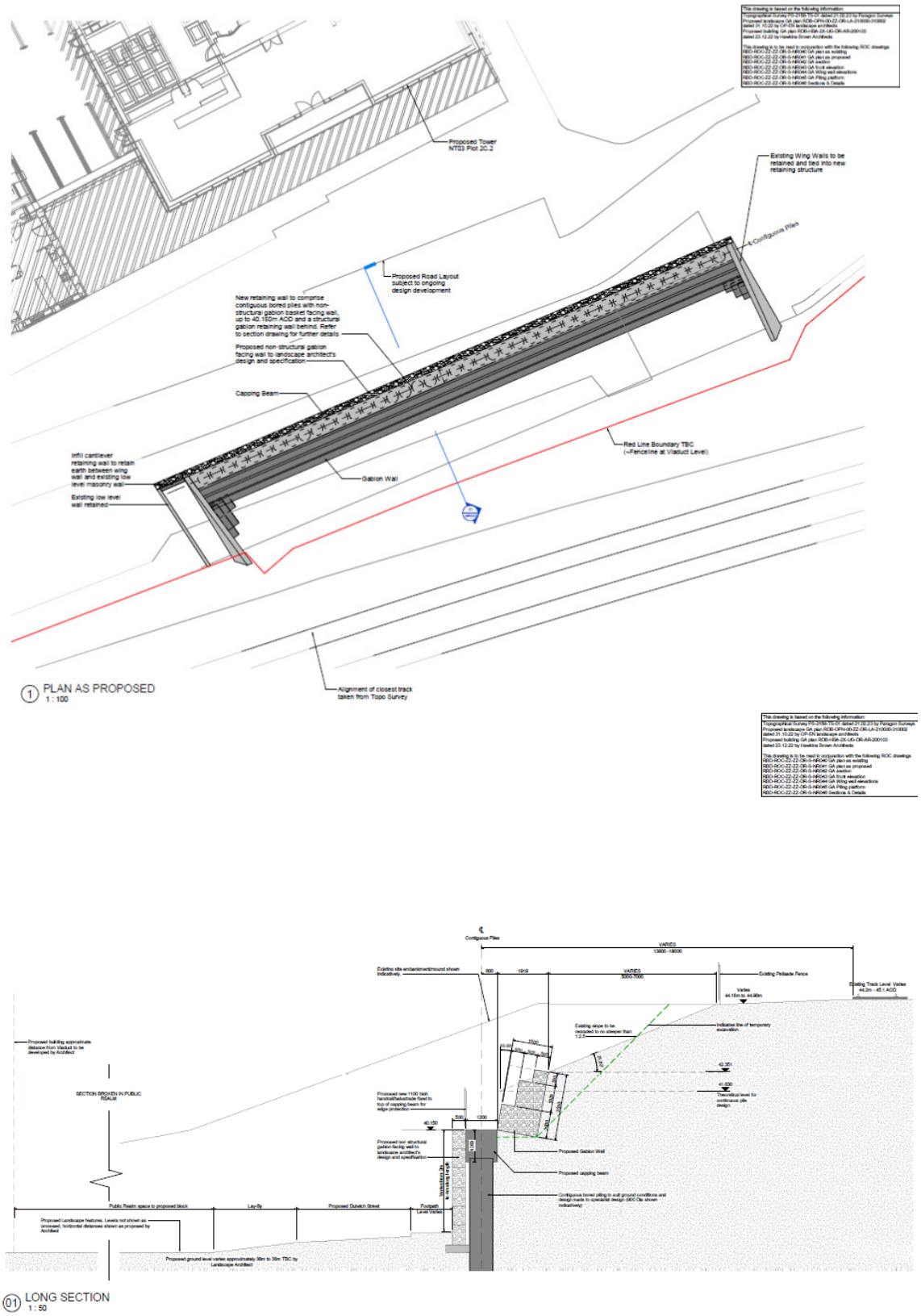
5.78 The design of the new retaining structure will also consider any lineside infrastructure and their zone of influence on any proposed retaining structure, and a construction methodology will be developed to ensure that the stability of any lineside infrastructure is maintained both in the temporary and permanent conditions.

## Construction Works

5.79 The structural frames for the buildings within plots NT02-04 (Application 4) will be primarily cast in-situ with reinforced concrete. The structural frame type for the buildings within plots RB01-17 (Application 5) will be considered for each plot on the merit of the material choice and building type. For multi-storey residential use, a concrete framed solution is most likely due to the considerations and benefits outlined above. However, for low rise residential and other civic uses, steel or even timber frames may prove advantageous due to their lighter weight, sustainability benefits and due to the reduced fire performance requirements of these building types.

5.80 For the substructure of the buildings within plots NT02-04 (Application 4) and RB01-17 (Application 5), due to the loads imposed on the foundations owing to the mass of the building and the depth to bedrock, the foundations will most likely need to be piled. Contiguous flight auger (CFA) piles are proposed due to the loads required and the ground condition.

***Figure 5.15**: Retaining Wall Plan view and Cross Section*



## Construction Site Access, Parking and Traffic

5.81 For the purposes of the ES, it has been assumed that the majority of construction traffic travelling to / from the plots situated along Danztic Street (including Plots NT02-04 and RB16 and 17) would do so via the A6010 and Collyhurst Road. For the plots situated within the Red Bank Plateau area (including Plots RB 1 – 7, 10 and 12), construction traffic to / from the plots would be via the A6010 (Queens Road), A665 (Cheetham Hall Road), North Street and Red Bank.

5.82 A suitable level of parking would be provided on-Site during the construction stage. No off-Site parking along the roads around the Site would be permitted unless otherwise agreed.

## Site Compounds

5.83 The Site compound will be carefully positioned within the Site to avoid unnecessary visual or noise nuisance to adjacent land users.

5.84 It is proposed to utilise a compound area to offload, store and handle materials as well as for welfare facilities where appropriate. The location of the compound will enable materials to be offloaded in one controlled area and then moved within the Site to the required building area. It is envisaged that strict management of loading zones will be implemented by way of a delivery booking system, which will ensure that material movements are efficiently managed and will also facilitate a 'just in time' delivery regime. Where possible, material movements will be managed to coincide with quiet periods.

## Construction Traffic Management

5.85 Appropriate traffic management controls would be implemented during the Works in line with Health and Safety Executive (HSE) standards[8] to ensure the safety of other road users and to protect the environment including:

- Appropriate signing of the delivery route(s) to ensure vehicles use the approved route(s) to and from the Site.
- Warning signs where appropriate in the vicinity of the Site permanent and temporary access(es), both for vehicles and other road users.
- Layout of working areas to allow adequate space for goods vehicle manoeuvring within the Site.
- Temporary traffic management for short periods during delivery of abnormal / oversized loads, as required.
- Design of the Site access(es) to ensure that vehicles have appropriate visibility upon leaving the Site.

[8] Health and Safety Executive (2006) Health and Safety in construction HSG 150 (online) Available at: http://www.hse.gov.uk/pubns/books/hsg150.htm (Accessed on 22.02.2019).

- Wheel washing facilities for vehicles leaving the Site.

## Construction Plant and Equipment

5.86 Consideration was given to the types of plant and equipment likely to be used during the Construction Works. An indication of the typical types of plant and equipment associated with each key element of the Works are shown in **Table 5.3.**

***Table 5.3**: Indicative Plant and Equipment*

| Plant and Equipment | Stage of Works | | | |
|---|---|---|---|---|
| | Site Enabling Works and Demolition | Ground Works | Construction Works | Open Space and Landscaping |
| Bulldozers | ✓ | ✓ | | |
| Compaction plant | ✓ | ✓ | ✓ | ✓ |
| Cranes and hoists | | | ✓ | |
| Cutters, drills and small tools | ✓ | ✓ | ✓ | ✓ |
| Crushers | ✓ | | | |
| 360º excavators | ✓ | ✓ | | |
| Floodlights | ✓ | ✓ | ✓ | |
| Fork lift truck | | | ✓ | ✓ |
| Generators | ✓ | ✓ | ✓ | ✓ |
| Hydraulic benders and cutters | ✓ | | ✓ | |
| HGVs / lorries / vans | ✓ | ✓ | ✓ | ✓ |
| Piling rigs | | | ✓ | |
| Scaffolding and mobile hydraulic access platforms | ✓ | | ✓ | |
| Ready-mix concrete lorry | | | ✓ | |
| Concrete pump | | | ✓ | |

| Plant and Equipment | Stage of Works | | | |
|---|---|---|---|---|
| | Site Enabling Works and Demolition | Ground Works | Construction Works | Open Space and Landscaping |
| Mortar batching plant | | | ✓ | |
| Water Pump | | | ✓ | |
| Temporary Supports | | | ✓ | |

## Hours and Days of Work

5.87 Working hours will be subject to agreement with MCC. However, it has been assumed that standard working hours would be followed. These are presented below:

- Monday – Friday: 07:30 - 18:00;
- Saturday: 08:30 - 14:00; and
- No working on Sundays or Bank Holidays.

5.88 Exceptions may arise, for example when abnormal loads are delivered or when specialist activities are conducted, when works may be required outside of these times. The Applicant acknowledges that should these circumstances arise, the appropriate permissions and notifications would be sought in advance from MCC.

5.89 Where works unavoidably need to take place outside the core working hours, occupiers of nearby residential properties shall be informed by the contractor in advance of the works and their likely duration.

## Environmental Management and Mitigation

### Construction Environmental Management Plan (CEMP)

5.90 A CEMP would be conditioned as part of the planning permission for Applications 4 and 5 and would detail the environmental controls, protection measures and safety procedures that would be adopted during the Works, providing a tool to ensure the successful management of the likely environmental effects as a result of construction activities.

5.91 The CEMP would be anticipated to outline the following topics:

- The Construction Programme.
- A broad plan of construction works, highlighting the various work stages and associated schedule of works and equipment requirements.

- Details of construction traffic and routing.
- Detailed site layout arrangements, including the location of site compounds, storage areas, delivery to site access and egress and on / off loading areas, parking for staff and location of construction lighting and site hoarding.
- Prohibited or restricted areas.
- Site working hours.
- Communication strategy with both MCC and the local community and confirmation of a Liaison Officer.
- Provision of monitoring and recording, including maintaining a complaints and actions register and auditing procedures; and
- Outline of key environmental management measures and details of any requirements for monitoring. This shall include details of any operations where disturbance / effects may occur, expected durations and response protocols.

5.92 Mitigation measures as identified within this ES will also be incorporated into the CEMP, where necessary. Individual contractors will also incorporate relevant requirements in respect of environmental controls, based largely on standard good working practices and all other statutory requirements.

## Management of Construction Works and Liaison

5.93 In terms of quality management, the Development would be constructed by the relevant appointed contractor in line with the principles set out in the externally accredited to BS ISO 9001: 2015[9] (or recognised equivalent). The Site would also be registered with the Considerate Constructors Scheme.

5.94 All Works would be undertaken in line with the relevant legislative requirements, including the Construction (Design and Management) Regulations 2015[10] and Environmental Protection Act[11].

5.95 The Applicant / appointed contractor would continue to undertake liaison with the local community, SRBC and other stakeholders, as appropriate, during the Works.

## Security, Emergencies and Accidents

5.96 The site security arrangements for the Works would be in line with the requirements set out within the Construction (Design and Management) Regulations[12]. It is also anticipated that the Development would include appropriate levels of security, including fencing, CCTV and on-Site security personnel.

[9] International Organization of Standardisation. https://www.iso.org/standard/62085.html. 2015.

[10] Construction (Design and Management) Regulations (Statutory Instrument No. 51) (online) Available at: http://www. legislation. gov.uk/uksi/2015/51/contents/made

[11] Environmental Protection Act 1990 (as amended) (online) Available at: https://www.legislation.gov.uk /ukpga/1990/43/contents.

5.97 All works would be undertaken in line with the Health and Safety at Work Act[13]. In addition, as part of the CEMP, there would be a requirement for the preparation of risk assessments and method statements prior to the commencement of activities. This would aid with the identification of risks and the Proposed Development mitigation measures to reduce any risk to an acceptable level.

5.98 The CEMP would also contain a series of procedures / measures for emergencies / accidents that could occur alongside contact details for relevant organisations that need to be notified.

### Materials Storage and Handling

5.99 Environmental issues would be considered in the procurement of raw materials and all such materials would be appropriately stored in order to minimise damage by vehicles, vandals, weather or theft.

5.100 Contractors and their subcontractors would be expected to maintain a tidy Site and where practical, to operate a 'just-in-time' policy for the delivery and supply of materials for the works.

5.101 Tanks and drums of liquid chemicals and fuels would be stored in bunded compounds and, where feasible, packaging would be returned.

### Waste Management and Minimisation

5.102 It is anticipated that waste would be generated during the Works, for example, packaging from deliveries and off-cuts of materials that are surplus to requirements. A Site Waste Management Plan (SWMP) would be prepared for the Development and would set out management / control measures to ensure that waste generated from carrying out the Works is kept to a minimum.

5.103 The movement of materials would adhere to the guidance set out in the 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites[14].

### Control of Noise, Vibration, Dust and Lighting

5.104 Noise mitigation measures and the Best Working Practices as outlined in British Standard 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites - Part 1 noise'[15] and British Standard 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites -

[12] Construction (Design and Management) Regulations 2015 (Statutory Instrument No. 51) (online) Available at: http://www. legislation .gov.uk /uksi/2015/51/contents/made

[13] Health and Safety at Work Act 1974 (as amended) (Statutory Instrument No. 37) (as amended) (online) Available at: http://www.legislation.gov.uk/ukpga/1974/37/contents

[14] Defra. Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. 2009.

[15] British Standards Institution. British Standard 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1 noise. 2014.

Part 2 vibration'[16], would be implemented. Mitigation measures that would be considered include using quiet construction methods, locating plant and equipment away from noise sensitive receptors, limiting hours of construction, and ongoing monitoring.

5.104.1 Mitigation measures that would be considered include using quiet construction methods, locating plant and equipment away from noise sensitive receptors, limiting hours of construction, and ongoing monitoring.

5.104.2 It is recognised that Works generated noise, vibration and dust could give rise to temporary and local disturbance. Site-specific best practice measures would therefore be implemented by the contractors to minimise the disturbance to local residents and other potentially sensitive receptors in the surrounding area.

5.104.3 Noise and vibration levels would be monitored during the Works. If noise and vibration levels breach the agreed levels above which action must be taken to reduce potentially harmful effects, at sensitive receptors, alternative methods would be explored and employed.

5.105 It is anticipated that the CEMP would contain relevant mitigation measures presented within the Institute of Air Quality Management (IAQM) 'Guidance on the assessment of dust from demolition and construction'[17]. The measures that would be considered include prevention measures such as screening stockpiles of material, deployment of windbreak netting, dampening exposed soils as appropriate and ongoing monitoring.

5.106 Good practice guidance documents prepared by the CIRIA[18] note that lighting on construction sites is typically part of on-Site security and health and safety requirements. As such, it is assumed that the following sources of lighting would be present during the Works:

- Health, safety and security lighting associated with the Site perimeter, access(es), working areas, temporary car parking areas and construction compound(s). It is assumed that construction lighting would not include floodlighting.
- Vehicular / plant lighting required for particular work tasks.
- Internal lighting associated with any temporary office units / welfare facilities in the construction compound(s).

5.106.1 There would be a curfew to ensure that no lighting would be kept switched on overnight aside from low level lighting (for security / safety purposes), which would be implemented along the perimeter of the Works area(s) as part of a presence detection type security system.

[16] British Standards Institution. British Standard 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2 vibration. 2014.

[17] Institute of Air Quality Management (2014) Guidance on the assessment of dust from demolition and construction. 2014.

[18] Construction Industry Research and Information Association. Environmental good practice on-site 3rd edition (C692). 2010.

5.107 Measures to minimise light spill and glare would be adopted during the Works, including use of baffles / shields, directional lighting and advanced notice / prior notification of works that would require construction lighting in proximity to sensitive receptors and post-installation checks, to ensure that any temporary lighting is suitably controlled.

### Pollution Control

5.108 The Works would be managed in accordance with the CIRIA guidance 'C532 - Control of Water Pollution from Construction Sites[19] and the relevant Good Practice Guidelines for Pollution Prevention, as follows:

- GPP 5: Works and maintenance in or near water[20].
- PPG 6: Working at construction and demolition sites[21].
- GPP8: Safe storage and disposal of used oils[22].
- GPP 13: Vehicle washing and cleaning[23].
- GPP 21: Pollution incident response planning[24].
- GPP 22: Dealings with spills[25].

5.109 Bunding would be provided around any source of potential pollutants required for construction (e.g. mortar mixers, fuel stores etc.). This would ensure that in the unlikely event of an accidental spillage, surface and ground water would remain protected.

### Protection of Ecological Resources and Trees

5.110 As part of the CEMP, procedures and management measures to ensure the protection of ecological resources, including habitats (where retained) and protected species would be included.

## Summary

5.111 This chapter has described the nature of the Proposed Development (comprising Applications 4 and 5) and the demolition and construction works that would be necessary.

[19] Construction Industry Research and Information Association. Control of Water Pollution from Construction Sites. Guidance for consultants and contractors (C532) (online). 2001.

[20] Environment Agency. GPP 5: Works and maintenance in or near water. 2017.

[21] Environment Agency. PPG 6: Working at construction and demolition sites. 2012.

[22] Environment Agency. GPP8: Safe storage and disposal of used oils. 2017.

[23] Environment Agency. GPP 13: Vehicle washing and cleaning. 2017.

[24] Environment Agency. GPP 21: Pollution incident response planning. 2017.

[25] Environment Agency. GPP 22: Dealings with spills. 2018.

5.112 The potential environmental impacts of the construction phase of the Proposed Development have been considered and all controls or measures to mitigate these effects are in line with current environmental standards and legislative requirements. Further detail of construction impacts has been presented in each technical chapter, where applicable.

5.113 The Applicant would develop and would implement a CEMP for the Site prior to construction, thereby ensuring that any potential environmental effects are within suitable standards or mitigated in accordance with measures identified through the EIA process, where no standards exist.

# 6. Townscape and Visual

## Introduction

6.1 This chapter assesses the townscape and visual effects of the Red Bank Neighbourhood Outline Application (Plots RB01-07, RB10, RB12B, RB16 and RB17) (herein referred to as 'Application 4') and NT02-NT04 Full Application (herein referred to as 'Application 5'). Application 4 and Application 5 are collectively referred to as 'the Proposed Development'. 'The Site' refers to the combined area contained within the red edges of Application 4 and 5. The TVIA considers effects that may arise because of the Proposed Development on both the townscape character as an environmental resource, and on people's views and visual amenity. These townscape and visual effects may occur both within the area of land within the Site boundary of the Proposed Development (**Figure 6.1**) ('the Site') and from the wider townscape within the TVIA 'Study Area' (**Figure 6.1**).

6.2 The structure for the assessment presented in the TVIA for Applications 4 and 5 is that of a 'typical' assessment, that is, each of the applications are assessed individually allowing impacts, mitigation and effects to be identified for each. An assessment of the cumulative effects of Application 4 and Application 5 in conjunction with other committed development has also been undertaken. This is followed by an assessment of the in-combination effects of Applications 4 and 5 together; and the in-combination effects associated with the Victoria North Strategic Regeneration Framework (SRF) (formerly referred to as 'Northern Gateway') (Manchester City Council (MCC), Far East Consortium (FEC) and partners, 2019).

6.3 This TVIA chapter describes the methods used to assess the likely significant effects; the baseline conditions currently existing at the Site and surroundings; the potential direct and indirect effects of the Proposed Development arising in terms of townscape and visual considerations; the mitigation measures required to prevent, reduce, or offset the identified significant effects; and the residual effects of the Proposed Development (both project alone, in-combination and cumulative).

6.4 This TVIA chapter is structured as follows:

- Introduction;
- Planning Policy Context;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Red Bank (Application 4);
    - Project Design Scenario – Basis for ES Assessment;
    - Embedded Mitigation;

  - Assessment of Likely Significant Effects;
  - Conclusions; and
  - Assessment of Cumulative Effects and their Significance.
- NT02-NT04 (Application 5);
  - Project Design Scenario – Basis for ES Assessment;
  - Embedded Mitigation;
  - Assessment of Likely Significant Effects;
  - Conclusions; and
  - Assessment of Cumulative Effects and their Significance.
- In Combination Effects of Applications 4 and 5; and
- In Combination Effects of Applications 4 and 5 and SRF.

6.5 This chapter is supported by a series of figures, provided in-full within **Volume 2: Main Text Figures**.

# Planning Policy Context

## Legislation

### Planning (Listed Buildings and Conservation Areas) Act 1990

6.6 The Planning (Listed Buildings and Conservation Areas) Act is a UK Act of Parliament introduced in 1990 that changed laws relating to the granting of planning permission for building works, with a particular focus on listed buildings and conservation areas. It created special controls for the demolition, alteration or extension of buildings, objects or structures of particular architectural or historic interest, as well as conservation areas.

6.7 Conservation areas are areas that have been designated by the local planning authority as being of *'special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance'.* Conservation area controls, as established by the Act, apply in addition to normal planning controls. Part II of the Act (para 72(1) places a general duty as respects conservation areas in exercise of planning functions that *'special attention shall be paid to the desirability of preserving or enhancing the character or appearance of that area'.*

6.8 This TVIA has regard to the character and appearance of conservation areas, which are mapped in **Figure 6.2**, described in the Baseline Conditions and the effects of the Proposed Development assessed in respect of and NT02-NT04 (Application 5).

### Town and Country Planning (Environmental Impact Assessment) Regulations 2017

6.9 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations') governs the process of EIA in the context of town and country planning in England. The EIA regulations only apply

to certain types of development, set out in Schedule 2, including urban development projects of more than 150 dwellings and more than 5 hectares (ha). The Proposed Development has been through 'Screening' which has determined that the Proposed Development has potential to result in significant effects on the environment in respect of townscape character and visual amenity. The Scoping Opinion of the local planning authority (MCC, 2023) has also confirmed the need to consider the townscape and visual effects of the Proposed Development in the EIA.

6.10 The aim of EIA is to protect the environment by ensuring that the local planning authority, when deciding whether to grant planning permission for a project which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision-making process. This TVIA includes information reasonably required to assess the likely significant environmental effects of the Proposed Development, including both written assessment and accurate visual representations, which have been prepared by competent experts, in line with guidance and standards.

6.11 The TVIA has been prepared to fully comply with Regulation 4 and Schedule 4 (Part I and II) of the EIA Regulations: 'Information for Inclusion in Environmental Statements'; and in accordance with National Planning Practice Guidance (NPPG).

## National Planning Policy

### National Planning Policy Framework 2021 (NPPF)

6.12 The National Planning Policy Framework (NPPF) sets out the government's planning policies for England and how these are expected to be applied.

6.13 The purpose of the planning system is to contribute to the achievement of sustainable development through three overarching objectives. The environmental objective is of particular relevance to the purposes of TVIA.

> *"An environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."*

6.14 Section 12 of the NPPF deals with the requirements of good design. The overarching principle is set out in paragraph 126, which states:

> *"The creation of high quality, beautiful and sustainable buildings and places is fundamental to what the planning and development process should achieve. Good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities."*

6.15 The NPPF advises, in section 12 Achieving well-designed places, paragraph 130, that

> *'Planning policies and decisions should ensure that developments:*

*a) will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;*

*b) are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;*

*c) are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);*

*d) establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;*

*e) optimise the potential of the Site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks; and*

*f) create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users; and where crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion and resilience'.*

6.16 The NPPF advises, in section 15 Conserving and enhancing the natural environment, paragraph 174, that landscapes should be taken into account in the planning process through the protection and enhancement of valued landscapes.

6.17 Whilst the Site is not located in a Conservation Area and does not contain listed buildings, heritage is an intrinsic part of landscape assessment and potential views from Conservation Areas and the context around listed buildings will be considered as part of the assessment. Section 16 of the NPPF concerns conserving and enhancing the historic environment. Paragraph 189 states that heritage assets are:

*"an irreplaceable resource, and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations".*

6.18 There is also an overarching desirability set out within the NPPF for new development to contribute positively to local character and distinctiveness. The NPPF advises in paragraph 190, that Plans should set out a positive strategy for the conservation and enjoyment of the historic environment taking into account:

*'the desirability of new development making a positive contribution to local character and distinctiveness; and opportunities to draw on the contribution made by the historic environment to the character of a place.'*

## National Planning Practice Guidance

6.19 The National Planning Practice Guidance (NPPG) (DCLG, 2014) provides a web-based resource in support of the NPPF.

6.20 NPPG: Design – Section 1: The Importance of Good Design, states that: *"As a core planning principle, planmakers and decision takers should always seek to secure high quality design".* Section 3 focuses on the qualities that define well designed places and spaces, stating that*: "A well designed space has a distinctive character". It lists the physical aspects*

*that contribute to distinctiveness, including the local pattern of street blocks and blocks, building forms, details, materials, style and vernacular".* It further adds that: *"Distinctiveness is not solely about the built environment"* – it also reflects an area's function, history, culture and its potential need for change.

## Local Planning Policy

### Places for Everyone Joint Development Plan Document (Publication Stage) 2021

6.21 Nine of the ten local authorities in Greater Manchester have developed a joint plan, the Places for Everyone Joint Development Plan of Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford, and Wigan Councils. This plan has been approved by the nine local authorities and submitted to the Secretary of State. An independent examination of the Plan is currently underway.

6.22 The Publication Stage Joint Plan, Policy JP-Strat 2 sets out the following policy for the City Centre:

*'The role of the City Centre as the most significant economic location in the country outside London will be strengthened considerably. The City Centre will continue to provide the primary focus for business, retail, leisure, culture and tourism activity in Greater Manchester, but the increasingly important residential role of the City Centre will be expanded considerable by a range of high density new homes, supported by necessary infrastructure. Development will enable people to take advantage of the access to education and training and the extensive public transport offer, reducing the need to travel to work whilst supporting economic growth and reducing levels of poverty.'*

### Manchester's Local Development Framework, Core Strategy Development Plan Document (2012 – 2027)

#### Spatial Objectives S06 Environment

*'Protect and enhance both the natural and built environment of the City and ensure the sustainable use of natural resources, in order to mitigate and adapt to climate change, support biodiversity and wildlife, improve air, water and land quality, recreational opportunities and provide networks of high quality green infrastructure, ensuring that the City is inclusive and attractive to residents, workers, investors and visitors. The development of networks of green infrastructure across the City and City Region, together with protecting and enhancing townscape character and securing a high standard of design in all development proposals, will promote healthy, low-carbon lifestyles, contribute to a sense of wellbeing, and help to facilitate the sustainable and inclusive growth of the City.'*

#### Policy CC9 Design and Heritage

*'Design of new buildings will need to be of the highest standard in terms of appearance and function. The standards and guidance explained in other LDF policies should be the basis for the approach to design, with particular attention to be given to the City Centre context and character.*

*Development in Manchester City Centre should preserve or enhance the heritage assets that have been identified, including listed buildings, conservation areas and scheduled ancient monuments.*

*The Council will support high density and mixed use development in the City Centre, but developers must recognise the specific design challenges that must be overcome to ensure complementarity of function and form. New development must support the range of uses the Council expects in the City Centre and contribute to a coherent and integrated physical environment.'*

## Policy EN1 Design Principles and Strategic Character Areas

*'New development in Manchester will be expected to take into consideration its location within the specific character areas and reinforce the sense of place and local distinctiveness of the City. This is considered an important element in increasing the sense of local ownership of and respect for a neighbourhood' and that 'Opportunities for good design to enhance the overall image of the City should be fully realised, particularly on major radial and orbital road and rail routes.'*

*'City Centre Character Area - The City Centre contains a rich legacy which reflects its urban evolution to the current day and includes listed buildings, conservation areas, archaeological remains and an historic street pattern. Its core area presents a particularly dense environment that accommodates a wide and closely integrated range of uses including commercial, civic and residential activities. Relative to the amount of development there is limited open space and this includes a range of civic and less formal green spaces and waterways. Outside the core and associated with the Inner Relief Route there are less active and less densely developed areas with significant elements of cleared land. The City Centre is the focus of the City's transport routes.*

*Developers will be expected to consider the City's heritage and continue the rich pattern of activity in the core area.*

*While there will be opportunities to create landmark buildings, developments should also contribute positively to the experience of all at street level.*

*Wherever possible the opportunity should be realised to enhance existing and provide new areas of meaningful open space, and the maintenance and improvement of the City's permeability should be considered in all proposals.'*

## Policy EN2 Tall Buildings

*'Tall buildings are defined as buildings which are substantially taller than their neighbourhoods and/or which significantly change the skyline. Proposals for tall buildings will be supported where it can be demonstrated that they*

- *Are of excellent design quality,*
- *Are appropriately located,*
- *Contribute positively to sustainability,*
- *Contribute positively to place making, for example as a landmark, by terminating a view,*

- *or by signposting a facility of significance, and*
- *Will bring significant regeneration benefits.*

*A fundamental design objective will be to ensure that tall buildings complement the City's key existing building assets and make a positive contribution to the evolution of a unique, attractive and distinctive Manchester, including to its skyline and approach views.'*

### Policy EN3 Heritage

*'New developments must be designed so as to support the Council in preserving or, where possible, enhancing the historic environment, the character, setting and accessibility of areas and buildings of acknowledged importance, including scheduled ancient monuments, listed buildings, registered parks and gardens, conservation areas and archaeological remains.'*

### Policy EN9 - Green Infrastructure

*"New Development will be expected to maintain existing green infrastructure in terms of its quantity, quality and multiple function. Where the opportunity arises and in accordance with current Green Infrastructure Strategies the Council will encourage developers to enhance the quality and quantity of green infrastructure, improve the performance of its functions and create and improve linkages to and between areas of green infrastructure. Where the benefits of a proposed development are considered to outweigh the loss of an existing element of green infrastructure, the developer will be required to demonstrate how this loss will be mitigated in terms of quantity, quality, function and future management".*

### Victoria North Strategic Regeneration Framework (SRF)

6.23 The Victoria North SRF (February 2019) (MCC, FEC and partners, 2019) (formerly known as 'Northern Gateway') was approved by MCC's Executive on 13th February 2019. The Proposed Development comprises the entirety of the Red Bank neighbourhood of the Victoria North SRF and a small section of the adjacent New Town neighbourhood. The document provides relevant information on the existing character of the area as well as setting a framework for the scale, type and quality of development that is likely to be appropriate there, including immediately around the Site.

6.24 The SRF advocates a careful consideration of views and vistas, including those to the city centre skyline. The SRF recognises that Red Bank and New Town provides opportunities for buildings of high density with landmark structures contributing to the skyline and reflecting the neighbourhood's close proximity to the centre and Green Quarter. The location of RB10, the tallest of the buildings within the Proposed Development, is identified in the indicative massing diagram and Spatial Framework as a potential location for one such landmark.

## Other Relevant Policy, Standards and Guidance

6.25 The European Landscape Convention (ELC) (2000) provides a foundation for closer co-operation on landscape issues across Europe and was ratified in the UK on 21 November 2006 and became binding on 1 March 2007. The convention identifies the need to recognise landscape in law, to develop and promote landscape policies dedicated

to the protection, management and creation of landscapes, and to establish procedures for the participation of the general public and other stakeholders in the evolution and implementation of landscape policies. It also encourages the integration of landscape into all relevant areas of policy, including cultural, economic and social policies.

6.26 The ELC defines landscape as *"an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors".* This definition covers 'natural, rural, urban and peri-urban areas'. It recognises that landscape has important cultural, ecological, environmental and social dimensions and is a key element of achieving sustainable development. In this urban context, the use of the word 'landscape' is more appropriately termed 'townscape' though the constituent factors remain consistent.

# Assessment Methodology and Significance Criteria

6.27 The TVIA predicts, describes and assesses the likely significant effects that the Proposed Development will have on the townscape and visual resource, covering effects on townscape character and visual effects.

6.28 The TVIA follows best practice guidance contained in the following documents:

- Landscape Institute with the Institute of Environmental Management and Assessment (2013). *Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3)*;
- Landscape Institute (2018). *Townscape Character Assessment*. *Technical Information Note 05/2017 (Revised 2018)*;
- Landscape Institute (2019). *Landscape Institute Technical Guidance Note 02/19, Visual Representation of Development Proposals*; and
- Natural England (2014). *An Approach to Landscape Character Assessment.*

## Townscape and Visual Effects

6.29 The TVIA considers both Townscape and Visual Amenity / Views. Due to the locality of the Proposed Development, located in an urbanised area, the issues normally referred to in an EIA as 'landscape' are referred to herein as 'Townscape'. GLVIA3 (Landscape institute and Institute for Environmental Management and Assessment, 2013) provides detailed guidelines which are applicable to TVIA.

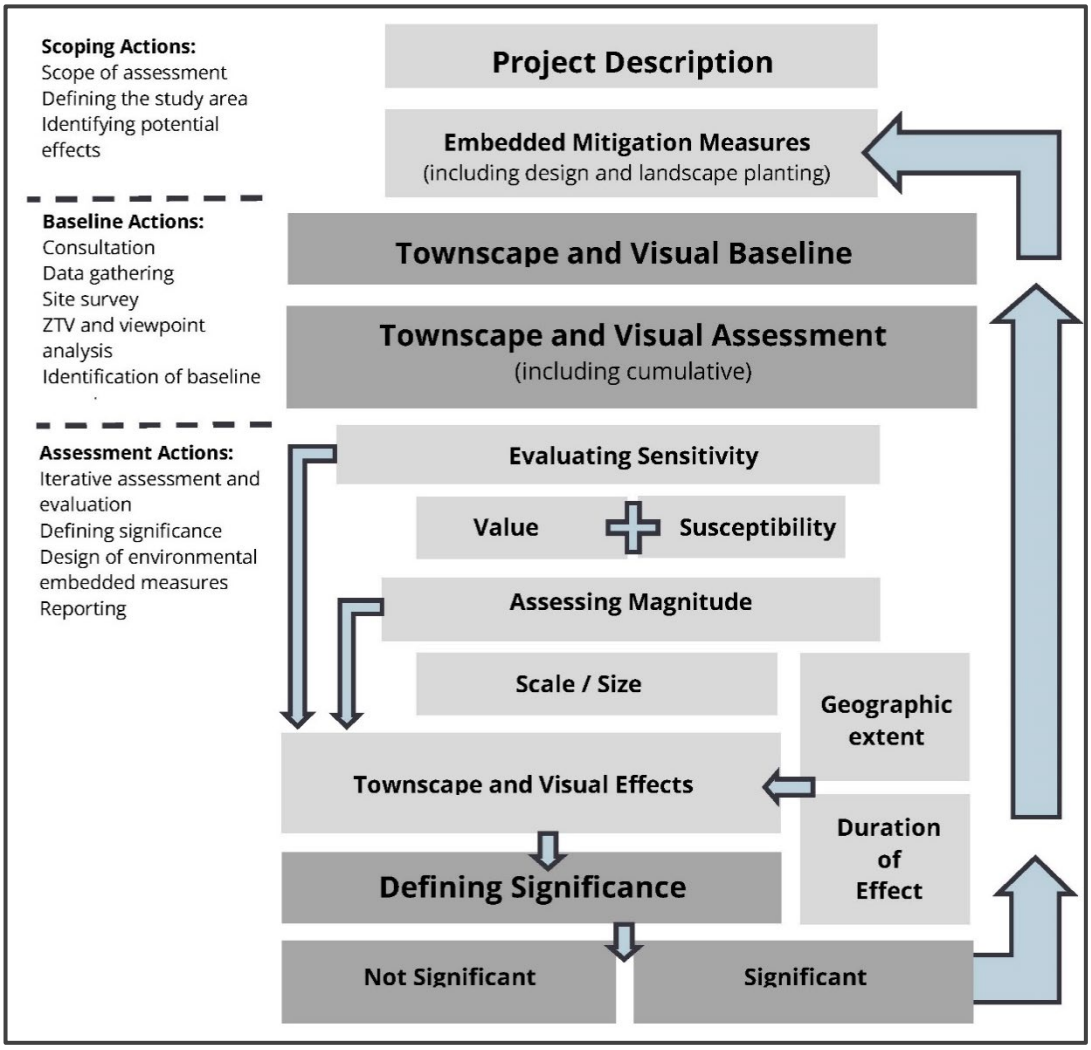
6.30 Townscape is '*the landscape within the built-up area, including the buildings, the relationships between them, the different types of urban open spaces, including green spaces, and the relationship between buildings and open spaces'* (Landscape Institute, 2013 and 2018)*.* Townscape effects are effects on the townscape as a resource in its own right, or effects on perceived character of the townscape.

6.31 Visual amenity is defined (in GLVIA3) as – *'The overall pleasantness of the views people enjoy of their surroundings, which provides the visual setting or backdrop for the activities of the people living, working, recreating, visiting or travelling through an area'*, with visual effects being effects on specific views and visual amenity experienced by people.

## Overview of Approach to TVIA

6.32 An overview of the TVIA process is provided here and illustrated, diagrammatically in **Table 6.1** below.

***Table 6.1**: Overview of approach to TVIA*




6.33 The TVIA assesses the likely effects that the construction (including demolition and groundworks) and operation of the Proposed Development on the townscape and visual resource, encompassing effects on townscape character, designated landscapes, visual effects and cumulative effects.

6.34 The assessment of whether an effect has the potential to be of likely significance has been based upon review of existing evidence base, consideration of commitments made (embedded mitigation measures), professional

judgement, evaluation of sensitivity of the receptor and magnitude of change, and where relevant, recommended aspect specific methodologies and best practice.

6.35 To ensure the provision of a proportionate ES that is focused on the likely significant effects, the assessment takes into account the considerable levels of existing environmental information available, extensive local geographical knowledge and understanding of the Site and surroundings gained from site surveys.

6.36 The townscape and visual assessment unavoidably, involves a combination of quantitative and qualitative assessment and wherever possible a consensus of professional opinion has been sought through consultation, internal peer review, and the adoption of a systematic, impartial, and professional approach.

## Assessment Scenarios

6.37 The structure for the TVIA presented in the ES for Applications 4 and 5 is that of a 'typical' assessment, that is, each application is individually assessed allowing potential impacts, mitigation and effects to be identified for each. This is followed by an assessment of the in-combination effects of applications 4 and 5 together. As the in-combination effects would be the same for both applications they are addressed just once. The effects of both applications in combination with committed cumulative developments (**Table 6.6**) and the SRF are also assessed. The lack of information for the remainder of the SRF inevitably results in a more qualitative assessment.

6.38 The baseline for the TVIA assumes that the HIF advance enabling works and infrastructure works would be substantially complete to enable the outline scheme to be built out in due course as they establish the levels on which these proposals will be built. There would be some overlap of the HIF works (for completion in 2024) with the NT02-04 works (starting in 2023), however, by the time NT02-04 is complete the Red Bank ground works would be complete, so the baseline for the TVIA assumes that the HIF works are in place on the site.

6.39 The assessment scenarios in respect of the TVIA for the Proposed Development are as follows:

***Table 6.2**: TVIA assessment scenarios*

| Assessment | Scenario Reference | Considerations for Scenario |
|---|---|---|
| **Application 4** | Scenario 1a | Demolition, groundworks, and construction effects |
| | Scenario 1b | Operational Effects |
| | Scenario 1c | Cumulative effects with identified Committed Schemes |
| | Scenario 1d | Cumulative effects with identified Committed Schemes + SRF |
| **Application 5** | Scenario 2a | Demolition, groundworks, and construction effects |
| | Scenario 2b | Operational Effects |
| | Scenario 2c | Cumulative effects with identified Committed schemes |
| | Scenario 2d | Cumulative effects with identified Committed Schemes + SRF |

| | | |
|---|---|---|
| **In combination effects of Applications 4 and 5** | Scenario 3a | Demolition, groundworks, and construction effects |
| | Scenario 3b | Operational Effects |
| | Scenario 3c | Cumulative effects with identified Committed schemes |
| **In combination effects of Applications 4 and 5 and SRF** | Scenario 4a | Demolition, groundworks, and construction effects |
| | Scenario 4b | Operational Effects |
| | Scenario 4c | Cumulative effects with identified Committed schemes |

## Significance Criteria

6.40 Information about the Proposed Development and the proposed activities with all stages of the Proposed Development life cycle (construction and operation) is combined with information about the environmental baseline to identify the potential interactions between the Proposed Development and the environment.

6.41 These potential interactions are known as potential impacts. The potential impacts are then assessed for the level of significance of their effect on the receiving environment/receptors. The terms impact and effect are defined below based on GLVIA3 (Landscape Institute with the Institute of Environmental Management and Assessment, 2013):

- Impact: defined as the action being taken; and
- Effect: defined as the change resulting from that action.

6.42 The outcome of the assessment is the determination of the significance of these effects. The process for determining the significance of effects is a two-stage process that involves defining the magnitude of the potential impacts and the sensitivity of the receptors.

6.43 This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors.

6.44 The evaluation of sensitivity takes account of the value and susceptibility of the receptor to the Proposed Development. This is combined with an assessment of the magnitude of change which takes account of the size and scale of the proposed change. By combining assessments of sensitivity and magnitude of change, a level of townscape or visual effect can be evaluated and determined. The resulting level of effect is described in terms of whether it is significant or not significant, and the geographical extent, duration and the type of effect is described as either direct or indirect; temporary or permanent; reversible; cumulative; and beneficial, neutral or adverse.

## Sensitivity

6.45 The sensitivity of townscape and visual receptors is an expression of the combination of the judgements made about the value of that receptor and its susceptibility to the specific type of change or the development proposed. Townscape value is the 'inherent' component, which is independent of the development proposal, while the other component, susceptibility, is development specific.

### Value

6.46 The value of a townscape or view / visual receptor reflects the value that society attaches to that townscape or view. There are a range of factors that are used to establish value but the presence of designations at national or local levels often reflects the level of value or importance they signify to society. The range of factors that can be considered when identifying townscape value include natural heritage, cultural heritage, condition, associations, distinctiveness, recreational, perceptual (scenic), perceptual (wildness and tranquillity) and functional factors (Landscape Institute, 2021). The following are considerations specific to townscape value (Landscape Institute, 2018):

- Buildings, open spaces, or other features, which contribute positively to the character and may be designated – including Conservation Areas, Listed Buildings, Scheduled Monuments, Registered Parks and Gardens. Conservation Areas designated for their special architectural and historic interest may be an important consideration in urban areas.
- Buildings, open spaces, or other features of townscape may be of value outside designated areas. Non-designated heritage assets that afford degree of value, meriting consideration, which are not formally designated.
- Buildings or groups of buildings, and open spaces which have won awards for architecture or design quality, such as Civic Trust or RIBA awards.
- Buildings, open spaces, or other features identified on a local list.
- Greenspaces / green infrastructure or other open spaces and public realm, particularly those that are designated in the Local Plan, well recognised through visitor use and/or have won awards, such as Green Flag or Landscape Institute awards.
- Areas designated and protected for geological or biological conservation, such as SSSIs and, SACs.
- Key or protected views.

### Susceptibility to Change

6.47 The susceptibility of a townscape to change is a reflection of its ability to accommodate the changes that may occur as a result of the addition of the Proposed Development, based on its characteristics, robustness, scale, topography, openness / enclosure, perceptual qualities and the associations between the townscape receptor and

the Proposed Development. The following are considerations specific to susceptibility of townscape character to change (Landscape Institute, 2018):

- Historic development – how the structure and identity of a place has evolved over time and how it may accommodate further change.
- Urban street patterns – the location and setting of buildings and the materials and building styles which contribute to local vernacular, and how liable these are to change.
- Movement and connectivity – pattern, scale and wider connections of roads, streets and passageways can strongly define the structure, levels of activity within an area, how townscape is experienced and therefore how susceptible it is to perceived changes.
- Urban structure and built form – including urban grain, scale/height, massing, density, enclosure, building line, rooflines, building type/use, architecture, materials and condition, and how these may be subject to changes associated with further development.
- Tranquillity – relative to the context, this important in urban areas where even small spaces can provide a degree of tranquillity in comparison to busy streets. Areas with relative tranquillity might affect a way an area is perceived and therefore its susceptibility to changes in character.

6.48 The susceptibility of visual receptors (people) relates mainly to the activity of the viewer (residents, motorists, walkers etc); the experience of the viewer - the extent to which attention or interest may be focused on the view and visual amenity; and the visual relationship between the receptors and the Proposed Development which combine to influence how susceptible viewers are to the potential effects of the Proposed Development.

6.49 Visual receptors that are most susceptible to change are likely to include residents / communities where views contribute to their setting; people who are engaged in outdoor recreation whose attention and interest is on particular views; and visitors to heritage assets or other attractions, where views of the surroundings are an important contributor to the experience. The susceptibility of residents in urban city centres is however, considered to be moderated where they have views of similar development and where they are likely to be accustomed to changes associated with regeneration in the surrounding townscape. High susceptibility to change is reserved for the highest sensitivity views experienced by visitors to assets or attractions where views of the surrounding townscape are highly valued in the setting/experience, such as through recognised townscape designations (for example Conservation Areas). Visual receptors likely to be of less sensitivity to change include motorists who experience dynamic and transitory views; people engaged in outdoor recreation that does not involve appreciation of views; and people at their place of work.

6.50 An overall assessment of the sensitivity of each townscape and visual receptor has been made by combining the assessment of the value of the receptor and its susceptibility to change. In TVIA, sensitivity is specific to the Proposed Development and to the location in question. An overall level of sensitivity has been applied for each visual receptor or view – high, medium-high, medium, medium-low or low, and the basis for this made clear using

evidence and professional judgement in the evaluation of each receptor, with reference to value and susceptibility of the receptor.

## Magnitude

6.51 The magnitude of change affecting townscape and visual receptors is an expression of the scale of the change that will result from the Proposed Development and is dependent on a number of variables regarding the size or scale of the change that will arise as a result of the Proposed Development. The geographic extent over which the change will be experienced is also assessed, which is distinct from the size or scale of change. The criteria for defining magnitude in this chapter are outlined in **Table 6.3** below.

***Table 6.3**: Definition of terms relating to the magnitude of change*

| Magnitude of change | Definition |
|---|---|
| **High** | The Proposed Development will result in a high level of alteration to the baseline characteristics of the townscape or existing view, forming the prevailing influence and/or introducing elements that are uncharacteristic in the baseline townscape or view. The addition of the Proposed Development will result in a large-scale change, loss or addition to the baseline townscape or view. |
| **Medium** | The Proposed Development will result in a medium level of alteration to the baseline characteristics of the townscape or existing view, forming a readily apparent influence and/or introducing elements that are potentially uncharacteristic in the baseline townscape or view. The addition of the Proposed Development will result in a medium-scale change, loss or addition to the baseline townscape or view. |
| **Low** | The Proposed Development will result in a low level of alteration to the baseline characteristics of the townscape or existing view, providing a slightly apparent influence and/or introducing elements that are characteristic in the baseline townscape or view. The addition of the Proposed Development will result in a small-scale change, loss or addition to the baseline townscape or view. |
| **Negligible** | The Proposed Development will result in a negligible alteration to the baseline characteristics of the townscape or existing view, providing a barely discernible influence and/or introducing elements that are substantially characteristic in the baseline townscape or view. The addition of the Proposed Development will result in negligible change, loss or addition to the baseline townscape or view. |

## Significance of Effect

6.52 The significance of the effect upon seascape, landscape and visual receptors is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The particular method employed for this assessment is presented in **Table 6.4**.

6.53 The significance of the effect on each townscape character and visual receptor is dependent on all of the factors considered in the sensitivity of the receptor and the magnitude of change resulting from the Proposed Development. Judgements on sensitivity and magnitude of change are combined to arrive at an overall assessment as to whether the Proposed Development will have an effect that is significant or not significant on each townscape and visual receptor.

6.54 The matrix in **Table 6.4** is used as a guide to help inform the threshold of significance when combining sensitivity and magnitude to assess significance. On this basis potential impacts are assessed as of negligible, minor, moderate and major. In those instances where there would be no effect, the magnitude has been recorded as 'Zero' and the level of effect as 'None'.

6.55 For the purposes of this assessment, any effects with a significance level of major and major/moderate have been deemed significant in EIA terms (red shaded boxes in **Table 6.4**). 'Moderate' levels of effect (indicated in orange in **Table 6.4**) have the potential, subject to the assessor's professional judgement, to be considered as significant or not significant, depending on the sensitivity and magnitude of change factors evaluated. These assessments are explained as part of the assessment, where they occur.

6.56 Significance can therefore occur at a range of levels depending on the magnitude and sensitivity, however in all cases, a significant effect is considered more likely to occur where a combination of the variables results in the Proposed Development having a defining effect on the townscape character or view. Definitions are not provided for the individual categories of significance shown in the matrix and the reader should refer to the detailed definitions provided for the factors that combine to inform sensitivity and magnitude. Effects assessed as being either moderate/minor, minor or negligible level are assessed as non-significant (white boxes in **Table 6.4**).

6.57 In line with the emphasis placed in GLVIA3 upon the application of professional judgement, an overly mechanistic reliance upon a matrix is avoided through the provision of clear and accessible narrative explanations of the rationale underlying the assessment made for each landscape and visual receptor.

***Table 6.4**: Illustrative significance matrix*

| | | Magnitude of Change | | | | |
|---|---|---|---|---|---|---|
| | | High | Medium | Low | Negligible | No Change |
| **Sensitivity to Change** | High | **Major (significant)** | **Major / moderate (significant)** | Moderate (significant or not significant) | Moderate / minor (not significant) | No effect (not significant) |
| | Medium | **Major / moderate (significant)** | Moderate (significant or not significant) | Moderate / minor (not significant) | Minor (not significant) | No effect (not significant) |
| | Low | Moderate (significant or not Significant) | Moderate / minor (not significant) | Minor (not significant) | Negligible (not significant) | No effect (not significant) |

## Geographical Extent

6.58 The geographic extent over which the townscape and visual effects will be experienced is also assessed, which is distinct from the size or scale of effect. This evaluation is not combined in the assessment of the level of magnitude, but instead expresses the extent of the receptor that will experience a particular magnitude of change and therefore the geographical extents of the significant and not significant effects. The geographic extent of the effects varies depending on the specific nature of the Proposed Development and is principally assessed through analysis of the extent of perceived changes through visibility of the Proposed Development using the ZTV (**Figure 6.6 – 6.7**) and field survey verification.

## Duration and Reversibility

6.59 The duration and reversibility of townscape and visual effects is based on the period over which the Proposed Development is likely to exist and the extent to which it will be removed and its effects reversed at the end of that period. The TVIA methodology does not include duration and reversibility as part of magnitude of change, as there is potential that the reversibility aspect could alter or reduce potentially significant effects even though they are long-term. The duration and reversibility of the effects is instead determined separately in relation to the assessed effects.

6.60 Long-term, medium-term and short-term seascape/ landscape effects are defined as follows:

- Long-term – more than 10 years in duration;

- Medium-term – between 1 and 10 years in duration; and
- Short-term – less than 1 year in duration.

6.61 Duration and reversibility are not incorporated into the assessment of magnitude of change but are stated separately in relation to the assessed effects (i.e. as short / medium / long-term and temporary / permanent) and are considered as part of drawing conclusions about significance, combining with other judgements on sensitivity and magnitude, to allow a final judgement to be made on whether each effect is significant or not significant.

## Positive and Negative Effects

6.62 Guidance (Landscape Institute, 2013) on the nature of effect (i.e., positive or negative) states that *'in the LVIA, thought must be given to whether the likely significant landscape and visual effects are judged to be positive (beneficial) or negative (adverse) in their consequences for landscape or for views and visual amenity'*, but it does not provide guidance as to how that may be established in practice. The nature of effect is therefore one that requires interpretation and, where applied, this involves reasoned professional opinion.

6.63 In this assessment the nature of effects refers to whether the landscape and / or visual effect of the Proposed Development is positive or negative (herein referred to as 'beneficial' / 'neutral' or 'adverse'). Townscape and visual effects of development are difficult to categorise in either of these brackets as, unlike other disciplines, there are no definitive criteria by which the effects of development can be measured as being categorically 'beneficial' or 'adverse'. In some disciplines, such as noise or ecology, it is possible to quantify the effect in numeric terms, by quantifying the proportion of a receptor that is affected and assessing the nature of that effect in justifiable terms. However, this is not the case in relation to townscape and visual effects where the approach combines quantitative and qualitative assessment.

6.64 For the purposes of this TVIA, the following definitions have been used to inform assessment of beneficial, neutral and adverse effects arising as a result of the Proposed Development:

- Beneficial effects – contribute to the townscape and visual resource through the enhancement of desirable characteristics or the introduction of new, beneficial attributes. The Proposed Development contributes to the townscape and local distinctiveness by virtue of good design and/or through the introduction of green infrastructure and new landscape planting. The removal of undesirable existing elements or characteristics can also be beneficial, as can their replacement with more appropriate components that integrate with the surrounding townscape context.
- Neutral effects – occur where the Proposed Development fits with the existing townscape character or visual amenity. The Proposed Development neither contributes to nor detracts from the townscape and visual resource and can be accommodated with neither beneficial or adverse effects, or where the effects are so limited that the change is hardly noticeable. A change to the townscape and visual resource is not considered to be adverse simply because it constitutes an alteration to the existing situation.

- Adverse effects – are those that detract from the townscape character or quality of visual attributes experienced, through the introduction of elements that contrast, in a detrimental way, with the existing characteristics of the townscape and visual resource, or through the removal of characteristic elements or features that are key to the townscape character or view.

## Cumulative Effects

6.65 The project alone assessment of Application 4 and 5 assesses the effect of each application against the existing baseline, with the HIF scheme taken as part of the baseline and a number of recently completed developments or projects nearing completion, which will form the baseline by the time in which the Proposed Development's construction works are anticipated to start in Q4 2023. In line with guidance (Landscape Institute, 2013), existing projects and those which are nearing completion are included in the baseline.

6.66 The Cumulative Effects Assessment (CEA) in the TVIA assesses the contribution of the Proposed Development to the effect arising with approved applications (committed schemes), which are either under construction or where construction has not yet started, as listed in **Table 6.6**.

6.67 The contribution of the proposed development to the cumulative effect upon the baseline character/view is assessed, in conjunction with these committed schemes, with the assessment of cumulative effect apportioning the amount of the effect that is attributable to the Proposed Development. Information is provided on how the effects of the Proposed Development would combine and interact with the effects of other committed schemes.

6.68 The projects selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise. A list of projects was reviewed and projects within the TVIA study area compiled (**Figure 6.5**), with potential for cumulative impact interactions. The specific cumulative projects scoped into the CEA for townscape and visual receptors are set out in **Table 6.6** and have been agreed during consultations and at the Scoping stage with MCC.

6.69 Cumulative effects *'result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future'* (Landscape Institute, 2013).

6.70 Guidance (Landscape Institute, 2013) also defines the following types of cumulative effects:

- Cumulative landscape effects are those effects that *"can impact on either the physical fabric or character of the landscape, or any special values attached to it"* (Landscape Institute, 2013); and
- Cumulative visual effects are those effects that can be caused by combined visibility, which *"occurs where the observer is able to see two or more developments from one 'viewpoint' and/or sequential effects which "occur when the observer has to move to another viewpoint to see different developments"* (Landscape Institute, 2013).

6.71 In line with guidance (Landscape Institute, 2013), cumulative effects are assessed in this TVIA as *'the additional changes caused by a proposed development in conjunction with other similar developments'* (not the totality of the cumulative effect).

## Visual Representations

6.72 Zones of Theoretical Visibility (ZTV) and accurate visual representations (AVR) are graphical images produced to assist with the prediction and illustration of townscape and visual effects. The methodology used for the production of the ZTVs and AVRs is in accordance with GLVIA3 (Landscape Institute, 2013) and Technical Guidance on Visual Representation of Development Proposals (Landscape Institute, 2019).

6.73 A 3D model of the Proposed Development within its context has been produced for the purpose of the ZTV and AVRs. This is based on a high-resolution terrain model using the HIF 3D ground model, the proposed detailed public realm design and LIDAR data (1m spatial resolution) for the areas not covered by the other two models.

6.74 Building massing for Application 4 is based on a 3D model of the proposed maximum parameter massing for Application 4, defined by the Parameter Plans (**Volume 3: Appendices, Appendix 5.1**), which indicate the maximum extent of the Development Plots (P1), maximum building heights (P4) and site levels (P5).

6.75 Building massing for Application 5 is based on the 3D model provided by the project architects.

6.76 The contextual model of the surrounding townscape is based on VuCity geometry for the buildings outside the Site in its nearby context, with additional geometry for consented buildings including Victoria Riverside and The Gasworks; supplemented with Environment Agency LIDAR / building height data for the wider townscape of the TVIA study area. Together these represent a building geometry model for the TVIA study area.

6.77 No 3D model information is available for the Strategic Regeneration Framework (SRF). Due to the nature of the Victoria North SRF (which only identifies 'up to' heights with suggested scale, density and form), it is not possible to produce modelling or accurate visual representations (AVRs) to reflect this. Therefore, the assessment of the effects in-combination with the Victoria North SRF undertaken within the TVIA is qualitative using professional judgement.

## Zone of Theoretical Visibility (ZTV)

6.78 The ZTVs shown in **Figure 6.6 – 6.7** have been produced using the viewshed tool within ArcGIS Pro software. Using the 3D model of the Proposed Development within its 3D context, the theoretical visibility of the Proposed Development is displayed factoring in the existing building geometry and visibility to observer features within the TVIA study area. The following ZTVs are included to illustrate the potential visibility of the Proposed Development:

- ZTV Application 4 (**Figure 6.6**). ZTV showing the amount of visibility of different building heights within Application 4, based on the number of storeys visible, using building height information from the parameter plan (P4) (**Volume 3: Appendices, Appendix 5.1**).
- ZTV Application 5 (**Figure 6.7**). ZTV showing the amount of visibility of different buildings (NT02, NT03 and NT04) within Application 5, using building height information from 3D model and the architects' elevation drawings (**Volume 3: Appendices, Appendix 5.2**).

## Accurate Visual Representations (AVRs)

6.79 AVRs or 'verified view' photomontages are presented in **Figures 6.8 – 6.24** for each of the 17 viewpoints agreed with MCC. The existing views were prepared using individual photographic frames taken with a digital SLR camera on a tripod with pano-head attachment, using a fixed 50mm lens, with the camera on a vertical axis. The image size / page height varies depending on the proximity of the viewpoint and vertical scale of the Proposed Development in the view. For closer views, a larger image / page size is required to capture the vertical height at a verifiable scale. AVRs have been prepared in accordance with the technical guidance (Landscape Institute, 2019), using a combination of Navisworks, AutoCad 3ds Max and Photoshop software.

6.80 All AVRs showing Application 4 (**Figures 6.8 – 6.24**) are prepared to 'Type 3' AVR Level 1 standards, i.e. scale verifiable massing shown within a 3D context represented by the photograph. These are based on a 3D model of the proposed maximum parameter massing for Application 4, defined by the parameter plans (**Volume 3: Appendix 5.1**), which indicate the maximum extent of the development plots (P1), maximum building heights (P4) and site levels (P5). These AVRs for Application 4 show the massing of the parameter plan blocks within a 3D context (represented by photographs) for TVIA assessment purposes, but do not show architectural form, detail etc as is typical for an outline application. The parameters for Application 4 development plots are shown in red, so that it is clear where the parameters will sit within the view and do attempt to be 'realistic' in terms of their appearance (other than the maximum parameters/massing of the development plots). The buildings brought forward at detailed application stage will sit within these parameter blocks within each of the development plots.

6.81 AVRs showing Application 5 show materiality of NT02-NT04 buildings in a selection of key views agreed with MCC– Viewpoint 6, 8, 9 and 17 (**Figures 6.13, 6.15, 6.16, 6.24**). All remaining AVRs showing Application 5 (**Figures 6.8 – 6.12, 6.14, 6.17 – 6.23)** have been prepared to 'Type 3' AVR Level 2 standards, i.e. illustrating architectural form and features such as doors, windows and floors (but not with fully rendered materiality). Architects computer generated images (CGIs) are included within the application materials and should be referred for information on the proposed architectural detailing and materiality.

6.82 AVRs in **Figures 6.8 – 6.24** also show Application 4 and Application 5 in the context of agreed cumulative schemes. Cumulative schemes are shown with a scale verifiable wireline (i.e. to Type 3' AVR Level 1 standards) to indicate the location of cumulative schemes within the view. The modelling utilises a combination of geometry licensed for nearby consented buildings and geometry obtained from planning submission drawings for committed

developments in the wider townscape, extrapolated within the 3D model. The baseline viewpoint photography captures completed and partially constructed developments within the 3D context.

6.83 Baseline viewpoint photography was taken between October 2021 and January 2023, prior to implantation of the HIF works. Although the HIF Works form part of the baseline against which the proposals are assessed, they are not shown in the baseline photography or AVRs, due to date at which this photography was taken, which is a limitation of the visualisations. However, where the HIF Works are likely to be visible, this is described in the assessment text.

## Assumptions / Limitations

6.84 A parameter-based design envelope approach has been used for the assessment of Application 4, meaning that the assessment considers a maximum design scenario whilst allowing the flexibility to make design changes in the future in ways that cannot be predicted at the time of submission of Application 4. The assessment of the maximum parameters for each receptor establishes the maximum potential impact and as a result, effects of greater adverse significance would not arise should any other development scenario to that assessed be taken forward in the final detailed project design. The parameters that have been identified to be relevant to the TVIA, including the size / location of Development Plots, building heights and site levels are set out in the project design scenario section of this TVIA and the Parameter Plans (**Volume 3: Appendices, Appendix 5.1**).

6.85 The photographs and other graphic material such as ZTVs and AVRs used in this assessment are for illustrative purposes only and, whilst useful tools in the assessment, can never show exactly what the Proposed Development will look like in reality due to factors such as: different lighting, weather and seasonal conditions which vary through time and the resolution of the image. They are not considered to be completely representative of what is apparent to the human eye. The assessments are carried out from observations in the field and therefore may include elements that are not visible in the photographs. The viewpoints illustrated are representative of views in the TVIA study area but cannot represent visibility at all locations.

6.86 As described above, the photographs and AVRs do not show the HIF Works, despite these being considered as part of the baseline. Where the HIF Works are likely to be visible, this is highlighted in the assessment text.

## Consultation

6.87 A series of pre-application communications and meetings with MCC have taken place to discuss and agree the scope of the EIA, including the TVIA, with a particular focus on the selection of viewpoints and cumulative development projects to be assessed. Viewpoint locations set out in **Table 6.9** and cumulative development projects set out in **Table 6.6** have been agreed through the Scoping Report and consultation communications with MCC. **Table 6.5** summarises key consultation points regarding the TVIA approach.

***Table 6.5**: Consultation*

| Consultee | Application | Date | Comments | Actions |
|---|---|---|---|---|
| MCC | 4 and 5 | 12/12/2022 | Agreed the representative viewpoints to be included in the TVIA. | Viewpoints listed in **Table 6.9** and shown in **Figure 6.4**. |
| MCC | 4 and 5 | 12/12/2022 | Agreed the cumulative schemes to be included in the TVIA cumulative effects assessment. | Cumulative schemes listed in **Table 6.6** and shown in **Figure 6.5**. |
| MCC | 4 and 5 | | Agreement with method for production of AVRs using AutoCAD 3DS Max and Photoshop. | AVRs showing the Proposed Development are presented in **Figure 6.8** to **Figure 6.24**. |
| MCC | 5 | 22/03/2023 | Agreed to show materiality of NT02-NT04 buildings in a selection of key views – Viewpoint 6, 8, 9 and 17. | AVRs showing Application 5 are presented in **Figure 6.8** to **Figure 6.24**. |

6.88 The EIA has also ensured that the public are given early and effective opportunities to participate in the decision-making procedure. Public consultation feedback regarding the Proposed Development is summarised in the Statement of Community Involvement, which assist in considering the value assigned to townscape character and views.

# Baseline Conditions

## Introduction

6.89 This section describes the townscape and visual baseline conditions for the Proposed Development. The baseline conditions within the area of land covered by the Application 4 site and within the Application 5 site are described separately at the start of this description of baseline conditions.

6.90 Outside the Site, the townscape and visual baseline of the wider townscape is consistent for both applications within the TVIA 'Study Area' (**Figure 6.1**) and is described collectively for both Application 4 and 5.

## Application 4 – Red Bank Neighbourhood Outline

6.91 The Application 4 area of the Site covers an area of 11.21 ha. It is located within the Red Bank area of the SRF (MCC, FEC and partners, 2019). The northern extent of this area contains the Red Bank Plateau (an area of hardstanding, prepared ground and woodland); Travis Island, an area of hardstanding and vacant commercial premises along the eastern bank of the River Irk within the New Town area; and the Red Bank Viaduct which contains large areas of hardstanding, along with the viaduct itself.

6.92 To the north, the Application 4 area of the Site is bound by existing commercial and industrial uses. To the north-east, the HMG Paint complex and Packaging and Products complex bound the Application 4 area. To the east, the Application 4 area is bound by Collyhurst Road and an area of open greenspace. This greenspace includes Sandhills Park, as well as informal greenspaces, and features grassland and woodland coppice of Alder and Birch, forming part of the green corridor within the Irk Valley. To the south, the Application 4 area is bound by Dantzic Street, on the opposite side of which is the Application 5 area and the emerging Victoria Riverside development. To the south-west, the Application 4 area is bound by an area of hardstanding currently in-use as a car park and the Red Bank viaduct. To the west, the Application 4 area is bound by Red Bank (adopted highway), along which is a residential neighbourhood consisting of a number of mid-rise buildings. The River Irk meanders through the site, generally contained in an open culvert, with limited public access. The topography across the Northern Gateway has notable level changes, with the Irk Valley in the west and a plateau landform in the east.

6.93 The southern extent of the Site occupies an area to the east of Red Bank Viaduct which currently contains a small industrial unit. Roger Street currently connects this part of the Site with Red Bank to the west, and further access within this part of the Site is provided by Chase Street, Crabbe Street and Hargreaves Street, which all connect with Roger Street. From its southern extent, the Site extends north in a narrow strip alongside the viaduct, before opening out to the east into a broader area east of Chase Street. This part of the Application 4 site currently comprises one low-rise industrial unit and areas of vacant land and hardstanding used for car parking. A retaining wall alongside Dantzic Street forms the eastern boundary of this part of the site.

6.94 To the north of this, the site generally widens out to occupy the space between industrial units along Honey Street and Collingham Street to the west, and Collyhurst Road to the east. The northern boundary is formed by a footbridge that connects the industrial estate to the west with Collyhurst Road to the east. There is also a large area of hardstanding formerly occupied by infrastructure associated with the railway line, including an engine shed and railway sidings. The current baseline consists of a large extent of clear vacant land on the former railway sidings. The northern and eastern part of the site is more vegetated than the southern extent and features a notable area of existing woodland vegetation at St. Catherine's Wood, within which trees will be retained to the east of the site within Sandhills Park and those to the west and north removed as part of the HIF works.

## Application 5 - NT02-NT04 Full

6.95 The Application 5 area of the Site covers an area of 2.81 ha, largely consisting of hardstanding and prepared ground. It is located within the New Town area of the SRF (MCC, FEC and partners, 2019).

6.96 To the north, the Application 5 area of the Site is bound by Dantzic Street, beyond which is the Application 4 area of the Site. To the east, the Application 5 area is bound by Dalton Street and a small number of two-storey homes and a mid-rise residential tower building. To the south, the Application 5 area is bound by the railway line into Victoria Station. To the west, the Application 5 area is bound by the emerging Victoria Riverside development.

6.97 There are changes in level across the Application 5 Site, with the landform generally rising to the south and east. A retaining wall separates the south-eastern edge of the Site from higher ground adjacent to the railway viaduct to the south. There are small pockets of vegetation across the site, particularly to the east adjacent to Dalton Street, and in the centre of the Site along the railway viaduct. There is one building within the Site located along the western boundary with Victoria Riverside. The rest of the Site is primarily areas of hardstanding and prepared ground.

## Study Area

6.98 The townscape and visual baseline of the wider townscape is consistent for both applications within the TVIA 'Study Area' (**Figure 6.1**) and is described collectively for both applications.

6.99 Based on an analysis of the area through site visits, desk-based analysis and professional judgement, the study area for the TVIA covers a 1 km radius from the Proposed Development, as shown in **Figure 6.1**. This TVIA study area includes the Site itself (i.e. both 'Application 4' and 'Application 5') and the full extent of the wider townscape around it, with the study area based on the extent of townscape and designated receptors likely to be affected and the extent of the area from which the Proposed Development may have significant townscape and visual effects. The study area was agreed with consultees during scoping.

6.100 The city centre of Manchester is located within the south and south-west of the Study Area. It contains rich historic legacy of Conservation Areas (CAs), listed buildings, and street patterns. The broad Miller Street marks the northern

boundary of the city centre, to the east of which is a grouping of modern residential and office buildings within the 'NOMA' Strategic Regeneration Framework masterplan, including the Meadowside development, which is located to the north of St Michael's Flags and Angel Meadow Park. Between Old Mount Street and Rochdale Road are a series of smaller-scale city blocks, with a dense urban grain based around a regular street pattern. It contains a wide and closely integrated range of uses including commercial, civic, and residential activities set within iconic Victorian Architecture and large municipal buildings.

6.101 Cheetham Hill is located in the north and north-west of the Study Area, while Strangeways and the Green Quarter are located to the west. Large swathes of Cheetham Hill and Strangeways are predominantly characterised by low-rise light industry, set within a tight urban grain based around a strict rectilinear street pattern. The Green Quarter lies in close proximity to the north-west, separated from the Irk Valley by an elevated Victorian railway viaduct (now derelict), and from the city centre by Miller Street and the railway to the south-west. Green Quarter is characterised by modern, high-rise residential apartments blocks, mixed commercial uses, and public realm spaces. The scale and massing of the Green Quarter stands apart from the prevailing low-rise scale of buildings within Strangeways and Cheetham Hill, and instead is more legible in relation to NOMA to the south-west.

6.102 The Irk Valley occupies the centre and parts of the north of the Study Area, and extends out to the north-east of Manchester. This is noted one of the key 'green fingers' into the city centre. The valley comprises a series of open, green spaces, including Queen's Park, that follow the sinuous course of the river, fringed by urban and suburban areas that occupy the upper slopes of the valley and pinch the valley into relatively narrow areas of greenspace. The eastern fringes of the Irk Valley are bordered by the residential suburbs of Collyhurst, and Harpurhey further to the east. A railway corridor passes broadly north-eastwards from Manchester Victoria station, crossing the townscape on an elevated viaduct, and passes to the south and east of the Irk Valley.

6.103 The area to the south of the River Irk and the railway line is New Town / New Cross. A number of large vacant plots, containing fragments of undeveloped scrub, scattered light industry, or large areas of car parking, are likely to be developed in line with the strategic regeneration of this part of the city, as part of the Victoria North SRF (MCC, FEC and partners, 2019). To the east and south-east of the Study Area are the residential suburb of Miles Platting and Ancoats (Conservation Area).

## Current Trends for Change

### Victoria North Strategic Regeneration Framework (SRF)

6.104 The Victoria North SRF (MCC, FEC and partners, 2019) (formerly referred to as 'Northern Gateway'), identifies the Site and areas immediately surrounding it, including New Cross and Collyhurst, as areas in which residential-led "*transformational regeneration*" can be accommodated. The SRF also outlines MCC's commitment to the delivery of this regeneration.

6.105 The SRF provides the reasoning behind the regeneration of the Victoria North SRF area as such:

> *"The population growth in Manchester and the city region is driving the need to provide a significant number of new homes and the social infrastructure required to support them. The Northern Gateway presents a hugely important and sustainable opportunity to deliver a significant proportion of thee homes within the extended city centre, to support anticipated growth."* (MCC, FEC and partners, 2019).

6.106 The SRF identifies seven neighbourhoods within the Victoria North SRF area as locations in which 15,000 new homes can be built within the next 15 – 20 years, alongside development of other uses including employment, social, community and cultural. Plots within the area of the SRF are illustrated in **Figure 6.5**. The seven neighbourhoods of the SRF comprise Collyhurst Village, South Collyhurst, New Cross, New Town, Red Bank, Vauxhall Gardens, and Eggington Street and Smedley Dip. The Application 4 and 5 sites are located in the Red Bank and New Town areas respectively, which forms the western and south-western edge of the Victoria North SRF area.

6.107 The Victoria North SRF sets out guidance for Red Bank to be *'a residential-led neighbourhood, where the unique topography and river setting will make it a suitable location for high-density development, set in a green valley'* (MCC, FEC and partners, 2019), with *'tall buildings located in strategic locations in relation to links to transport nodes, and where visually appropriate to serve as local landmarks'*. New Town *'will be a residential-led neighbourhood at the southern extent of the SRF area and represents an opportunity to establish a range of higher-density housing types and tenures'*, with *'High density and taller buildings…. concentrated closer to the city centre and along the operational railway'* with *'taller buildings…. serving as landmarks to define the character of the place'* (MCC, FEC and partners, 2019).

6.108 The SRF identifies several Core Objectives for the Victoria North SRF area, which are:

- *"A unique and high quality residential-led regeneration scheme;*
- *A varied network of high-quality green streets and public open spaces;*
- *Manchester's unique city river park;*
- *Build on the best of what is there;*
- *Improve connectivity across the Northern Gateway and beyond;*
- *Create new gateways to and from the city centre;*
- *Promote truly sustainable places; and*
- *Foster the emergence of local retail and service hubs."* (MCC, FEC and partners, 2019)

## Housing Infrastructure Fund (HIF)

6.109 To unlock the full potential of the area, MCC has secured £51.6m of Government Funding through the Housing Infrastructure Fund (HIF) to deliver critical infrastructure and enabling works within the Initial Development Area. Practical completion of the infrastructure and enabling works is anticipated by March 2024 on land controlled and owned by MCC and FEC at Red Bank. Due to the HIF funding and programme requirements, it is necessary to approach the delivery of this development project by a series of separate planning applications consisting

Application 1 HIF Advance Enabling Works; Application 2: HIF Infrastructure Works; and Application 3: HIF Utility Works. These have now been approved and it is assumed for the purposes of the TVIA, that the HIF Works would be part of the baseline conditions, as they would be substantially complete by the time that works on the NT02-04 site begin and will also be completed to enable the Red Bank Neighbourhood Outline scheme to commence, as they establish the levels on which most of the outline will be built.

## Townscape Regeneration and Existing Development

6.110 One of the major transformations taking place across the study area is a change in use from industrial buildings and vacant plots to modern offices or residential units. The areas to the immediate south of the Site are going through significant regeneration, resulting in changes in the townscape character. The current trend for change in the baseline townscape arising from these committed developments is towards high residential towers, with heights generally of up to around 40 storeys, set against the backdrop and context of lower massing industrial and residential buildings towards the north of the study area. The city centre is typically more uniform, with its iconic Victorian architecture and large municipal buildings, although regeneration is also taking place across this area.

6.111 A number of development projects have recently been completed within the TVIA study area and are part of the baseline, including Meadowside (with three buildings currently constructed at up to 22 m, and with planning permission for a further 41 storey building), the Quarters (up to 8 storeys), Deluna (7 storeys), Manchester College Strangeways Campus (5 storeys), 55 Queen Street (17 storeys) and The Copper Works (up to 14 storeys).

6.112 Several other development projects are nearing completion and will form part of the baseline by the time in which the Proposed Development's construction works are anticipated to start in Q4 2023. These include the fourth Meadowside building (40 m), Ancoats Gardens (up to 15 storeys), 4 Angel Square (11 storeys), New Victoria (up to 26 storeys), the Glassworks (up to 17 storeys), Mulbury City Oldham Road (Mulbury City) (12 storeys) and Bendix Street (Mulbury City) (12 storeys). The development of these projects, many of which are tall buildings, together with others in the wider townscape, will notably change the scale, massing and elevation of the Manchester skyline in the study area.

6.113 There has also been further regeneration activity taking place within the wider city, beyond the Study Area. In particular, there is an area featuring a high concentration of tall buildings within the Deansgate and Castlefield areas of the city centre. This includes the Deansgate Square South Tower (65 storeys), The Blade (52 storeys), Elizabeth Tower (52 storeys) and Beetham Tower (47 storeys).

6.114 There are two areas within the Study Area which form particular focal points for this regeneration activity. These are the areas around NOMA (TCA2) and New Cross (TCA10) to the north of Manchester city centre, as well as the Greengate area to the west of the River Irwell in the south-west of the city centre, where there is a particular concentration of recent development of tall buildings that are changing the Manchester skyline and extending the city centre scale.

## Committed Schemes

6.115 Committed schemes (approved applications), either under construction or where construction has not yet started, will also result in further notable changes to the Manchester skyline over the coming years. In particular, Cortland at Colliers Yard, which is currently under construction in Greengate, will be up to 50 storeys in height when complete. Within NOMA and New Cross, committed developments include Meadowside (up to 40 storeys), which is currently under construction, and The Gasworks (up to 34 storeys) which is subject to an approved planning application (pending s106 agreement).

6.116 Regeneration will result in further change as schemes in planning or under construction are completed, with increasing numbers of tall buildings within the city centre and adjacent areas extending the scale of tall buildings out from the city centre and changing the city skyline.

6.117 The changing townscape context is reflected by a number of committed schemes that have approved applications, which are either yet to start construction or are under construction. These cumulative schemes included in TVIA were agreed in consultation with MCC and are listed in Table 6.6 and mapped in Figure 6.5. These committed developments are considered further within cumulative effects assessment of this TVIA.

***Table 6.6**: Committed Developments included in TVIA*

| TVIA Ref | Location | Planning Ref | Status |
|---|---|---|---|
| 1 | Collyhurst Village | 129393/VO/2021 | Application approved (under construction) |
| 2 | Osborne Yard | 127971/FO/2020 | Application approved (construction not started) |
| 3 | The Gasworks | 128248/FO/2020 | Application approved (construction not started) |
| 4 | Meadowside | 116366/FO/2017 | Application approved (under construction) |
| 5 | 25 Rochdale Road | 127537/FO/2020 | Application approved (construction not started) |
| 6 | 2 & 3 Angel Square | 124973/FO/2019 | Application approved (construction not started) |
| 7 | Victoria Riverside | 126944/FO/2020 | Application approved (under construction) |
| 8 | 87 Rochdale Road | 131708/FO/2021 | Application approved (construction not started) |
| 9 | 40 Swan Street | 128997/FO/2020 | Application approved (construction not started) |
| 10 | Swan House | 121380/FO/2018 | Application approved (under construction) |
| 11 | New Cross Central | 124888/FO/2019 | Application approved (under construction) |
| 12 | 20 – 36 High Street | 121375/FO/2018 | Application approved (construction not started) |

| TVIA Ref | Location | Planning Ref | Status |
|---|---|---|---|
| 13 | Peeler's Yard | 125678/FO/2019 | Application approved (construction not started) |
| 14 | Great Ducie Street | 132416/FO/2021 | Application approved (construction not started) |
| 15 | Mirabel Street | 122280/FO/2019 | Application approved (construction not started) |
| 16 | Manchester Arena Expansion | 127901/FO/2020 | Application approved (construction not started) |
| 17 | 39 Deansgate (Speaker's House) | 131314/FO/2021 | Application approved (construction not started) |
| 18 | Island, John Dalton Street | 130553/FO/2021 | Application approved (under construction) |
| 19 | Eliza Yard | 130354/FO/2021 | Application approved (construction not started) |
| 20 | Ancoats Mobility Hub | 130627/FO/2021 | Application approved (under construction |
| 21 | 1 Lord Street | 113914/FO/2016 | Application approved (construction not started) |
| 22 | Uptown | 18/71330/FUL | Application approved (under construction) |
| 23 | Maldron Hotel, Chapel Street | 20/76134/FUL | Application approved (under construction) |
| 24 | Cortland at Collier's Yard / Bankside | 19/74465/HYBEIA | Application approved (under construction) |
| 25 | Embankment Exchange | 15/66806/FUL | Application approved (under construction) |
| 26 | Waterloo Place | 19/74205/FULEIA | Application approved (construction not started) |

# Townscape Baseline

## Townscape Character

### Overview

6.118 The Site is largely located within the Lower Irk Valley neighbourhood, which occupies the western parts of the Victoria North SRF, and the Site and adjacent areas can be characterised as a relatively under-developed and under-utilised area of land adjacent to the city centre. The area currently retains a legacy of industrial use, limited existing infrastructure, river valley topography and significant changes in levels, along with the presence of both operational and redundant rail structures. The southern extent of the Lower Irk Valley (around Dantzic Street and Roger Street) interfaces with the northern boundary of the NOMA Estate and Cheetham Hill Road and is delineated to the south by a railway viaduct that provides rail and Metrolink services to and from Manchester's Victoria Station. This viaduct creates a physical and visual barrier between the Lower Irk Valley and NOMA. Land uses within the

Site include surface and commuter car parks, a former waste management site and a former industrial warehouse that now contains some smaller-scale commercial businesses. Although the natural topography of the river valley has been levelled to accommodate industrial uses, a sharp incline is caused by the retaining wall which lies adjacent to the railway viaduct to the south, close to the southern boundary of the Site. The river is currently enclosed in an open culvert and opportunities exist to significantly enhance its amenity value and positively improve its present contribution to the area, while addressing existing flood risk issues.

### Urban Grain

6.119 To the west of the Site, the urban grain is dense and rigid, with streets laid out in a regular grid pattern. The grain becomes more informal to the north of the Site and contains buildings of much more substantial floorplate. Within the Site and areas to the east the grain is sparse, with built development informally places amid large, open areas frequently as a result of demolition. This area reflects the industrial past and subsequent decline of industry in this part of the city. Rochdale Road forms a major strategic route into the city centre but the importance of this route is currently not reinforced by consistent buildings frontage. To the south of the Site, the urban grain is more varied, with a visible range of building shape and size reflecting the range of uses, redundant areas, and regenerated sites on the fringes of the city centre.

### Land Use

6.120 The land within the Site and land to the east is under-used as a result of the industrial heritage and subsequent decline. Large areas to the north-west of the Site remain predominantly industrial in use. To the east and south, land use is primarily residential with associated uses. Towards the city centre to the south land use is more mixed land use, with a substantial proportion of the land use being residential, with the additional of commercial land use, industrial use and green and public open space (St Michael's Flags and Angel Meadow Park). Additional uses include a major transport hub, leisure and civic uses reflecting the city centre fringe location of the area. The Site and areas to the east and immediate south where clearance of former industrial uses has taken place represent substantial 'voids' in the land use within close proximity to the city centre. The Site is affected by the legacy of more than 150 years of industrial uses and Victorian / pre-Victorian infrastructure, with modified waterways; significant operational and redundant rail infrastructure; limited sewerage, water, electricity and gas infrastructure; and contaminated sites associated with textile manufacturing and other heavy industries. Historically the area was used as railway sidings, following the route of the former Prestwich Branch of the Lancashire and Yorkshire Railway which started at Victoria Station to the south-west before heading north west. This is now disused and forms a plateau above the River Irk valley to the south-east.

### Public Open Space and Woodland

6.121 St. Catherine's Wood located within the Site was intended to form the gateway to the wider Irk Valley when it was created in 2000, however it currently lacks accessibility and connectivity to the wider green space and movement network and shows evidence of anti-social behaviour. The majority of tree cover on site within St Catherine's wood comprises large groups of self-set silver birch and goat willow regeneration of varying ages with occasional

established trees, generally around the boundaries. Although poorly managed, the woodland forms a key feature within the study area, helps to define the river corridor and creates a wider green corridor within the Irk Valley. A former quarry, Sandhills park, located to the north of the Site, is well used by local residents and provides elevated views towards the Site. St Michael's Flags and Angel Meadow Park is located to the south of the Site and forms a green connection to the city centre.

## Movement and Linkages

6.122 The Site is well connected by secondary/minor vehicular routes to the city centre to the south, and wider context. It is near key bus and cycle routes, strengthening the connection moving into the city centre. Manchester Victoria Station is the nearest railway station and is located approximately 420m southwest of the Site. The station predominantly provides local and regional mainline services to the north of England. Cycling and walking routes are currently constrained by numerous barriers to movement including topography, woodland and vegetation, and physical barriers including the River Irk and railway viaduct. The Site does not currently contribute positively to the wider movement and linkages network.

## Strategic Character Areas (SCAs)

6.123 Strategic Character Areas (SCAs) are identified within the Core Strategy Development Plan Document (DPD) (MCC, 2012). Policy EN1 relates to "Design Principles and Strategic Character Areas":

> *"All development in Manchester will be expected to follow the seven principles of urban design, as identified in national planning guidance and listed above and have regard to the strategic character area in which the development is located. Opportunities for good design to enhance the overall image of the City should be fully realised, particularly on major radial and orbital road and rail routes…"*

6.124 Eleven SCAs are identified within the Manchester city area, at a strategic scale, within which the Site falls within the boundaries of the following SCAs:

- Central Art SCA: Described by the DPD as:

> *"The character of the area we have today is predominantly one of 1960's social housing estates and zoned industrial areas bisected by the transport network and largely resulting from the comprehensive redevelopment of the past. Significant areas of employment are found where this area overlaps with the fringe of the City Centre such as at Strangeways which is a large, distinctive, entirely industrial area suitable for further employment growth. Much of the Central Arc is experiencing regeneration with some contemporary urban solutions, for example in Hulme, now complete, and some still to be progressed.*
>
> - *The opportunity exists for development on a large scale using innovative urban design solutions. These should use District Centres and key nodes of public transport as focal points and involve existing communities. The opportunity should also be taken to use the canals to create a distinctive urban environment and enhance access through the City."*

- City Centre SCA: Described by the DPD as:

*"The City Centre contains a rich legacy which reflects its urban evolution to the current day and includes listed buildings, conservation areas, archaeological remains and an historic street pattern. Its core area presents a particularly dense environment that accommodates a wide and closely integrated range of uses including commercial, civic and residential activities. Relative to the amount of development there is limited open space and this includes a range of civic and less formal green spaces and waterways. Outside the core and associated with the Inner Relief Route there are less active and less densely developed areas with significant elements of cleared land. The City Centre is the focus of the City's transport routes.*

- *Developers will be expected to consider the City's heritage and continue the rich pattern of activity in the core area.*
- *While there will be opportunities to create landmark buildings, developments should also contribute positively to the experience of all at street level.*
- *Wherever possible the opportunity should be realised to enhance existing and provide new areas of meaningful open space, and the maintenance and improvement of the City's permeability should be considered in all proposals."*

- Irk Valley SCA: Described by the DPD as:

*"A tree-filled river valley, steeply cut in parts, used as informal open space. This river valley is bounded by and still contains many areas of low density residential and industrial activity with occasional formal open spaces. Its green character stops abruptly at Dantzic Street/Dalton Street where its character becomes more like that of the City Centre.*

- *Development within or alongside the valley sides should also seek to enhance the valley's semi-natural appearance and function.*
- *Views into, out of and along the valley are to be considered."*

## Townscape Character Areas (TCAs)

6.125 A finer grained character assessment of the townscape character of the study area has been undertaken as part of the TVIA, to provide a townscape character baseline that is appropriately detailed to the assessment of the Proposed Development and TVIA study area. Townscape Character Areas (TCAs) are defined within the TVIA study area (**Figure 6.3**), informed by desk study analysis of the SCAs, townscape character described within Victoria North SRF and surveys undertaken within the site and TVIA study area. Twelve TCAs are identified within the TVIA study area (**Figure 6.3**), with a baseline description of each TCA provided in Table 6.7 together with an evaluation of their sensitivity to change.

***Table 6.7**: Townscape Character Areas – Baseline and Sensitivity to Change*

| Criteria | Baseline Conditions and Sensitivity to Change |
|---|---|
| **TCA 1: Lower Irk Valley** | |

| Criteria | | Baseline Conditions and Sensitivity to Change |
|---|---|---|
| Baseline | | The underlying topography of this area is that of the Irk river valley. The area is bisected by the River Irk, which lies mainly within channel but which has influenced the topography of the surrounding area. The natural topography of the river valley has been altered and levelled in places, and there are significant changes in levels across parts, particularly around a retaining wall towards the south-eastern edge of the TCA. Parts of the TCA also rise steeply to the east and west of the river itself, particularly close to the north of the TCA on the western valley side, where the landform rises towards a plateau created to accommodate prior industrial use.<br><br>Land use across the area includes a legacy of industrial use, railway infrastructure, car parks and industrial warehouses. Railway line pass along the southern and eastern edges of the TCA, and there is a large former carriage sidings site within the TCA. A brick Victorian viaduct delineates the southern boundary of the TCA and provides both rail and metrolink services to Manchester Victoria station.<br><br>Within lower lying and level parts of the river valley, towards the south of the TCA, land use includes industrial areas, including a waste management company, surface car parks and several commercial units. There are several areas of formerly industrial land that are currently vacant or derelict. Towards the north, parts of the valley are occupied by industrial units associated with HMG Paints and Packing Products.<br><br>The river has been culverted and passes through the centre of the TCA. Vegetation within the TCA includes woodland along the river valley and railway lines, and grassland across higher parts to the east, including at Sand Hills Park. St. Catherine's Wood is a notable area of existing vegetation, towards the south-western part of the TCA. The woodland comprises plantation broad-leaved woodland and semi-natural broad-leaved woodland and a network of formal and informal recreational pedestrian paths.<br><br>Pedestrian and road access into the area is limited. Existing roads and routes into the area include Roger Street which connects with Red Bank to the west; Dantzic Street and Dalton Street which connect with New Cross and Collyhurst to the south-east; Collyhurst Road which passes along the eastern edge of the TCA and provides access to HMG Paints and Packaging Products; and a railway underpass which connects with Collyhurst to the east. Committed development currently under construction within this TCA: 7, Victoria Riverside. |
| Value | Low | This TCA is not covered by any townscape designations or conservation areas which may denote a special townscape value. However, it does feature areas of greenspace which form part of the setting for surrounding TCAs. The Grade II listed Union Bridge is also located within this TCA, and contributes positively to its townscape value. |
| Susceptibility | High | The Proposed Development is located within this TCA therefore it is liable to direct changes associated with the construction and operation of the Proposed Development. This TCA is currently relatively open in character and forms the |

| Criteria | | Baseline Conditions and Sensitivity to Change |
|---|---|---|
| | | setting of several other TCAs towards Manchester city centre. Development across the TCA is generally low-rise and low-density. The susceptibility of this TCA to townscape effects arising from the Proposed Development is considered to be high. |
| Sensitivity | Medium | The combination of low value and high susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development. |
| **TCA 2: NOMA** | | |
| Baseline | | NOMA is an area to the north of Manchester City Centre currently undergoing regeneration. The area is bounded to the north by the railway line from Manchester Victoria; to the east by Gould Street; to the south by Rochdale Road; and to the west by Miller Street. The topography slopes down towards the railway line which borders the Lower Irk Valley. The area has undergone redevelopment in recent years and land use generally comprises high-rise retail, office and residential space. Several areas are currently undergoing construction, and further development is approved. There are a small number of historic red brick buildings, including the Grade II listed Charter Street Mission towards the north of the area. The historic St Michael's Flags and Angel Meadow Park is located at its north-east extent.<br>Committed development currently under construction within this TCA: 4, Meadowside.<br>Committed development consented within this TCA: 5, 25 Rochdale Road; 6, 2 and 3 Angel Square. |
| Value | Medium | This TCA is not covered by any townscape designations or conservation areas which may denote a special townscape value. However, it does feature several Grade II listed buildings, which contribute positively to the townscape value of the area, as well as the public park at St Michael's Flags and Angel Meadow. |
| Susceptibility | Low | Due to the regeneration taking place across this area, there are an increasing number of buildings of large scale and massing, which lowers the susceptibility of this TCA to townscape effects arising from the Proposed Development. The area has an active and vibrant character capable of absorbing substantial change without loss of characteristics. Susceptibility to change is considered to be low. |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development. |
| **TCA 3: Strangeways** | | |
| Baseline | | An extensive area of mixed-used development to the west of the Lower Irk Valley. Development across this area generally comprises low-rise industrial and commercial units, although there is also an area of modern high-rise residential development within the Green Quarter at the south-eastern extent. There are several historic buildings, including Strangeways Prison and St Chad's Roman Catholic Church, the spires of both of which can be seen from across the area and beyond. Cheetham Hill Road and Bury New Road form major routes into Manchester city centre from the north and north-west, and pass through this area. There are some small pockets of residential |

| Criteria | | Baseline Conditions and Sensitivity to Change |
|---|---|---|
| | | development towards the north of the area, and some small associated greenspaces.<br>Committed development consented within this TCA: 14, Great Ducie Street; and 21, 1 Lord Street. |
| Value | Low | This TCA not covered by any townscape designations or conservation areas which may denote a special townscape value. However, it does feature several clusters of Grade II listed buildings, including at Strangeways Prison and along Cheetham Hill Road, as well as the Grade II* listed Manchester Jewish Museum however the majority of this TCA is defined by low-rise industrial and commercial units, often in relatively poor condition and of low townscape value. |
| Susceptibility | Medium | Changes in neighbouring areas are considered to have limited association with the townscape character of this TCA. The TCA has been subject to visibility of modern development of a similar nature to the Proposed Development in the neighbouring TCAs of NOMA, New Cross and City Centre, and an area within the TCA around Green Quarter has also experienced recent high-rise development, albeit of a smaller scale than Proposed Development. The influence that the Proposed Development could have on this TCA is considered to occur externally in the city centre backdrop and contained to the eastern areas of the TCA with more association with the adjacent Irk Valley, and susceptibility is therefore considered to be medium. |
| Sensitivity | Low | The combination of low value and medium susceptibility results in this TCA, on balance, having a low sensitivity to changes associated with the Proposed Development. |
| **TCA 4: Manchester Fort** | | |
| Baseline | | An area of retail development, comprising large-scale retail units, hot food retailers and extensive car parking. Cheetham Hill Road runs through the centre of the area and connects it with the adjacent Strangeways and Cheetham Hill TCAs. The retail units are split into two main areas, with the larger development to the east of Cheetham Hill Road, and a smaller development to the west. Access to both areas is provided from this route. The topography is generally level, and outward views are limited by the built form. There are areas of street trees along Cheetham Hill Road and within the car parks.<br>There is no committed development consented or under construction in this TCA. |
| Value | Low | This TCA is not covered by any townscape designations or conservation areas which may denote a special townscape value, and it does not feature any notable buildings, open spaces or other features which would contribute to a higher townscape value. |
| Susceptibility | Low | This TCA is considered to be of low susceptibility to changes in townscape character resulting from the introduction of the Proposed Development. The Lower Irk Valley is visually and physically separate from this TCA, with potential for changes associated with the Proposed Development to occur to its skyline backdrop, however the character of the TCA is defined by commercial/retail |

| Criteria | | Baseline Conditions and Sensitivity to Change |
|---|---|---|
| | | park development of Manchester Fort, which has a low susceptibility to changes in character in the wider townscape. |
| Sensitivity | Low | The combination of low value and low susceptibility results in this TCA having a low sensitivity to changes associated with the Proposed Development. |
| **TCA 5: Transport & Education** | | |
| Baseline | | An area to the west of the Lower Irk Valley, focussed on the Queen's Road Metrolink Depot, two educational facilities and an area of sports pitches. The Irish World Heritage Centre is also located within this TCA. The area is bounded to the east by Metrolink railway sidings, and to the west by retail developments at Manchester Fort. Development across the area is low-density, and generally set within an area of grassland. Deciduous woodland along the Irk Valley borders the area to the south-east, and woodland to the north-west separates the area from residential development within Cheetham Hill. The topography generally slopes down towards the Irk Valley to the east, and there are views from higher parts of the area of high-rise development towards the city centre. There is no committed development consented or under construction in this TCA. |
| Value | Low | This TCA is not covered by any townscape designations or conservation areas which may denote a special townscape value, and it does not feature any notable buildings, open spaces or other features which would contribute to a higher townscape value. It's townscape character is defined by educational and transport (Metrolink depot) uses primarily, which have a low townscape value. |
| Susceptibility | Medium | This TCA is considered to be of medium susceptibility to changes in townscape character resulting from the introduction of the Proposed Development. The Lower Irk Valley lies to the immediate west and south of the TCA, with visual associations between the TCA and the potential changes associated with the Proposed Development in its backdrop, however the character of the TCA is defined by institutional areas of the educational facilities and Metrolink Depot, whose fundamental character is not that liable to changes associated with development in the wider townscape, despite the visual association with the valley, and on balance is assessed as having a medium susceptibility to change. |
| Sensitivity | Medium | The combination of low value and medium susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development. |
| **TCA 6: Cheetham Hill** | | |
| Baseline | | Predominantly a residential area, largely comprised of low-rise terraced housing. The area is bounded to the south by Queen's Road, although several pockets of residential development extend to the south of Queen's Road and are included within this TCA. Cheetham Hill Road passes north-south through the centre of the area, while the railway passes along the eastern boundary through a wooded corridor. The River Irk passes to the east of the area. A well as residential development, there are several other land uses, including educational facilities, Greater Manchester Museum of Transport and Queens Road Bus Depot. Development is relatively low-density, and there are some areas of informal greenspace. There is no committed development consented or under construction in this TCA. |

| Criteria | | Baseline Conditions and Sensitivity to Change |
|---|---|---|
| Value | Medium | This TCA not covered by any townscape designations or conservation areas which may denote a special townscape value. However, there are two Grade II listed buildings within the study area. There are also areas of red-brick terraced housing which are a characteristic typology across the wider study area, and which indicate a higher townscape value. |
| Susceptibility | Low | This area is considered to be of medium susceptibility to changes in townscape character resulting from the introduction of the Proposed Development in a neighbouring TCA. The Lower Irk Valley currently provides a setting for the low-rise residential development within this TCA, however changes associated with the Proposed Development will be geographically and visually separated from the TCA, with intervening retail parks (Manchester Fort) and transport depots (Metrolink). The northern part of the Lower Irk Valley, closest to the Cheetham Hill TCA, are not subject to changes as a result of the Proposed Development. |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development. |
| **TCA 7: Collyhurst** | | |
| Baseline | | A primarily residential area located to the east of the River Irk. The area has a history of industrial use, but development now primarily comprises low-density residential properties including terraced, semi-detached and detached houses, and a mixture of high-rise and low-rise flats. Generally, high-rise buildings are focussed towards the south of the area, nearer the city centre, while towards the north development becomes smaller in scale. Several important transport routes pass through the area including railway lines and the major arterial route of Rochdale Road. There are a number of informal greenspaces across the area, including on a former quarry at Sand Hills and a former colliery.<br>Committed development currently under construction within this TCA: 1, Collyhurst Village. |
| Value | Medium | This TCA is not covered by any townscape designations or conservation areas which may denote a special townscape value. However, the Grade II listed Roman Catholic Church of St Patrick is located towards the south of the TCA, and it does feature several areas of greenspace which are likely to be locally valued by residents and visitors to the area. |
| Susceptibility | Medium | This area is considered to be of medium susceptibility to changes in townscape character resulting from the introduction of the Proposed Development in a neighbouring TCA. The Lower Irk Valley currently provides a setting for the low-rise residential development within this TCA, and changes associated with the Proposed Development have the potential to result in effects on the perceived character of this TCA, due to the fairly close proximity and association. |
| Sensitivity | Medium | The combination of medium value and medium susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development |
| **TCA 8: Miles Platting** | | |
| Baseline | | An area of predominantly residential development, located to the south-east of Collyhurst. The boundary between these two residential neighbourhoods |

| Criteria | | Baseline Conditions and Sensitivity to Change |
|---|---|---|
| | | has been defined along New Allen Street, although in reality there is a gradual transition between the two. It is a formerly industrial area which has undergone redevelopment. The primary land use is now low-density residential development, with buildings largely dating from the latter half of the 20th Century. Oldham Road is a major route into Manchester city centre and passes through this area. Residential development is generally semi-detached or arranged in small terraces, and arranged along short streets or cul-de-sacs. There are several high-rise blocks of flats along Oldham Road towards the south of the area, as well as a number of low-rise industrial units to the north of Oldham Road at the northern extent of the TCA.<br>Committed development consented within this TCA: 2, Osborne Yard. |
| Value | Medium | The value of this TCA is medium. This TCA is not covered by any townscape designations or conservation areas which may denote a special townscape value. Although located just outside the study area, the Grade II listed Victoria Mill is visible across much of the TCA, and contributes positively to the townscape value of the area. |
| Susceptibility | Low | This area is considered to be of low susceptibility to changes in townscape character resulting from the introduction of the Proposed Development in the Lower Irk Valley, which is geographically and visually separated from the low-rise residential development within this TCA. Changes associated with the Proposed Development have limited potential to result in indirect townscape effects on this TCA, which is situated beyond the intervening Collyhurst TCA at distance from the Proposed Development. |
| Sensitivity | Low | The combination of medium value and medium susceptibility to the Proposed Development would give rise to an overall sensitivity rating of medium for this TCA. |
| **TCA 9: Ancoats** | | |
| Baseline | | The Ancoats Conservation Area forms the core of this TCA. It is bordered to the north by Oldham Road and to the west by Great Ancoats Street. The historic focus of the area is the large cotton spinning mills adjacent to the Rochdale Canal, and residential development towards the north of the area, near Oldham Road, dates from the same period. The area remains predominantly industrial and the buildings are generally of red brick construction and low-rise to mid-rise in scale. Along the western edge of the area, towards the City Centre, there is more modern high-rise development.<br>Committed development currently under construction within this TCA: 29: Ancoats Mobility Hub.<br>Committed development consented within this TCA: 19, Eliza Yard. |
| Value | High | The value of this TCA is high. The Ancoats Conservation Area is located within this TCA, and denotes a higher townscape value. There are a number of Grade II* and Grade II listed buildings, particularly focussed towards the south and west of the TCA, which contribute positively to the townscape value of the area. |
| Susceptibility | Low | This area would be susceptible to changes within its core, however, changes in neighbouring areas are considered to have limited influence on the townscape character of the TCA itself. The TCA has been subject visibility of modern development of a similar nature to Proposed Development in the |

| Criteria | | Baseline Conditions and Sensitivity to Change |
|---|---|---|
| | | neighbouring New Cross TCA, and as such the influence that the Proposed Development could have on this TCA is considered to be minimal. Susceptibility is therefore considered to be low. |
| Sensitivity | Medium | The combination of the high value and low susceptibility of the TCA to the Proposed Development is considered to result, on balance, in an overall sensitivity rating of medium for this TCA. |
| **TCA 10: New Cross** | | |
| Baseline | | An area to the north of Ancoats and south of the Lower Irk Valley with a legacy of historic industrial influences. Oldham Road forms the border to the south, and Rochdale Road forms the border with NOMA along part of the western edge. Towards the south and west of the area, development follows an urban grid street pattern and uses are primarily commercial and residential. This area is undergoing substantial redevelopment, and buildings are generally high-rise, in keeping with development in the neighbouring NOMA and City Centre TCAs. There are also areas of car parking on vacant plots within this area. To the north of the TCA, the land use is dominated by several large-scale plots, including street-level car parking, Manchester Central Community Fire Station and Royal Mail Manchester Sorting Office. There are also a number of low-rise industrial units across this part of the TCA. Access within this north-eastern area is limited.<br>Committed development currently under construction within this TCA: 10, Swan House; 11, New Cross Central.<br>Committed development consented within this TCA: 3, The Gasworks; 8, 87 Rochdale Road; 9, 40 Swan Street; and 13, Peeler's Yard. |
| Value | Medium | This TCA is not covered by any townscape designations or conservation areas which may denote a special townscape value. However, there are a number of Grade II listed buildings towards the south-west of the TCA which contribute positively to the townscape value of the area. The value of this TCA is medium. |
| Susceptibility | Low | Due to the regeneration taking place in this area, there are an increasing number of buildings of large scale and massing in this TCA, which lowers its susceptibility to townscape effects arising from the Proposed Development. Due to this development, the area has a character capable of absorbing substantial change without loss of characteristics. Susceptibility to change is considered to be low. |
| Sensitivity | Medium | The combination of the medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development. |
| **TCA 11: City Centre** | | |
| Baseline | | Much of Manchester City Centre is covered by conservation area designations. Within the study area these comprise Cathedral, Shudehill, Smithfield, Stevenson Square, Upper King Street, St Ann's Square, and Parsonage Gardens Conservation Areas. This TCA comprises a varied urban fabric and a range of land uses and building styles. Historic buildings include Manchester Cathedral and Chetham's School of Music. The retail core of the Manchester is focussed on Market Street and the Arndale Centre, while across other parts of the city centre there are areas of residential, office space and public open space. The |

| Criteria | | Baseline Conditions and Sensitivity to Change |
|---|---|---|
| | | area is generally bounded to the west by the River Irwell and to the north by the Ring Road. Outward views from this area are limited by built form.<br>Committed development currently under construction within this TCA: 9, New Victoria; and 10: Glassworks.<br>Committed development consented within this TCA: 15, Mirabel Street; 16, Manchester Arena Expansion; and 17, 39 Deansgate (Speaker's House). |
| Value | High | The majority of this TCA is covered by conservation area designations, including Cathedral, Shudehill, Smithfield, Stevenson Square, Upper King Street, St Ann's Square and Parsonage Gardens. There are a large number of listed buildings across the area, including the Grade I listed Chetham's Hospital and Manchester Cathedral. |
| Susceptibility | Low | The core areas of the City Centre TCA have limited associated with the Proposed Development due to the extent and scale of development within the city centre and to its north, where constructed and recently completed tall buildings form a physical and visual buffer between the Site and the core areas of the city centre. The potential influence that the Proposed Development may have on this TCA is limited by the scale and influence of this intervening townscape, with changes likely to occur in the background. Susceptibility to change is therefore considered to be low as a whole, while noting that there are areas to the north of the city centre, such as around Victoria, where the susceptibility to changes is locally higher due to its closer proximity to the Site. |
| Sensitivity | Medium | The combination of high value and low susceptibility to changes results in this TCA having a medium sensitivity to changes associated with the Proposed Development. |
| **TCA 12: Salford** | | |
| Baseline | | A primarily residential area to the west of the River Irwell, adjacent to Manchester City Centre and Strangeways. The Flat Iron Conservation Area is located within this TCA. Several pedestrian and road bridges over the River Irwell connect this area with Manchester City Centre, as well as the railway line to Manchester Victoria. Development is generally denser to the south, with high-rise buildings located between the River Irwell and the railway line. Between the railway line and Trinity Way, redevelopment is taking place and there is a mixture of industrial use and high-rise residential properties. To the north of Trinity Way, there are areas of low-rise flats and terraced houses, as well as a large car showroom. There are views over the River Irwell towards Manchester City Centre from parts of this TCA.<br>Committed development currently under construction within this TCA: 22, Uptown; 23, Maldron Hotel, Chapel Street; 24, Cortland at Collier's Yard / Bankside; and 25, Embankment Exchange.<br>Committed development consented within this TCA: 26, Waterloo Place. |
| Value | Medium | The Flat Iron Conservation Area is located within this TCA, and denotes a higher townscape value. There are a number of Grade II listed buildings as well as two Grade II* listed buildings, which contribute positively to the townscape value of the area. These features are generally focussed towards the west of the TCA, towards the edge of the study area. |

| Criteria | | Baseline Conditions and Sensitivity to Change |
|---|---|---|
| Susceptibility | Low | This TCA is considered to be of low susceptibility to changes in townscape character resulting from the introduction of the Proposed Development. The TCA is visually and physically separate from this TCA, with only limited potential for changes associated with the Proposed Development to occur to the distant skyline backdrop, and in the context of the tall buildings located within this TCA and beyond the intervening city centre, such that it is assessed as having a low susceptibility to changes in character resulting from the Proposed Development. |
| Sensitivity | Low | The combination of medium value and low susceptibility results in this TCA having a low sensitivity to changes associated with the Proposed Development. |

## Townscape Designations

6.126 There are no local landscape or townscape designations recognised for their scenic quality and no nationally designated Registered Parks and Gardens (RPGs) or World Heritage Sites located within the study area. The Site is not located within a Conservation Area (CA), but to the south there are nine CAs located within or partially within the study area. These CAs lie within the Ancoats, City Centre and Salford TCAs as follows and identified in **Figure 6.3**:

- Ancoats TCA:
    - Ancoats CA.
- City Centre TCA:
    - Cathedral CA;
    - Shudehill CA;
    - Smithfield CA;
    - Stevenson CA;
    - Upper King Street CA;
    - St Ann's Square CA; and
    - Parsonage Gardens CA.
- Salford TCA:
    - Flat Iron CA.

6.127 These CAs influence the sensitivity of the townscape in the study area. CAs are therefore included in the assessment of sensitivity for each TCA, which is used in combination with the magnitude assessments for the TCAs to assess the likely significant effects of the Proposed Development on the townscape character of the study area.

6.128 Each conservation area has a detailed description within the Manchester City Council / Salford City Council conservation area appraisals detailing the identity, history and townscape of each area as well as opportunities for improvement and enhancement and control of development. Relevant sections from the citation for each of these conservation appraisals have been included in **Table 6.8** below in order for particular townscape sensitivities to be considered in the townscape character assessment.

***Table 6.8**: Conservation Area townscape appraisal extracts*

| Criteria | | Assessment Description |
|---|---|---|
| **Ancoats CA** | | |
| Baseline | | *'The area of Ancoats lies just outside the city centre, immediately to the north of Great Ancoats Street. The principal buildings are the massive cotton spinning mills, which are located adjacent to the Rochdale Canal and the nearby housing. This juxtaposition and inter-linking of manufacturing, transport and residential uses meant that Ancoats functioned as the first industrial estate in the world… Ancoats, with its concentration of mill buildings, is an important landmark in the history of the Industrial Revolution… Although the area is dominated by the massive mill buildings, it also contains other listed buildings of differing character. The Victoria Square housing… is a five-storey block of flats dating from 1889. Built in red brick with a pitched slate roof and in the form of an enclosed courtyard, it may fairly claim to be one of the most successful local authority housing schemes in Manchester, due in part to its enclosure of shared inner space… The character of the area remains largely industrial… Much of the area's character derives from the size, mass and construction of the older buildings. Generally these are built in red brick between two and six storeys high with pitched slate roofs; windows are vertically proportioned and simply divided.'* (MCC, 2023a) |
| Value | High | The CA designation indicates that this area has a high townscape value. |
| Susceptibility | Low | This CA is located within TCA9: Ancoats, which has a low susceptibility to changes in townscape character associated with the Proposed Development, as described in Table 6.7 above. |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development. |
| **Cathedral CA** | | |
| Baseline | | *'The Cathedral area has been the ecclesiastical and scholastic centre of Manchester since the earliest times. Today, the Cathedral and Chetham's Hospital school form the focal point of a wider area notable for the diversity of activities carried on within its bounds… To the south and east the two buildings, and the confined solemnity of the Cathedral Yard, are effectively separated from the rest of the city centre by a partial ring of Victorian Commercial buildings, including the impressive Corn and Produce Exchange. These all cluster around the medieval street pattern and bounded on the outside by the curving line of the Cateaton Street, Hanging Ditch, Todd Street, Victoria Station and Hunts Bank approach…*<br>*To the north and west the Cathedral overlooks the broad width of the busy Victoria Street and the deep cut of the River Irwell, both of which traverse the area, and beyond, into Salford, to the extensive cobbled forecourt of the disused Exchange Station which forms the western boundary of the area.'* (MCC, 2023b) |
| Value | High | The CA designation indicates that this area has a high townscape value. |
| Susceptibility | Low | This CA is located within TCA11: City Centre, which has a low susceptibility to changes in townscape character associated with the Proposed Development, as described in Table 6.7 above. |

| Criteria | | Assessment Description |
|---|---|---|
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development. |
| **Shudehill CA** | | |
| Baseline | | *'The west side of the Conservation Area is composed of large buildings constructed during the 20th century. These line the east side of Corporation Street and turn the corner up Withy Grove. The older, smaller scale properties which survive today are situated to the east side of the conservation area…Shudehill and Withy Grove rise up the incline of one of the Irwell river terraces. At the steepest part, the upper end of Withy Grove, the narrowest fronted buildings are found, and these form a more varied yet integrated frontage on the slope than would large, broad-based buildings such as those on Corporation Street, which is level. Many older buildings have been demolished due to low levels of occupancy, neglect and lack of investment. Others have been affected by the construction of the Metrolink system which follows the line of Balloon Street and the former Snow Hill... The early development on Shudehill and Withy Grove was, and still is in part, small scale with narrow frontages. By the 20th century large scale property was being developed along Corporation Street: first the headquarters of the Co-operative Wholesale Society, then the buildings on the corner of Withy Grove and Corporation Street to accommodate national newspaper publishers.'* (MCC, 2023c) |
| Value | High | The CA designation indicates that this area has a high townscape value. |
| Susceptibility | Low | This CA is located within TCA11: City Centre, which has a low susceptibility to changes in townscape character associated with the Proposed Development, as described in Table 6.7 above. |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development. |
| **Smithfield CA** | | |
| Baseline | | *'Smithfield conservation area lies on the north-eastern edge of the city centre of Manchester... Since its establishment in 1821, Smithfield has been known as the centre for Manchester's food markets, where fruit, vegetables, meat and fish have been sold on both a wholesale and retail scale. At its peak around the turn of the century, it was probably the largest market complex in Britain, occupying seven acres... Historically, the predominant building type was food markets. Few of these are still standing, and those that are have been converted to other uses. Principal amongst them is the retail fish market, which is now the Craft Village. This building, significant among indoor markets, was an extension to the original retail fish market constructed during the 1890s... Buildings to the south of the conservation area, closest to the commercial heart of the regional centre along Oldham Street, Market Street and Church Street, are larger and of later date than the rest of the area. The contrast is especially noticeable around Turner Street and Back Turner Street, where there are some very small-scale houses dating from the Georgian period, subsequently converted or used for commercial purposes.'* (MCC, 2023d) |
| Value | High | The CA designation indicates that this area has a high townscape value. |
| Susceptibility | Low | This CA is located within TCA11: City Centre, which has a low susceptibility to changes in townscape character associated with the Proposed Development, as described in Table 6.7 above. |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development. |
| **Stevenson Square CA** | | |
| Baseline | | *'Stevenson Square conservation area lies on the north-eastern edge of the city centre of Manchester...The Stevenson square conservation area represents a significant portion of the city centre in which the majority of Victorian buildings remain intact.* |

| Criteria | | Assessment Description |
|---|---|---|
| | | *Many are listed by the Department of the Environment as being of special architectural or historic interest. Very few buildings from the 18th century are still standing in the conservation area. The earliest include a few groups of houses and two public houses… The majority of buildings of architectural or historic interest in the conservation area are Victorian or early-20th century. Most are related to the cotton industry, often warehouses, showrooms or workshops. These buildings are taller than the earlier examples and create a varied matrix of building mass, divided by largely dark, narrow streets. Wealth produced by the cotton industry can be seen reflected in the buildings, either stone or brick with stone dressings, many of which are elaborately decorated. Towards the end of this period terracotta became popular and was extensively used either in conjunction with brick or on its own… During the latter half of the 19th century most properties in and around the present day conservation area were replaced by solely commercial buildings. Oldham Street, with its millinery and clothing-related shops was a favourite shopping district with Manchester's fashion-conscious residents up to the last quarter of the 20th century. A sudden decline of the shops coincided with the opening of the Manchester Arndale Centre in 1975, which changed the focus of retailing in the city centre. The conservation area still has a high proportion of under-utilised floorspace, reflecting a lack of investment, partly because it is no longer fashionable for shopping.'* (MCC, 2023e) |
| Value | High | The CA designation indicates that this area has a high townscape value. |
| Susceptibility | Low | This CA is located within TCA11: City Centre, which has a low susceptibility to changes in townscape character associated with the Proposed Development, as described in Table 6.7 above. |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development. |
| **Upper King Street CA** | | |
| Baseline | | *'The upper part of King Street is a wider and more majestic continuation of the earlier portion to the west. Although almost all properties in the street have been re-developed at some time, the west retains the small-scale property boundaries typical of the Georgian period while the upper part to the east has changed its character completely… The buildings are large, and although the architectural styles vary greatly they do for the most part create a harmonious street scene. The view looking up the street is terminated by a group of buildings with an interesting skyline of pediments, cupolas and chimneys in the Baroque style. These buildings are not exceptionally tall, though there is a general increase of height and mass towards the top of King Street. All are dwarfed, however, by the tower of the Piccadilly Plaza, which can be seen in the distance.'* (MCC, 2023f) |
| Value | High | The CA designation indicates that this area has a high townscape value. |
| Susceptibility | Low | This CA is located within TCA11: City Centre, which has a low susceptibility to changes in townscape character associated with the Proposed Development, as described in Table 6.7 above. |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development. |
| **St Ann's Square CA** | | |
| Baseline | | *'St. Ann's Square was laid out in the Georgian period, early in the 18th century, and is one of the main spaces in the city centre. The church, which dominates the southern end of the Square is the only surviving building of that time in the area, the remainder being later replacements which continue to enclose the Square in a satisfactory and coherent manner. As these buildings were constructed in various styles over a long period, they create a rich tapestry of built form..* |

| Criteria | | Assessment Description |
|---|---|---|
| | | *Each new building has been designed with due regard and respect for the others that were already there and together they create an imposing 'street wall'. This is also true in other parts of the conservation area…The rectilinear street pattern that Manchester has developed over the centuries is not a 90 degree grid system. Some streets are parallel to others but there are also subtle changes of direction that give rise to irregular sites and to the non-rectangular plan form of buildings. This adds interest to the townscape and can be witnessed in this conservation area in John Dalton Street, Exchange Street and Barton Square… In the designated conservation area, stone is the predominant material used for building, but there is also a rich variety of other materials including brick, stucco, mock-Tudor timber-framing and glazed cast-iron framing.'* (MCC, 2023g) |
| Value | High | The CA designation indicates that this area has a high townscape value. |
| Susceptibility | Low | This CA is located within TCA11: City Centre, which has a low susceptibility to changes in townscape character associated with the Proposed Development, as described in Table 6.7 above. |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development. |
| **Parsonage Gardens CA** | | |
| Baseline | | *'Parsonage Gardens conservation area is based on a square of the same name - a small, tranquil oasis close to the heart of Manchester… The Gardens are bordered by large and impressive buildings. Most are in orange-red brick or terracotta, although one modern-style steel and glass structure merges well into its surroundings… Parsonage Gardens conservation area embraces a length of river frontage to the Irwell and this also includes part of the bridge on Blackfriars Street, half of which is in Salford. This heavy stone bridge was built around 1820 to replace a light timber footbridge of 1761. One of the three semi-circular arches is partly embedded in the river bank on the Manchester side.'* (MCC, 2023h) |
| Value | High | The CA designation indicates that this area has a high townscape value. |
| Susceptibility | Low | This CA is located within TCA11: City Centre, which has a low susceptibility to changes in townscape character associated with the Proposed Development, as described in Table 6.7 above. |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development. |
| **Flat Iron CA** | | |
| Baseline | | *'The Flat Iron conservation area is centred around the grade II * listed Sacred Trinity Church on the A6, close to the boundary with the city of Manchester… The Flat Iron conservation area derives its name from the triangular shaped plot of land which contained both Trinity Church and the market itself, resembling the shape of flat, hot coal heated iron once used for ironing clothes. The original town of Salford was contained within the triangle of land bounded by the River Irwell, Chapel Street, Gravel Lane and Greengate… In the late 18th and early 19th centuries, the areas adjacent to the old town centre developed with housing, industry and public buildings. Originally the surrounding areas were fashionable residential areas, but as the 19th century progressed they became increasingly used for commerce and industry. The houses were replaced by shops and offices and only a limited amount of residential accommodation, often over shops or in the form of caretaker's flats, survived. This process was accelerated in the 1880s by the building of Exchange Station, which resulted in the obliteration of a large part of Sacred Trinity's parish.'* (SCC, 2023) |
| Value | High | The CA designation indicates that this area has a high townscape value. |

| Criteria | | Assessment Description |
|---|---|---|
| Susceptibility | Low | This CA is located with TCA12: Salford, which has a low susceptibility to changes in townscape character associated with the Proposed Development, as described in Table 6.7 above. |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development. |

## Visual Baseline

### Visual Amenity

6.129 The existing visual amenity of the Site is influenced by the variety of land uses contained within it. In particular, the former industrial uses and current areas of vacant or derelict land have an influence on the visual amenity of the area. While areas of vacant and derelict land have an adverse influence on the amenity of the area, St Catherine's Wood is characteristic of the wider River Irk valley and provides a landscape corridor link with the wider landscape.

6.130 The visual amenity of the Site and immediate parts of the study area are influenced by the urban grain, height and mass of existing and under-construction buildings and the streetscape in the immediate vicinity. There is a complex urban grain and diverse visual amenity arising from the regeneration of the area over the years, with contrasts of old red-brick and modern buildings, industrial built heritage and newly constructed or approved tall buildings in juxtaposition. The Site is visually well contained due to the combination of tree cover, ground levels and surrounding built form.

6.131 Generally, the buildings are taller and arranged in a denser urban grain towards the south of the study area, limiting outward views to the north. In contrast, moving towards the centre and north of the study area, there is more open space and development is generally lower-rise in nature, allowing wider views over the surrounding landscape, and towards the city centre of Manchester to the south.

6.132 There are numerous new developments planned to be built, or that have been built, in the Site's periphery. In particular, the areas to the south-west of the Site, focussed towards the New Cross and NOMA TCAs, are undergoing significant regeneration. Across these areas there are a number of high residential towers, and these are set against the backdrop and context of lower massing red-brick warehouses, low-rise residential development, modern industrial units and vacant plots, towards the north of the study area. The development of large towers within these areas is notably changing the skyline to the north of Manchester City Centre. Committed developments within the study area which either already influence the visual amenity, or will influence views when they are constructed, are shown in **Figure 6.5**.

## Visual Receptors

6.133 Visual receptors are the groups of people who experience the visual amenity of the study area and who may experience views of the Proposed Development.

6.134 Principal visual receptors within the TVIA are the people within the study area who will be affected by changes in views and visual amenity as a result of the Proposed Development, which primarily include:

- Residents living in the area;
- People working in the area;
- People travelling through the area on roads or trains; and
- People engaged in recreation including cyclists, walkers and people using public parks.

6.135 Visual receptors in the study area include (but are not limited to) – residents of Cheetham Hill, Miles Platting, Collyhurst, Ancoats and Manchester City Centre; motorists on the network of public roads in the study area; rail passengers on the eastbound line from Manchester Victoria station; metrolink tram passengers; people working in Manchester City Centre, Strangeways and Ancoats; visitors, particularly to the civic centre around Manchester Cathedral and Northern Quarter; visitors to public parks including St Michael's Flags and Angel Meadow Park and Sand Hills Park; pedestrians using both footpaths around streets and long-distance paths such as the South Pennine Ring long-distance recreational trail, which passes through the south-east of the study area. The nearest recognised long-distance cycle route is Sustrans National Cycle Route 60, which passes through the south-east and north-east of the study area. The towpaths alongside the Rochdale / Ashton Canals are recreational routes as well as the canal itself.

6.136 Visual receptors are identified and assessed in the viewpoint assessment from a range of representative viewpoints in the study area, shown in **Figure 6.4**.

## Zone of Theoretical Visibility (ZTV)

6.137 The visual baseline is defined by the Zone of Theoretical Visibility (ZTV) – the geographical area from which the Proposed Development is likely to be visible. The ZTVs in **Figures 6.6** to **6.7** show the main areas in which the Proposed Development will theoretically be visible, highlighting the different areas that may afford views and assisting in the identification of representative viewpoints where they may be affected.

6.138 The ZTVs have been modelled using detailed landform data and building polygons from OS OpenMap data, with heights extracted from Environment Agency LIDAR data, to represent surface features in the study area. The Proposed Development has been modelled and set within this surface model and the ZTV calculated based on its maximum height / scale, to determine where it would be theoretically visible,

6.139 **Figures 6.6** to **6.7** show a series of ZTVs of the Proposed Development. **Figure 6.6** shows the overall ZTV of the Red Bank neighbourhood Outline Application (Application 4), and **Figure 6.7** shows the theoretical visibility of Full Application plots NT02, NT03 and NT04 (Application 5), indicating the number of storeys theoretically visible across the study area.

6.140 Although these figures are a theoretical representation of potential visibility, these ZTVs indicate that visibility of the Proposed Development will be relatively widespread, with visibility of the 55-storey RB10 available across most of the study area. However, visibility of lower elements of the Proposed Development will be more limited, focussed throughout the Lower Irk Valley and across northern and eastern parts of the study area, where there is more limited screening by built form. Some parts of the study area (with no colour shown in the ZTV) have no visibility of the Proposed Development.

6.141 **Figure 6.6** shows the ZTV of the Red Bank neighbourhood Outline Application (Application 4), including the number of storeys theoretically visible across the Study Area. This ZTV indicates that the majority of plots within Application 4 will be visible from northern and eastern parts of the Study Area, particularly within the Lower Irk Valley, Cheetham Hill and Collyhurst TCAs. Although there are a number of areas across this part of the Study Area which will experience no visibility of the Outline Application, primarily due to screening by intervening built form, where the Outline Application is visible it tends to be seen to its full extent, with the lowest buildings within the Site visible as well as the tallest.

6.142 To the west and south there is a slightly different pattern of visibility, due to the screening influence of existing buildings located to the south and west of the Application 4 Site. Across these parts of the Study Area, general visibility of the Outline Application is reduced, particularly within the City Centre to the south-west. There is also more limited visibility of the lowest buildings within the Site compared to northern and eastern parts of the Study Area. Where the Outline Application is visible, visibility is more likely to be limited to only the tallest buildings, with more of the lower buildings towards the north of the Site screened by built form.

6.143 **Figure 6.7** shows the ZTV of the Full Application plots NT02, NT03 and NT04 (Application 5), including the number of storeys theoretically visible across the Study Area. This ZTV follows a similar pattern of theoretical visibility as the Application 4 ZTV, with visibility focussed towards the north and east of the Study Area, and most widespread visibility across the Lower Irk Valley, Cheetham Hill and Collyhurst TCAs. Although there are a number of areas across this part of the Study Area which will experience no visibility of Application 5, primarily due to screening by intervening built form, where Application 5 is visible it tends to be seen to its full extent, with NT02, NT03 and NT04 all being visible.

6.144 Again, in keeping with Application 4, there is a different pattern of visibility across western and southern parts of the Study Area. Across these areas, visibility of Application 5 is reduced, due to the screening influence of existing buildings, particularly within the City Centre to the south-west. There is also a different pattern of visibility in terms

of those elements of Application 5 which are visible. Across western parts, within the Strangeways TCA in particular, there are areas which experience visibility of NT02 and NT03 but not NT04, due to screening by existing built form.

## Viewpoints

6.145 Viewpoints have been selected to illustrate potentially significant effects and represent views experienced by visual receptors within the TVIA study area. Viewpoints for the TVIA were identified and agreed in consultation with MCC as shown in **Table 6.9** and mapped in **Figure 6.3**. The existing view from each of these representative viewpoints is shown in **Figures 6.8a – 6.24a**.

***Table 6.9**: Representative viewpoints included in the TVIA*

| VP No. | Viewpoints | Figure |
|---|---|---|
| 1 | St Michael's Flags and Angel Meadow Park | Figure 6.8a-e |
| 2 | Corporation Street | Figure 6.9a-e |
| 3 | Manchester Cathedral | Figure 6.10a-e |
| 4 | Smithfield | Figure 6.11a-e |
| 5 | Ancoats | Figure 6.12a-e |
| 6 | Rochdale Road (Railway Bridge) | Figure 6.13a-e |
| 7 | Dantzic Street | Figure 6.14a-e |
| 8 | Sand Hills Park, Collyhurst | Figure 6.15a-e |
| 9 | Dalton Street | Figure 6.16a-e |
| 10 | Queen's Road (near Metrolink) | Figure 6.17a-e |
| 11 | Queen's Park | Figure 6.18a-e |
| 12 | Miles Platting | Figure 6.19a-e |
| 13 | Manchester Fort | Figure 6.20a-e |
| 14 | North Street | Figure 6.21a-e |
| 15 | St Chad's Street | Figure 6.22a-e |
| 16 | Red Bank | Figure 6.23a-d |
| 17 | Rochdale Road | Figure 6.24a-e |

6.146 A description of the baseline (existing) view from each of these viewpoints and evaluation of their sensitivity to change, is set out in **Table 6.10**.

***Table 6.10**: Representative Viewpoints - Baseline and Sensitivity to Change*

| **Viewpoint 1: St Michael's Flags and Angel Meadow Park** | |
|---|---|
| Baseline conditions: **Figure 6.8a** | Representative of views experienced by recreational visitors to St Michael's Flags and Angel Meadow Park. The viewpoint is located on Old Mount Street, to the south-east of the park itself, but is considered to be representative of views experienced from within the park. This is the closest urban greenspace to the Site. The foreground and middle ground of the view is dominated by the open greenspace, paths and trees that create the park. The entrances to the park, with their large metal sign-posts, form a focal point. The landform slopes away from |

| | | |
|---|---|---|
| | | the viewpoint towards the centre of the park, and views are available towards the streetscape beyond. The park is generally surrounded by residential development, particularly along Old Mount Street to the south-east. Two modern high-rise residential buildings are visible on the north-western edge of the park, and limit longer-distance views in this direction. The Grade II listed Charter Street Mission is also visible to the north, beyond the park. The large-scale Co-op Building is visible on Angel Street to the west. In the view to the north-east, towards the Site, construction works associated with several tall buildings are visible. |
| Value: | Medium | The view is not formally recognised or afforded protection in local planning policy and does not lie within or overlook a designated area or conservation area. It is however located adjacent to a public park, where views of the greenspace and the experience it provides, in contrast to the surrounding city, are likely to be locally valued and visited by a relatively large number of people passing through or visiting the park recreationally. |
| Susceptibility: | Medium | This viewpoint is representative of views experienced by residents of Style Street and Old Mount Street, people using St Michael's Flags and Angel Meadow Park, and people working and living in NOMA. The attention of people using St Michael's Flags and Angel Meadow Park is likely to be at least partially on their surroundings. Residents within the area may have static long-term views from their primary place of residence, and some residents on Style Street will have principal views towards Application 4. Receptors experiencing this view will, however, experience tall buildings and construction of new buildings in the existing view, in relatively close proximity, and are likely to be accustomed to changes associated with urban regeneration in the surrounding townscape, which moderates their susceptibility to further change. |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 2: Corporation Street** | | |
| Baseline conditions: **Figure 6.9a** | | Representative of views experienced by pedestrians, and people working in or visiting this area of the city centre, particularly those near to the busy transport interchange at Manchester Victoria Station. This viewpoint is on the boundary of the Shudehill Conservation Area, looking outwards (away from) the historic townscape. The viewpoint is located on the eastern side of Corporation Street, adjacent to the Grade II listed Cooperative Wholesale Society Building and New Century House. The view towards the Site is to the north along Corporation Street. The view along Corporation Street to the north of the junction with Cheetham Hill Road and Miller Street provides one of the few longer-distance outlooks from this viewpoint, which is otherwise fairly enclosed by surrounding city-centre development. The Grade II listed Parker's Hotel forms a focal point at the junction of Corporation Street and Cheetham Hill Road, and its architecture and scale provides a contrast with the modern high-rise development which occupies the view in several other directions. Developments of this kind include 4 Angel Square (up to 90.3m height), opposite Parker's Hotel at the junction of Corporation Street and Miller Street, as well as New Victoria (up to 119.8m height) which is currently under construction in the foreground of the view to the west of the viewpoint, adjacent to Victoria train station. The façade of Victoria train station can be seen in the view to the south-west. |

| | | |
|---|---|---|
| Value: | High | The viewpoint not formally recognised, but it is located at the north-western extent of the Shudehill Conservation Area and is therefore valued for its townscape and built heritage quality (although the Conservation Area is located largely behind the viewpoint and does not cover the visible townscape towards the Site). The viewpoint is located on the edge of the Conservation Area but looks outwards and away from the designated landscape. The western part of the Conservation Area is "*composed of large buildings constructed during the 20th Century*" (MCC, 2023c). The view contains a mix of streetscape and built form, which is representative of the regeneration that is occurring in this part of Manchester. The view is aligned towards the Grade II listed Parker Hotel (109 Corporation Street). Its decorative façade and domed roof contribute to the heritage value and townscape character in the view. |
| Susceptibility: | Medium | This viewpoint is representative of views experienced by people walking / driving along Corporation Street; people working in nearby office buildings; and people travelling from / arriving into Manchester from Victoria Station.<br>The activity of pedestrians and motorists only partly depends on appreciation of views of townscape, with their attention also focussed on other matters. The attention of people at their place of work is likely to be focussed on their work or activity, not their surroundings, although the setting around the civic centre is important to the quality of working life in the area. The setting of the Grade II listed Parker Hotel (109 Corporation Street) is liable to changes associated with the Proposed Development, however the valued elevation faces away from the Site towards the commercial heart of the city with its extensive contemporary, tall buildings including the recently completed New Victoria. |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 3: Manchester Cathedral** | | |
| Baseline conditions:<br>**Figure 6.10a** | | Representative of views experienced by visitors to the Cathedral, as well as pedestrians and recreational visitors within Cathedral Gardens public space. The view towards the Site is to the north-east, over public space within Cathedral Gardens. A modern extension to Chetham's School of Music occupies the foreground to the west, while the eastern boundary of Cathedral Gardens is bordered by the modern large-scale National Football Museum. To the south-east, the Grade II listed Corn Exchange occupies the foreground, and Manchester Cathedral occupies the view to the south. There are slightly longer-distance views to the west, towards the River Irwell. Longer distance views are also available to the north, in the direction of the Site, towards tall buildings including the CIS tower and new development adjacent to Manchester Victoria train station. |
| Value: | High | The viewpoint is not formally recognised, but it is located within the Cathedral Conservation Area and is therefore valued for its townscape and built heritage quality. It is also located adjacent to the Grade I listed Manchester Cathedral. The Conservation Area is noted "f*or the diversity of activities carried on within its bounds*". The Cathedral and Chetham's School of Music form the focal point of this area, which represents the historic centre of Manchester. |
| Susceptibility: | High | This viewpoint is representative of views experienced by people using Cathedral Gardens public open space; people visiting the Cathedral, National Museum of Football, and Chetham's Music School; and people visiting, living or working in Fennel Street. The attention and interest of people visiting the civic centre |

| | | |
|---|---|---|
| | | around the Cathedral is likely to be on their surroundings. Residents within the area may have static long-term views from their primary place of residence. The attention of people at their place of work is likely to be focussed on their work or activity, not their surroundings, although the setting around the civic centre is important to quality of working life in the area. |
| Sensitivity: | High | The combination of high value and high susceptibility results in the receptors experiencing this view having a high sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 4: Smithfield** | | |
| Baseline conditions: **Figure 6.11a** | | Representative of views experienced by pedestrians within Smithfield Conservation Area. The viewpoint is located at the junction between Shudehill and Swan Street. Outward views from this viewpoint are generally contained within the foreground to middle distance by built development along Shudehill, Rochdale Road, Miller Street and Swan Street. These buildings are generally larger-scale to the west and north, along Shudehill, Miller Street and Rochdale Road. To the east, along Swan Street, the buildings are smaller-scale and more historic, although there are tall buildings on either side of Swan Street at the junction with Rochdale Road and Shudehill. The view towards the Site is to the north, along Rochdale Road. The site is located beyond tall buildings between Miller Street and Angel Street, as well as smaller buildings further north along Rochdale Road, in views from this location. |
| Value: | Medium | The viewpoint is not formally recognised, but it is located on the edge of the Smithfield Conservation Area and is therefore valued for its townscape and built heritage quality. The viewpoint is located at the north-western extent of the Conservation Area, and views from this location towards the Site are to the north and therefore away from the core of the Conservation Area. The Conservation Area comprises an area which was historically food markets. |
| Susceptibility: | Medium | This viewpoint is representative of views experienced by people walking and driving along Swan Street and Rochdale Road; people working in nearby office buildings; people travelling in and out of the city centre in vehicles through Smithfield; and people visiting and staying in the Crowne Plaza Hotel. The activity of pedestrians and motorists only partly depends on appreciation of views of townscape, with their attention also focussed on other matters. The attention of people at their place of work is likely to be focussed on their work or activity rather than their surroundings. Views from this location and relatively contained and enclosed due to the urban grain and position of intervening buildings between the Smithfield Conservation Area and the Site. |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 5: Ancoats** | | |
| Baseline conditions: **Figure 6.12a** | | Representative of views experienced by pedestrians and residents within Ancoats Conservation Area. The viewpoint is located on Sherratt Street, within an area of historic residential development. Views towards the east, south and west are over the area covered by the Ancoats Conservation Area, and the views in this direction are generally contained at relatively close proximity by small to medium-scale historic red brick buildings. To the north-east and south-west historic residential development at Victoria Square and on Anita Street limits |

| | | |
|---|---|---|
| | | outward views. The spire of the Hallé St Peter's, a former church on Blossom Street, is visible along the skyline to the south. Views towards the north are slightly more open, over the New Cross area of the city. Construction works associated with new high-rise buildings on Oldham Road are visible to the north-west. The junction of Thompson Street and Oldham Street can be seen to the north, while to the east of Thompson Street there are low-rise industrial and commercial buildings. Cranes associated with construction works in the Lower Irk Valley are visible on the skyline to the north, in the same sector of the view in which the Site is located. |
| Value | Medium | The viewpoint is not formally recognised, but it is located on the edge of the Ancoats Conservation Area and is therefore valued for its townscape and built heritage quality. The viewpoint is located towards the northern extent of the Conservation Area, and views from this location towards the Site are to the north and therefore away from the core of the Conservation Area, and the visible townscape in the view is not part of the Conservation Area. Views towards the Site from other parts of the Conservation Area will be more limited by the built form within. The Conservation Area comprises a mixture of historic large-scale mill buildings and medium-scale residential buildings. |
| Susceptibility: | Medium | This viewpoint is representative of residents of Ancoats and Oldham Road; and road users on Oldham Road. Residents within the area may have static long-term views from their primary place of residence, and some residents on Oldham Road will have principal views towards Application 4. Receptors experiencing this view will, however, experience tall buildings and construction of new buildings in the existing view, in relatively close proximity, and are likely to be accustomed to changes associated with urban regeneration in the surrounding townscape, which moderates their susceptibility to further change. The activity of pedestrians and motorists only partly depends on appreciation of views of townscape, with their attention also focussed on other matters. |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 6: Rochdale Road (Railway Bridge)** | | |
| Baseline conditions: **Figure 6.13a** | | Representative of views experienced by pedestrians and road users on Rochdale Road to the east of the Site, and railways passengers on the rail line to the east of Manchester Victoria. The viewpoint is located on a railway bridge on Rochdale Road to the east of the Site. From the viewpoint, views to the east are limited by the wall along the railway bridge. To the north-east and south-west, views are available along Rochdale Road, and feature vegetation on either side of the road alongside the railway corridor. To the south-west, views are longer-distance towards Manchester city centre. In this direction, the skyline is formed by a cluster of medium- to high-rise generally modern buildings within the Lower Irk Valley, Strangeways, NOMA and City Centre TCAs. Cranes associated with the construction of several buildings in the Lower Irk Valley TCA are also visible in this direction. |
| Value | Low | The view is not formally recognised or afforded protection in local planning policy and does not lie within or overlook a designated area or conservation area. It does however offer relatively long-distance views towards Manchester city centre from this area in which views are generally contained in closer proximity by built form and vegetation within the Lower Irk Valley and along the |

| | | |
|---|---|---|
| | | road and railway corridors. Rochdale Road is one of the main routes through the Collyhurst and New Cross neighbourhoods, and the view from this viewpoint is likely to be experienced by a relatively large number of receptors. |
| Susceptibility: | Medium | This viewpoint is representative of road users on Rochdale Road and passengers on the adjacent railway line. The activity of pedestrians, road users and travellers on the railway line only partly depends on appreciation of views of townscape, with their attention also focussed on other matters. The skyline view of Manchester available when approaching the city centre on major arterial routes at this location is liable to change due to the proximity of the Site within its foreground. |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 7: Dantzic Street** | | |
| Baseline conditions: **Figure 6.14a** | | Representative of views experienced by road users and pedestrians on Dantzic Street within the NOMA area of the city, to the south of the Site. The viewpoint is located on Dantzic Street, adjacent to the Co-op building at Angel Square. The view towards the Site is to the north-east. In this direction, the junction of Dantzic Street and Angel Street forms the foreground. Medium-rise residential development is visible to the west of Dantzic Street, while to the east of the road, a high-rise residential development is under construction. There are traditional red-brick buildings visible on Angel Street to the north-west. St Michael's Flags and Angel Meadow Park is visible to the north-east. To the south-west and south, modern development within the NOMA area of the city is visible, including several developments under construction in close proximity. |
| Value | Low | The view is not formally recognised or afforded protection in local planning policy, and does not lie within or overlook a designated area. It does, however, afford views of traditional red-brick buildings on Angel Street, which contrast with modern architectural styles present throughout the wider view. Views are likely to be valued by people living, working and at leisure in the area. |
| Susceptibility: | Medium | This viewpoint is representative of road users on Dantzic Street; and people living and working in the area, including within NOMA and on Dantzic Street. Residents within the area may have static long-term views from their primary place of residence. Receptors experiencing this view will, however, experience tall buildings and construction of new buildings in the existing view, in relatively close proximity, and are likely to be accustomed to changes associated with urban regeneration in the surrounding townscape, which moderates their susceptibility to further change. The attention of people at their place of work is likely to be focussed on their work or activity, not their surroundings, although the setting around the civic centre is important to quality of working life in the area. The activity of pedestrians and road users only partly depends on appreciation of views of townscape, with their attention also focussed on other matters. |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development. |

| | | |
|---|---|---|
| **Viewpoint 8: Sand Hills Park, Collyhurst** | | |
| Baseline conditions: **Figure 6.15a** | | Representative of views experienced by recreational receptors within this greenspace. The greenspace is located on top of a former colliery within the Lower Irk Valley to the north-east of the Site. A sculptural public artwork is located at the summit of the hill. The greenspace is accessed from Dalton Street, Collyhurst Road, Sand Street and Kentford Drive. Deciduous woodland alongside the railway line and within the greenspace itself filter and screen outward views in several directions. To the north-east, high-rise residential development within Collyhurst can be seen above this woodland. To the north and west, outward views are generally limited by the landform and vegetation, although views are relatively long-distance across the greenspace itself. The sculpture at the summit of the hill can be seen. To the south-west, modern high-rise development within the Lower Irk Valley, NOMA and Manchester City Centre is visible. Cranes associated with construction work are also visible on the skyline in this direction. Closer-proximity views towards high-rise residential development along Dalton Street to the south are also available. |
| Value | Medium | The view is not formally recognised or afforded protection in local planning policy and does not lie within or overlook a designated area or conservation area. It is however located within an area of open greenspace, where views of the greenspace itself and the experience it provides, in contrast to the surrounding city, are likely to be locally valued and visited by a relatively large number of people passing through or visiting the area recreationally. |
| Susceptibility: | Medium | This viewpoint is representative of users of local informal greenspace within the Irk Valley, whose attention is likely to be at least partially focussed on their surroundings. The skyline view of Manchester city centre which is available from this viewpoint is liable to change due to the position of the Application 4 Site within its foreground. |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 9: Dalton Street** | | |
| Baseline conditions: **Figure 6.16a** | | Representative of views experienced by residential receptors on Dalton Street, to the east of the Site. The viewpoint is located adjacent to a row of two-storey residential properties, as well as opposite a larger high-rise residential block. The railway line to Manchester Victoria passes in close proximity to the south of the viewpoint. Outward views from the viewpoint are relatively contained, with the view along Dalton Street to the west representing the most open outlook. To the south, a brick wall associated with the railway embankment is visible. To the north, on the opposite side of Dalton Street, views are contained in close proximity by residential development and associated vegetation. Views along Dalton Street to the north-east are slightly more open, with two-storey semi-detached and terraced houses situated on either side of the road, and longer-distance views towards high-rise residential blocks beyond. To the south-west, views are available towards high-rise development within the NOMA, Strangeways, Lower Irk Valley and City Centre TCAs. |
| Value | Low | The view is not formally recognised or afforded protection in local planning policy and does not lie within or overlook a designated area or conservation |

| | | |
|---|---|---|
| | | area. It is however located within a residential area, where views of the surrounding area are likely to be valued by local residents. |
| Susceptibility: | Medium | This viewpoint is representative of road users on Dalton Street and residents of nearby areas of Collyhurst. The activity of road users depends only partly on appreciation of views of townscape, since their attention is also focussed on other matters. Residents within the area may have static long-term views from their primary place of residence, which feature existing residential development. Receptors experiencing this view will, however, experience tall buildings and construction of new buildings in the existing view, in relatively close proximity, and are likely to be accustomed to changes associated with urban regeneration in the surrounding townscape, which moderates their susceptibility to further change. This viewpoint offers an incidental skyline view of Manchester city centre, which is liable to change due to the position of the Application 4 Site within its foreground. |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 10: Queen's Road (near Metrolink)** | | |
| Baseline conditions: **Figure 6.17a** | | Representative of views experienced by road users and pedestrians on Queen's Road, as well as Metrolink passengers at the nearby Queen's Road stop. The viewpoint is located on Queen's Road to the east of the railway bridge and Metrolink stop. Outward views are relatively long-distance to the south-west from this somewhat elevated location. To the north and south, residential development within Cheetham Hill is visible on either side of Queen's Road, partially filtered by vegetation alongside the road. To the east, Queen's Road stretches into the middle distance, and long-distance outward views are limited by vegetation along the River Irk valley. The Metrolink line is visible at lower elevation to the south-west, as are buildings associated with the Queen's Road depot and the platforms of the Queen's Road stop. Longer-distance views are available in this direction over the Lower Irk Valley towards high-rise development within the NOMA, Strangeways and City Centre TCAs. |
| Value | Low | The view is not formally recognised or afforded protection in local planning policy and does not lie within or overlook a designated area or conservation area. It is dominated by the road and railway routes, but it does afford relatively long-distance views towards Manchester City Centre which are likely to be valued by people living, working and at leisure in the area. |
| Susceptibility: | Low | This viewpoint is representative of people travelling on Metrolink services approaching Queen's Park Metrolink station, as well as road users on Queen's Road, whose attention is focussed only incidentally on their surroundings. These receptors will experience incidental views towards the Site at a relatively greater distance. |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 11: Queen's Park** | | |

| | | |
|---|---|---|
| Baseline conditions: **Figure 6.18a** | | Representative of views experienced by recreational receptors within Queen's Park, to the north-east of the Site. Queen's Park is one of the oldest parks in Manchester and lies adjacent to the River Irk Valley to the immediate north-east of the study area. The viewpoint is located within the centre of the park, close to a former museum and gallery building set within the park. Queen's Park is set upon a relative high point in the wider area. However, outward views over the surrounding lower-lying landscape are heavily filtered by deciduous woodland within the park. The site is located to the south-west of the viewpoint, and the landform slopes down in this direction towards the Lower Irk Valley. High-rise development within the NOMA and City Centre TCAs is visible upon the skyline beyond woodland along the River Irk. Residential development within Collyhurst can be seen to the south-east, and educational buildings on the eastern side of Rochdale Road can be seen to the east. |
| Value | Medium | The view is not formally recognised or afforded protection in local planning policy and does not lie within or overlook a designated area or conservation area. It is however located within a historic public park, where views of the greenspace and the experience it provides, in contrast to the surrounding city, are likely to be locally valued and visited by a relatively large number of people passing through or visiting the park recreationally. |
| Susceptibility: | Low | This viewpoint is representative of views experienced by visitors to Queen's Park, who have some attention and interest on their surroundings. However, views are generally focused and enclosed within the park due to the containment of surrounding woodland, which reduces susceptibility to changes occurring in the wider townscape outside the park. The outline of the city centre skyline is incidental to the view and only experienced from localised areas of higher ground within the park, with views to the city centre largely screened by intervening vegetation (particularly during summer months). |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 12: Miles Platting** | | |
| Baseline conditions: **Figure 6.19a** | | Representative of views experienced by residential receptors within Miles Platting, as well as road users and pedestrians on Oldham Road. Oldham Road is one of the main routes into and out of Manchester city centre. The viewpoint is located on this route within the residential area of Miles Platting, to the east of the Site. Oldham Road stretches to the north-east and south-west, and is flanked on either side by low-density residential development largely dating from the late 20th century. Opposite the viewpoint, to the north-west of Oldham Road, new residential development can be seen. To the south-west, several high-rise buildings to the south-east of Oldham Road are visible. The view towards the Site is to the south-west, beyond residential development to the north-west of Oldham Road. |
| Value | Low | The view is not formally recognised or afforded protection in local planning policy and does not lie within or overlook a designated area or conservation area. It is however located within a residential area, where views of the surrounding area are likely to be valued by local residents. |

| | | |
|---|---|---|
| Susceptibility: | Medium | This viewpoint is representative of views experienced by people travelling on Oldham Road and residents of parts of Miles Platting along Oldham Road. The attention of road users is focussed only incidentally on their surroundings, while residents may experience long-term, direct views from their primary place of residence and therefore have a higher susceptibility to change. This susceptibility is however, moderated by the existing relatively low amenity value of the townscape surrounding the viewpoint, and the existing presence of residential development and tall buildings as part of the baseline view. |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 13: Manchester Fort** | | |
| Baseline conditions: **Figure 6.20a** | | Representative of views experienced by visitors to Manchester Fort shopping centre. The viewpoint is located on Cheetham Hill Road, adjacent to the shopping centre. Retail units are located to the east and west of Cheetham Hill Road at this viewpoint, and the shops and associated car parks occupy much of the available view. Cheetham Hill Road extends north to south, and is flanked by trees along sections. To the north and south, there are slightly longer-distance views. To the north, residential development within Cheetham Hill to the north of Queen's Road is visible. To the south, tall buildings within NOMA and Manchester city centre, including the CIS Tower and Co-operative Building, are visible. There are also several cranes associated with construction seen in the same sector of the view. The view towards the Site is to the south-east. |
| Value | Low | The view is not formally recognised or afforded protection in local planning policy, and does not lie within or overlook a designated area or conservation area. Views are unlikely to be valued by local residents or visitors to the area, given the contained nature of views and the prominence of modern commercial buildings. |
| Susceptibility: | Low | The primary receptor is people shopping at Manchester Fort, who are mainly focused on the shopping/retail experience, rather than views of their surroundings. These receptors are only likely to have a secondary interest on the visual amenity and setting of the surrounding townscape. Road users on Cheetham Hill Road are also a receptor, and will also have only an incidental interest in their surroundings, with their attention focussed on other things. |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 14: North Street** | | |
| Baseline conditions: **Figure 6.21a** | | Representative of views experienced by road users and pedestrians on North Street, as well as people working at businesses in the area. The viewpoint is located to the north-west of the Site, close to the point at which Peel Street meets Stanley Street. The immediate context of the viewpoint comprises generally low-rise modern industrial development, although there are a number of more traditional low-rise red brick buildings which contrast with the surrounding more modern development. To the east and west, views are contained by built form. North Street and Stanley Street extend to the south-east and south-west respectively. North Street also extends to the north-west, |

| | | |
|---|---|---|
| | | and a building within Manchester Fort shopping centre can be seen on the eastern side of the road. Vegetation alongside the eastern side of the road is visible in the middle distance. The view towards the Site is to the south-east. To the south, there are longer-distance views above the surrounding development towards high-rise development within NOMA, Manchester City Centre and New Cross. |
| Value | Low | The view is not formally recognised or afforded protection in local planning policy, and does not lie within or overlook a designated area or conservation area. Views are unlikely to be valued by local residents or visitors to the area, given their contained nature. Although there are a small number of traditional red brick properties visible in the surrounding area, the main focus of views is on modern low-rise industrial development. |
| Susceptibility: | Low | The primary receptors at this viewpoint are people working in this commercial area, with trading estates, commercial units, warehouses etc. that predominate in this area around North Street. Their main focus and attention is on their work and not views of the surrounding townscape. The condition of the townscape is relatively poor and existing visual amenity is influenced by the commercial land use and building quality. |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 15: St Chad's Street** | | |
| Baseline conditions: **Figure 6.22a** | | Representative of views experienced by pedestrians and road users on St Chad's Street and workers at nearby businesses. The viewpoint is located near St Chad's Roman Catholic Church. The Grade II listed St Chad's Church occupies the south-western sector of the view, while retail premises on Cheetham Hill Road are visible at the end of St Chad's Street to the west. To the north, the baseline is formed by low-rise industrial development, generally of red brick. Views to the east along St Chad's Street are longer-distance. Vegetation within the Lower Irk Valley and high-rise residential development are visible in this direction. Modern high-rise development can also be seen to the south-east, within the Green Quarter area adjacent to the Lower Irk Valley, beyond low-rise red brick buildings along Stock Street. The CIS Tower, within Manchester City Centre, is also visible upon the skyline. |
| Value | Low | The view is not formally recognised or afforded protection in local planning policy, and does not lie within or overlook a designated area or conservation area. It does represent the view from the Grade II listed St Chad's Church, and is likely to be somewhat valued by local residents and visitors to the church. |
| Susceptibility: | Medium | This viewpoint is representative of views experienced by pedestrians and road users on St Chad's Street and workers at nearby businesses. Also representative of views experienced by congregation of St Chad's Roman Catholic Church. These receptors will have only an incidental interest in their surroundings, as their main focus and attention will be on other things. The existing townscape in the view has a relatively low susceptibility to change given its fabric and condition. |

| | | |
|---|---|---|
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 16: Red Bank** | | |
| Baseline conditions: **Figure 6.23a** | | Representative of views experienced by residential receptors at nearby properties, as well as pedestrians and road users on Red Bank. The viewpoint is located at the corner of Red Bank and New Century Park, close to the railway line which runs to Manchester Victoria. Outward views are generally contained in close proximity by development surrounding the viewpoint. The railway line passes close to the viewpoint to the east and south, elevated above ground level on a red brick viaduct. Vegetation alongside the railway can be seen above the viaduct. To the north and west, modern high-rise development along Red Bank and New Century Park limits outward views. The view towards the Site is to the north-east, beyond the railway line. |
| Value | Low | The view is not formally recognised or afforded protection in local planning policy, and does not lie within or overlook a designated area or conservation area. Views are unlikely to be highly valued by local residents or visitors to the area, although the railway viaduct does provide some historic interest. |
| Susceptibility: | High | Primary receptors at this viewpoint are the residents living within the residential blocks on Red Bank, who are considered to be of high susceptibility to change due to the view being from their primary place of residence, and their close proximity and direct association to the Site. Receptors experiencing this view will, however, experience tall buildings and construction of new buildings in the existing view, in relatively close proximity, and are likely to be accustomed to changes associated with urban regeneration in the surrounding townscape, which moderates their susceptibility to further change. This view is also representative of the views of rail passengers on the trains passing this location. |
| Sensitivity: | Medium | The combination of low value and high susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development. |
| **Viewpoint 17: Rochdale Road** | | |
| Baseline conditions: **Figure 6.24a** | | Representative of views experienced by road users and pedestrians on Rochdale Road within the New Cross area. The viewpoint is located on Rochdale Road, at the junction with Sudell Street and opposite Clive Street. Rochdale Road stretches from south-west to north-east to the north-west of the viewpoint. Views to the north-west are relatively long-distance beyond Rochdale Road, towards industrial development within New Cross in the foreground and the Lower Irk Valley beyond. Several high-rise developments and construction works associated with new development are visible in relatively long-distance views in this direction. The spire of St Chad's Church is also visible. A large telecommunications mast can be seen to the north, between Rochdale Road and Bromley Street. The view to the south is over an area of car parking, and there are views beyond to tall buildings within Ancoats. To the south-west, modern high-rise development within NOMA forms the horizon. The view towards the Site is to the north-west. |
| Value | Low | The view is not formally recognised or afforded protection in local planning policy, and does not lie within or overlook a designated area or conservation |

| | | |
|---|---|---|
| | | area. Views are unlikely to be valued by local residents or visitors to the area. Although views are somewhat long-distance, the main focus of views is on a mixture of low-rise industrial development and high-rise residential development in the surrounding area, most of which is relatively modern. |
| Susceptibility: | Low | This viewpoint is representative of views experienced by road users on Rochdale Road approaching the city centre, as well as people working at the trading estates/commercial units in the vicinity. Both these receptors will have a lower susceptibility to change in the view, due to their main focus and attention being on other things. |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development. |

# Red Bank Neighbourhood (Application 4)

## Project Design Scenario – Basis for ES Assessment

6.147 Far East Consortium (FEC) is seeking to obtain planning permission for a residential-led, mixed-use development for the Red Bank Neighbourhood and part of the New Town Neighbourhood. This includes, but is not limited to, residential dwellings, commercial / retail uses, cafes, restaurants, community uses, employment uses, and social infrastructure (including a primary school and health centre) (hereafter referred to as 'the Proposed Development'). The Proposed Development will be brought forward through two separate planning applications. One application in detail for the NT02-04 plots and one in outline for the Red Bank Plots (RB01-07, RB12B, RB10, RB16 and RB17). Applications 4 (Red Bank Neighbourhood Outline) and 5 (NT02-04 Full) collectively form the 'Proposed Development' for the purposes of the EIA.

6.148 The Proposed Development comprises of three Development Areas, which in turn is divided into a number of Development Plots:

- Red Bank Plateau - this area includes the Development Plots north of Dantzic Street and includes Development Plots RB01, RB02, RB03, RB04, RB05A, RB05B, RB05C and RB12B.
- Red Bank Viaduct - this area includes the Development Plots surrounding the Red Bank Viaduct, west of Dantzic Street and includes Development Plots RB06, RB07 and RB10.
- New Town - this area includes the Development Plots south of Dantzic Street and includes Development Plots RB16, RB17, NT02, NT03 and NT04.

6.149 Application 4 is defined by the Development Specification, the Design and Access Statement (DAS) and Parameter Plans (**Volume 3: Appendices, Appendix 5.1**) and the Phasing Plan **(Volume 2a: Main Text Figures, Figure 5.12**). The Development Specification provides details covering the quantum of residential and non-residential uses however, it is primarily the DAS and the scale and massing set out within the Parameter Plans (**Volume 3: Appendices, Appendix 5.1**) that inform the basis for the TVIA in this ES.

6.150 A parameter-based design envelope approach has been used for the assessment of Application 4, meaning that the assessment considers a maximum design scenario whilst allowing flexibility. At the detailed design stage, the scheme proposals will accord with the parameters. The assessment of the maximum parameters for each receptor establishes the maximum potential impact and as a result, effects of greater adverse significance would not arise should any other development scenario to that assessed be taken forward in the final detailed project design.

6.151 The parameters that have been identified to be relevant to the TVIA, including the size / location of the Development Plots, building heights and site levels are set out in the parameter plans (**Volume 3: Appendices, Appendix 5.1**), which show the proposed maximum parameter massing for Application 4, defining the maximum extent of the Development Plots (P1), maximum building heights (P4) and site levels (P5). The assessment of

Application 4 is based on a 3D model of the proposed maximum parameter massing defined by these parameter plans.

### Phasing

6.152 The high-level anticipated phasing of delivery of the two applications is shown in **Volume 2a: Figure 5.12**, which informs the assessment of intra-development phase impacts. The proposed phasing is:

- Phase 1 NT02-04-: Q4 2023 to Q4 2029 Individual plots will be brought forward within the estimated build out duration.
- Phase 2 RB01-05 and RB12b: Q1 2025 to Q 2029 Individual plots will be brought forward for detailed design and construction within the estimated build out duration.
- Phase 3RB16, RB17, RB06, RB07 and RB10: Q3 2027- Q4 2032 Individual plots will be brought forward for detailed design and construction within the estimated build out duration.

6.153 There would be some overlap of the HIF works with the NT02-04 works as the Red Bank ground works are scheduled for completion in 2024. It is assumed that the HIF Works would be substantially complete by the time that works on the NT02-04 site begin. The HIF works will also be completed to enable the outline scheme to commence as they establish the levels on which most of the outline will be built.

## Embedded Mitigation (Application 4)

6.154 This section describes the measures which have been 'embedded' into the Proposed Development to avoid or minimise potential effects on townscape and visual amenity.

### Demolition and Construction

6.155 Prior to the commencement of any demolition, hoardings would be erected around the perimeter of the works within the Site, so that the visual effects of demolition will be minimised from adjoining pedestrian routes.

6.156 The site compound will be carefully positioned within the Site to avoid unnecessary visual effect to adjacent receptors. It is proposed to utilise the compound area to offload, store and handle materials as well as for welfare facilities where appropriate.

6.157 Contractors and their subcontractors would be expected to maintain a tidy site and where practical, to operate a 'just-in-time' policy for the delivery and supply of materials for the works. Excavated materials would primarily be removed from Site via HGVs for transportation to nearby construction or disposal sites.

6.158 As part of the Construction Environment Management Plan (CEMP), procedures and management measures to ensure the protection of ecological resources, including habitats (where retained) and protected species will be

included. All trees that are to be retained on-Site will be subject to protective measures in line with NJUG 4 Guidelines.

6.159 Working hours will be subject to agreement with MCC. However, it has been assumed that standard working hours would be followed, Monday – Friday 07.30 – 1800; Saturday 0800-1300 and no working on Sundays, which would minimise the visual effects of construction works experienced during evenings and weekends.

6.160 It is assumed that construction lighting will not include floodlighting and that there will be a curfew on other construction lighting at 23:00 hrs, to ensure that no lighting will be kept switched on overnight aside from low level lighting (for security / safety purposes). Construction works lighting to involve the use of well-located modern light fittings as part of a CEMP and in accordance with current best practice standards to minimise lighting intrusion to surrounding receptors.

6.161 The top of a tower crane is likely to be higher than the top of the Proposed Development, so it may be more visible than the finished buildings. This temporary effect is common as a consequence of building activity in cities and there is no practical way of avoiding it. The primary mitigation measure will therefore be the completion of the construction works and the short-term, temporary duration of the effect.

## The Completed and Operational Development

6.162 Operational phase embedded mitigation measures are incorporated into the design of Application 4 as primary mitigation. The design of Application 4 is described in **Volume 2: Main Text, Chapter 5: The Proposed Development**, the DAS and the Planning Statement submitted in support of Application 4.

6.163 The operational Development incorporates high quality buildings and places, which are fundamental to achieving well-designed places that are healthy, greener, enduring and successful in practice. The proposed development demonstrates embedded 'good design', by providing a setting for a diverse range of uses and activities; buildings, landscape and infrastructure that are likely to endure and evolve incrementally; and a richness of experience, including visual, such as views across the landscape of the Irk Valley or the detail of a well-design building.

6.164 The primary mitigation measures most relevant to townscape and visual effects that are incorporated into the design of the Proposed Development are summarised as follows:

- A townscape strategy that addresses height and density of the surrounding townscape. Densities range across the site, with higher density development and taller elements concentrated closer to the city centre, with height and massing stepping down to the River Irk.
- The tallest buildings within the Proposed Development are positioned towards the south of the Site, in the context of other tall buildings within the surrounding TCAs, including NOMA and New Cross, while buildings towards the north of the Site, where there are fewer tall buildings in the surrounding townscape, have fewer storeys.

- The buildings would be developed as three distinct neighbourhoods:
    - New Town, designed to link the city centre with a new park across the Irk Valley;
    - Red Bank Viaduct, designed to create a mixed-use destination; and
    - Red Bank Plateau, designed to create a residential, family-focussed area.
- The differences in character between these three neighbourhoods would help Application 4 to respond to the surrounding townscape context, which changes across the Site. Red Bank Viaduct and New Town comprise predominantly of high-density, mix-use urban blocks with heights between 8 and 55. The Plateau is a lower-density neighbourhood with perimeter blocks ranging between 5-12 storeys.
- Variation in building heights across the area would create a dynamic skyline. A heights framework has established key principles in relation to building heights:
    - Building heights step up towards the City Centre and live rail corridor;
    - Building heights step down towards the River Irk valley; and
    - The Plateau is a lower-density neighbourhood with taller elements located closer to Red Bank Terraces.
- The heights strategy was refined through TVIA workshops and to take account of overshadowing and VSC analysis. The resultant strategy sets out a range of heights across the masterplan following the principles of the heights framework that:
    - Create a consistent shoulder height along key routes;
    - Stagger taller elements to avoid facing towers;
    - Identified appropriate location for towers, including a landmark tower at RB10; and
    - Created a dynamic skyline through variation in heights.
- Tall building studies undertaken during the project design particularly considered the potential townscape, visual and heritage effects arising from the proposed scale and massing of plot 'RB10' specifically, the tallest building within the Proposed Development. The review included consideration of the townscape and visual impacts arising from alternative height options for RB10, and consideration of its potential effects. RB10 is in a location where the SRF recognises the opportunity for a landmark building with potential to contribute to the skyline, reflecting the neighbourhood's close proximity to the city centre. RB10 is also located outside the city centre Conservation Areas. Although RB10 is likely to be visible from the northern edges of the Shudehill Conservation Area, the likely townscape effects of RB10 on this valued townscape was found likely to be limited, as the Conservation Area is visually contained by the layout of its streets, and the height and density of buildings that enclose the spaces and limit outward views.
- The height of RB10 will be comparable to under-construction and consented buildings in the immediate area, such as Meadowside (162.4m), Victoria Riverside (145m) and the Gasworks (145.8m). In the context of under-

construction and consented development, RB10 will not be substantially taller than its emerging townscape, as the precedent for tall buildings of similar scale will be established by other towers in the emerging neighbourhood, which provide precedent as markers that visibly extend the city centre northwards.

- The general massing strategy is predominantly based on a perimeter block typology in order to incorporate taller elements and accommodate high density development while clearly defining streets with active frontages. This involves a combination of buildings featuring ground floor residential use towards the Red Bank Plateau, and mixed-use blocks towards the city centre, again responding to the surrounding context.
- The concept of 'wild urbanism', which has guided the design of Application 4 is set out in the Red Bank Illustrative Masterplan and is intended to create an interface between the city and the Irk Valley, bringing nature into the city and enhance the mix of uses in the Irk Valley. The Red Bank Illustrative Masterplan includes a number of embedded landscape measures including sky gardens, a rich tree canopy, layered existing and enhanced green infrastructure, strong blue infrastructure focused on the River Irk and a topography that will provide opportunities for views within and beyond its neighbourhoods.
- These measures 'embedded' into the proposed development help it to integrate with its townscape and visual context and provided embedded mitigation with respect to townscape and visual effects.

### 133143/VO/2022 | City Council development for creation of new and improved green infrastructure

6.165 Under a separate planning permission (permitted through planning application ref 133143/VO/2022) Manchester City Council (MCC) has also obtained full planning permission for infrastructure works for the Red Bank Neighbourhood project. This includes, but is not limited to, construction of new Plateau Avenue and junction from the existing Red Bank Road, utility and services connections, remediation and earthworks, demolition of existing sections of River Wall and the provision of green infrastructure including the creation of green links and first phase of the new City River Park. These green infrastructure improvements works being delivered by MCC under a separate planning permission include creation of public greenspace that will enhance the character of the area, comprising:

- The enhancement of St Catherine's Wood to deliver c. 4.5ha of the City River Park, including vegetation planting, lighting and security, and a new circulation route access for pedestrian and cyclists leading from St Catherine's Wood bridge, including some minor reprofiling of slopes to the rear of the park and tree and shrub clearance; and
- The creation of new public realm areas in the form of Red Bank Terraces, and Union Waterfront at the southern-most extent of the Site and connecting pedestrian and cycling circulation routes.

# Assessment of Likely Significant Townscape Effects (Application 4)

## Introduction

6.166 Townscape character is the distinct and recognisable pattern of elements that occurs consistently in a particular area of townscape, and the way that this pattern is perceived. Effects on townscape character would occur both within the Site, where the existing townscape and pattern of elements would be directly altered by the addition of Application 4; and contextually, where visibility of Application 4 may alter the way in which the townscape would be perceived.

6.167 Representative viewpoints are referred to in this assessment as they give a useful indication of the appearance of Application 4 from different townscape character areas. It should be noted however, that levels of magnitude of effect on townscape receptors are generally found to be lower than the magnitude of effect on viewpoints that lie within these townscape character areas. This means that if a viewpoint is assessed to undergo a medium-high magnitude of effect it does not necessarily follow that the townscape character area within which it lies would also undergo a medium-high magnitude of effect, but could undergo a medium magnitude of effect instead, for example. This is because the effects on viewpoints are assessed within the context of a specific outlook of Application 4 and are usually specifically selected to gain a direct view towards the application site. Application 4 is the principal consideration in the viewpoint assessment, and influences that lie in other areas of the view are considered to a lesser degree. The townscape character of a receptor is not, however, determined so specifically by the outlook over Application 4, and there are many other considerations, both visual and perceptual, that combine to give an area its townscape character. This means that the degree of influence Application 4 can be slightly less on townscape character than on a specific view.

## Preliminary Assessment – Townscape Character (Application 4)

6.168 In order to ensure that the assessment of the effects of Application 4 on townscape character is proportionate, **Table 6.11** presents a preliminary assessment of all of the TCAs within the Study Area. It indicates which TCAs are considered to have potential to undergo a significant effect as a result of Application 4 that require further assessment, and the TCAs that do not require further assessment due to the lack of potential effects. Those with potential for significant effects are assessed further in **Table 6.12 and 6.13**.

***Table 6.11**: Preliminary Assessment of Effects on Townscape Character (Application 4)*

| TCA Receptor | Distance to Application 4 | Preliminary Assessment (Application 4) |
|---|---|---|
| TCA 1: Lower Irk Valley | 0 km | Yes, due to the position of Application 4 within TCA1 Lower Irk Valley and the potential for direct effects to its townscape character during construction and operation, as shown in Viewpoint 8, 9 and 16 (**Figure 6.15, 6.16** and **Figure 6.23**). |
| TCA 2: NOMA | 0.1 km | Yes, due to the proximity of Application 4 to TCA 2: NOMA and potential for indirect effects on character during construction and |

| TCA Receptor | Distance to Application 4 | Preliminary Assessment (Application 4) |
|---|---|---|
| | | operation, through visibility of the Proposed Development from this TCA, as shown in the ZTV (**Figure 6.6**) and Viewpoint 1 and 7 (**Figure 6.8** and **6.14**). |
| TCA 3: Strangeways | 0.1 km | Yes, due to proximity of Application 4 to TCA3: Strangeways and potential for indirect effects on character during construction and operation, through visibility of the Proposed Development from this TCA, as shown in the ZTV (**Figure 6.6**) and Viewpoint 14 and 15 (**Figure 6.21** and **6.22**). |
| TCA 4: Manchester Fort | 0.3 km | No. Although there is visibility of the proposed development from this TCA, its retail park character has a low sensitivity to changes associated with the Proposed Development. No potential for significant effects on character of TCA and is not assessed further. |
| TCA 5: Transport & Education | 0.1 km | No. Although there is visibility of the proposed development from this TCA, its character defined by transport and education facilities has a low sensitivity to changes associated with the Proposed Development, during construction and operation. No potential for significant effects on character of TCA and is not assessed further. |
| TCA 6: Cheetham Hill | 0.6 km | No, due to distance of Application 4 to TCA6: Cheetham Hill and limited potential for indirect effects on character during construction and operation. Although there is visibility of the Proposed Development (**Figure 6.6**) in the skyline backdrop to this TCA in views towards the city centre, such as Viewpoint 10 (**Figure 6.17**), Cheetham Hill is geographically and visually separated from Proposed Development and the character of Cheetham Hill is likely to experience low levels of change during construction and operation. No potential for significant effects on character of TCA and is not assessed further. |
| TCA 7: Collyhurst | 0.4 km | Yes, due to proximity of Application 4 to TCA7: Collyhurst and potential for indirect effects on character during construction and operation, through visibility of the Proposed Development in the backdrop to this TCA in views and extent of visibility as shown in the ZTV (**Figure 6.6**) and Viewpoint 6 (**Figure 6.13**). |
| TCA 8: Miles Platting | 0.6 km | No. Although there is visibility of the proposed development from this TCA, its character is likely to experience low levels of change during construction and operation, due to the distance and restricted visibility of the Proposed Development from this TCA, as shown in Viewpoint 12 (**Figure 6.19**). No potential for significant effects on character of TCA and is not assessed further. |
| TCA 9: Ancoats | 0.7 km | No. Although there is visibility of the proposed development from the northern edges of this TCA, its character is likely to experience low levels of change during construction and operation, due to the distance, presence of intervening tall buildings/development and restricted visibility of the Proposed Development from the majority of this TCA, as shown (as a worst-case) in Viewpoint 5 (**Figure 6.12**). No potential for significant effects on character of TCA and is not assessed further. |
| TCA 10: New Cross | 0.15 km | Yes, due to proximity of Application 4 to TCA10: New Cross and potential for indirect effects on character during construction and operation, through visibility of the Proposed Development in the backdrop to this TCA in views and extent of visibility as shown in the ZTV (**Figure 6.6**) and Viewpoint 17 (**Figure 6.24**). |
| TCA 11: City Centre | 0.25 km | Yes, due to proximity of Application 4 to TCA11: City Centre and potential for indirect effects on character during construction and |

| TCA Receptor | Distance to Application 4 | Preliminary Assessment (Application 4) |
|---|---|---|
| | | operation, through visibility of the Proposed Development in the backdrop to this TCA in views and extent of visibility as shown in the ZTV (**Figure 6.6**) and Viewpoint 2, 3 and 4 (**Figure 6.9 – 6.11**). |
| TCA 12: Salford | 0.6 km | No. Although there is theoretical visibility of the proposed development from this TCA, its character during construction and operation, is likely to experience low levels of change due to its distance, the presence of tall buildings in the intervening townscape and restricted visibility of the Proposed Development from this TCA (**Figure 6.6**). |

## Demolition and Construction (Application 4)

6.169 The effects of Application 4 on townscape character during demolition and construction are assessed in **Table 6.12**, focusing on the TCAs identified in the preliminary assessment (**Table 6.11**) as requiring further assessment. A baseline description of each TCA is set out **Table 6.7**.

***Table 6.12**: Assessment of Townscape Character – Demolition and Construction (Application 4)*

| **TCA 1: Lower Irk Valley** | | |
|---|---|---|
| Sensitivity | Medium | The combination of low value and high susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | High | Demolition works within the Site will result in physical changes to parts of the townscape within the Lower Irk Valley (TCA1). Three buildings will be demolished during demolition works – the timber yard on Dantzic Street; joinery shop warehouse unit on Hargreaves Street; and warehouse unit on Faber Street; as well as demolition of several walls within the Site. Hoardings will be erected around the perimeter of the demolition works to minimise effects.<br>Construction activities will result in direct changes to the townscape character within the Site and indirect changes to the perceived character of the wider TCA outside the Site. Changes to townscape character will occur as a result of the construction works occurring through the phased build out duration. Construction effects of plots RB01-05 and RB12b are likely to occur during their construction phase between 2025 – 2029, while construction effects of plots RB06, RB07, RB10, RB16 and RB17 are likely to occur between 2025 – 2032.<br>Changes to townscape character will result from the construction works within the Site, including the introduction of the site compound; materials excavation, storage and handling; flight auger piling used for the buildings' foundations across all plots; construction plant particularly taller cranes (telescopic, support, tower and tracked cranes); and smaller plant including dump trucks, concrete mixers, piling rigs, lorries, skip wagons, excavators and rollers. Construction traffic will also be present within the TCA accessing plots NT02-04 and RB16 and RB17 via Collyhurst Road, and accessing plots RB01 – 07, RB10 and RB12b via Red Bank. The magnitude of change to the perceived townscape character of the Lower Irk Valley (TCA1) that will result from Application 4 during demolition and construction is assessed as high. |

| | | |
|---|---|---|
| Significance of effect (demolition and construction) | Significant (major/ moderate) | The effect on the townscape character of the Lower Irk Valley (TCA1) that will result from Application 4 during demolition and construction is assessed as **significant (major/moderate)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **TCA 2: NOMA** | | |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | Medium | Demolition and construction activities with the Site will result in no direct changes to the townscape character of TCA 2: Noma and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will be screened behind intervening buildings and the change in level of the railway viaduct, such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant resulting in no changes to the character of TCA3. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 4 construction period, together with the upper elements of partially constructed buildings, particularly those within the closer and taller plots RB10, RB07, RB06, RB16 and RB17.<br>The character of TCA 2: Noma is undergoing regeneration and redevelopment, with several areas undergoing construction and further development planned. Changes associated with construction of Application 4 in the adjacent Irk Valley (TCA1) are similar to and have associations with the changes already taking place with this TCA, which moderates the perceived changes to its townscape context. Construction traffic will also be visible on the edge the TCA accessing plots RB01 – 07, RB10 and RB12 via Red Bank and increase the influence of vehicle traffic, on the very edge of the TCA. The magnitude of change to the perceived townscape character of the Noma (TCA2) that will result from Application 4 during demolition and construction is assessed as medium. |
| Significance of effect (demolition and construction) | Not significant (moderate) | The effect on the townscape character of Noma (TCA2) that will result from Application 4 during demolition and construction is assessed as not significant (moderate), adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **TCA 3: Strangeways** | | |
| Sensitivity | Low | The combination of low value and medium susceptibility results in this TCA having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | Medium | Demolition and construction activities with the Site will result in no direct changes to the townscape character of TCA 3: Strangeways and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will largely be screened behind intervening buildings, such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant resulting in no changes to the character of TCA3. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 4 construction period, together with the upper elements of partially constructed buildings, particularly those within the closer and taller plots RB10, RB07, RB06, RB16 and RB17, but also within plots RB01-RB05C that will form the backdrop.<br>The character of TCA 3: Strangeways is defined by mixed-use low-rise industrial and commercial units and around the Green Quarter has also |

| | | |
|---|---|---|
| | | experienced recent high-rise development. The existing and emerging city centre skyline is visible in its backdrop with a number of tall buildings under construction and the skyline marked by tower cranes. Changes associated with construction of Application 4 in the adjacent Irk Valley (TCA1) are similar to and have associations with the changes already taking place, which moderates the perceived changes to its townscape context. The magnitude of change to the perceived townscape character of the Noma (TCA2) that will result from Application 4 during demolition and construction is assessed as medium from the closest areas of the TCA. The wider Strangeways TCA extends to the west at greater distance and will be subject to a low magnitude of change. |
| Significance of effect (demolition and construction) | Not significant (moderate/ minor) | The effect on the townscape character of Strangeways (TCA3) that will result from Application 4 during demolition and construction is assessed as not significant (moderate/minor), adverse and medium-term in duration (occurring primarily between 2025 - 2032), reducing with distance on the wider Strangeways TCA3 extending to the west. |
| **TCA 7: Collyhurst** | | |
| Sensitivity | Medium | The combination of medium value and medium susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | High | Demolition and construction activities with the Site will result in no direct changes to the townscape character of TCA 7: Collyhurst and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will largely be screened behind intervening buildings, landform and vegetation such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant resulting in limited changes to the character of TCA7. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 4 construction period, together with the upper elements of partially constructed buildings, particularly those within the closer and taller plots RB10, RB07, RB06, RB16 and RB17, but also within plots RB01-RB05C.<br>The character of TCA 7: Collyhurst is defined by a mix of low-rise and high-rise residential development. The existing and emerging city centre skyline is visible in its backdrop with a number of tall buildings under construction and the skyline marked by tower cranes. Changes associated with construction of Application 4 in the adjacent Irk Valley (TCA1) are similar to and have associations with the changes already taking place, which moderates the perceived changes to its townscape context. The magnitude of change to the perceived townscape character of Collyhurst (TCA7) that will result from Application 4 during demolition and construction is assessed as high from the closest areas of the TCA. The wider Strangeways TCA extends to the north and east at greater distance and will be subject to a low magnitude of change. |
| Significance of effect (demolition and construction) | Significant (major/ moderate) | The effect on the townscape character of Collyhurst (TCA7) that will result from Application 4 during demolition and construction is assessed as significant (major/moderate), adverse and medium-term in duration (occurring primarily between 2025 - 2032), reducing with distance on the wider Collyhurst TCA7 extending to the north and east. |
| **TCA 10: New Cross** | | |
| Sensitivity | Medium | The combination of the medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |

| | | |
|---|---|---|
| Magnitude of change (demolition and construction) | Medium | Demolition and construction activities with the Site will result in no direct changes to the townscape character of TCA 10: New Cross and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will largely be screened behind hoarding and intervening buildings, the change in level of the railway viaduct and vegetation, such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant resulting in limited change to the character of TCA10. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 4 construction period, together with the upper elements of partially constructed buildings, particularly those within the closer and taller plots RB10, RB07, RB06, RB16 and RB17, but also within plots RB01-RB05C.<br>The character of TCA 10: New Cross is undergoing regeneration and redevelopment, with several areas undergoing construction Mulbury City, Bendix Street is nearing completion) and further development is approved. Changes associated with construction of Application 4 in the adjacent Irk Valley (TCA1) are similar to and have associations with the changes already taking place with this TCA, which moderates the perceived changes to its townscape context. The magnitude of change to the perceived townscape character of the New Cross (TCA10) that will result from Application 4 during demolition and construction is assessed as medium. |
| Significance of effect (demolition and construction) | Not significant (moderate) | The effect on the townscape character of New Cross (TCA10) that will result from Application 4 during demolition and construction is assessed as not significant (moderate), adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **TCA 11: City Centre** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility to changes results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | Low | Demolition and construction activities with the Site will result in no direct changes to the townscape character of TCA 11: City Centre and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will be screened behind intervening buildings, such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant result in no change to the character of TCA11. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 4 construction period, together with the upper elements of partially constructed taller buildings within plots RB10, RB07, RB06, RB16 and RB17.<br>The character of the northern edges of TCA 11: City Centre is undergoing regeneration and redevelopment, particularly within the adjacent NOMA (TCA2) and New Cross (TCA10) areas, where several developments are undergoing construction and further development is approved. Changes associated with construction of Application 4 occur behind (to the north) of these TCAs and are separated from the city centre by these areas undergoing re-development. Views of the construction of Application 4 will largely be limited to the northern edges of the City Centre, near Victoria. Changes associated with Application 4 during construction are similar to, and have associations with, the changes already taking place on the northern edges of the city centre, which moderates the perceived changes to its townscape context. The magnitude of change to the perceived |

| | | |
|---|---|---|
| | | townscape character of the City Centre (TCA11) that will result from Application 4 during demolition and construction is assessed as low. |
| Significance of effect (demolition and construction) | Not significant (moderate/ minor) | The effect on the townscape character of New Cross (TCA10) that will result from Application 4 during demolition and construction is assessed as not significant (moderate/minor), adverse and medium-term in duration (occurring primarily between 2025 - 2032). |

## The Completed and Operational Development (Application 4)

6.170 The effects of Application 4 on townscape character for the completed and operational development are assessed in **Table 6.13**, focusing on the TCAs identified in the preliminary assessment (**Table 6.11**) as requiring further assessment. A baseline description of each TCA is set out **Table 6.7**.

***Table 6.13**: Assessment of Townscape Character – Completed and Operational Development (Application 4)*

| **TCA 1: Lower Irk Valley** | | |
|---|---|---|
| Sensitivity | Medium | The combination of low value and high susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | High | Application 4 will result in physical changes to the townscape of this TCA across its southern extent. Application 4 is likely to alter the character of the area from a generally formerly industrial area, featuring land uses including industrial buildings, vacant plots and areas of informal greenspace, to an area of high-density residential development, featuring areas of green infrastructure. The character of the area will be more in keeping with the adjacent NOMA and New Cross TCAs, where development of this type is currently taking place. The ZTV indicates that the addition of Application 4 to this TCA will be highly visible throughout. Actual visibility is likely to be somewhat reduced across northern parts of the TCA by screening provided by vegetation cover. Application 4 will also alter the setting that the TCA provides in views from neighbouring TCAs, appearing to bring the city centre skyline of Manchester into closer proximity to residential areas on the north-eastern edge of the city.<br>Taking this into account the magnitude of change is assessed as high for this TCA. Viewpoints within this TCA comprise Viewpoint 8: Sand Hill Park, Collyhurst, and Viewpoint 9: Dalton Street. Viewpoint 16: Red Bank and Viewpoint 9: Rochdale Road (Railway Bridge) are located on the boundary between this TCA and the neighbouring Strangeways TCA and Collyhurst TCA, respectively. |
| Significance of effect (completed and operational) | Significant (major/ moderate) | During completion and operation, Application 4 will form the new Red Bank character area (defined in the Victoria North SRF) within the existing Lower Irk Valley (TCA 1). The effect on the townscape character of the River Irk Valley (TCA1) that will result from Application 4 during the completed and operational phase, is assessed as significant (major/moderate), beneficial and long-term in duration. |
| **TCA 2: NOMA** | | |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | Medium | The addition of Application 4 will be highly visible from most areas within this TCA, with the exception of areas around the Co-op building and within the grid of streets to the north of Rochdale Road, where visibility of Application 4 will be reduced by existing built form. |

| | | |
|---|---|---|
| | | At the moment, the Site and the wider Lower Irk Valley TCA provide a more open setting in views from parts of this TCA. The addition of Application 4 to the adjacent Lower Irk Valley TCA will result in views towards a more developed backdrop from this TCA. However, the buildings within Application 4 will be similar in nature to buildings currently under construction and recently built within this TCA, and as such would be experienced within an immediate townscape context that is not uncharacteristic. Application 4 would introduce further built development that is taller than the immediately surrounding and historic pattern of development, but that is similar in nature to newly completed and under construction tall buildings in this area. Taking this into account the magnitude of change is assessed as medium for this TCA.<br>Viewpoints within this TCA comprise Viewpoint 1: St Michael's Flags and Angel Meadow Park, and Viewpoint 7: Dantzic Street. |
| Significance of effect (completed and operational) | Not significant (moderate) | The effect on the townscape character of NOMA (TCA2) that will result from Application 4 during the completed and operational phase, is assessed as not significant (moderate), beneficial and long-term in duration. Although there may be a perceived loss of a more open outlook from parts of the TCA, the high design quality of Application 4 compared to the existing townscape condition of the Site and the high-level of integration with the existing character of the TCA results in effects that are considered neutral on balance. |
| **TCA 3: Strangeways** | | |
| Sensitivity | Low | The combination of low value and medium susceptibility results in this TCA having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | Medium | The ZTV shows that theoretical visibility of Application 4 will be relatively widespread across this TCA, although visibility is somewhat reduced by the relatively close urban grain of buildings, which would limit outward views from the TCA. Application 4 would be in keeping with other under construction and recently completed high-rise buildings within an area of intensive regeneration across the nearby New Cross and NOMA TCAs and would therefore be in keeping with the immediate townscape context. However, it would bring development of a larger scale into closer proximity to this TCA. The large vertical scale of Application will be notable in the backdrop the TCA, partially encloses the backdrop behind the low trading estates and commercial units, although the longer distance aspect to the city centre will be retained. There will be an impression of the character and scale of development within the city centre extending out towards this TCA. Taking this into account the magnitude of change is assessed as medium. Viewpoints within this TCA comprise Viewpoint 14: North Street, and Viewpoint 15: St Chad's Street. Viewpoint 16: Red Bank is located on the boundary between this TCA and Lower Irk Valley TCA. |
| Significance of effect (completed and operational) | Not significant (moderate/ minor) | The effect on the townscape character of Strangeways (TCA3) that will result from Application 4 during the completed and operational phase, is assessed as not significant (moderate/minor), beneficial and long-term in duration. Although the large vertical scale of plots within Application 4 will be notable in the backdrop to the TCA, behind the low trading estates and commercial units, changes associated with Application 4 occur to the TCA that is of low sensitivity to change, given the relatively poor condition and low value of the townscape, and will relate well to the character and scale of development within the evolving city centre skyline extending into the backdrop of this TCA. Effects are also considered to reduce on the wider TCA to the west with increasing distance from the Site. |
| **TCA 7: Collyhurst** | | |

| | | |
|---|---|---|
| Sensitivity | Medium | The combination of medium value and medium susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | High | The ZTV indicates that visibility of Application 4 will be widespread across this TCA, particularly across more open parts to the south and west within closest proximity to the Site. Existing low-rise residential development within parts towards the north and east will limit outwards views towards Application 4 from these residential areas, and the ZTV shows a more intermittent pattern of visibility. Existing tall buildings along Rochdale Road will limit visibility along parts of this route,<br><br>Currently, the Site and the wider Lower Irk Valley TCA provide a more open setting in views to the south-west from parts of this TCA, and form a 'green buffer' between high-rise development towards Manchester city centre and low-rise residential development across this TCA. The addition of Application 4 to the adjacent Lower Irk Valley TCA will introduce further built development that is taller than the immediately surrounding pattern of development and may appear to extend Manchester city centre towards this TCA in the backdrop. Across southern parts of the TCA, the addition of Application 4 will change the surrounding context and introduce tall buildings into close proximity to low-rise, low-density residential development. Parts of the adjacent Lower Irk Valley TCA to the north-west of this TCA will remain unchanged, and will continue to provide a more open outlook for the northern parts of the Collyhurst TCA. Taking this into account the magnitude of change to the perceived character of the closest, adjacent parts of the TCA to its south and west, is assessed as high, reducing with distance to the north and east. Viewpoints within this TCA include Viewpoint 6: Rochdale Road (Railway Bridge). |
| Significance of effect (completed and operational) | Significant (major/ moderate) | The effect on the townscape character of the closest parts of Collyhurst (TCA7) that will result from Application 4 during the completed and operational phase, is assessed as significant (major/moderate), beneficial and long-term in duration. Although the larger vertical scale of plots within Application 4 may appear to extend Manchester city centre along the Lower Irk Valley towards this TCA in its backdrop, changes associated with Application 4 will relate well to the character and scale of development within the evolving city centre skyline and introduce built elements of high design quality compared to the existing townscape condition. Effects are also considered to reduce on the wider TCA to the north and east with increasing distance from the Site. |
| **TCA 10: New Cross** | | |
| Sensitivity | Medium | The combination of the medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | Medium | The ZTV indicates that theoretical visibility across this TCA would be relatively widespread, with the exception of areas where existing built form limits views to the north. This is restricted to small pockets of the TCA, including within streets featuring tall buildings and a tight grid pattern to the south of Rochdale Road, and around industrial units further north. Elsewhere, there will be relatively close-proximity views towards Application 4. This TCA currently forms the edge of high-rise development within Manchester city centre, and views to the north from within it are partially open over the neighbouring Lower Irk Valley TCA, although the intervening railway corridor and viaduct provides a visual and physical buffer. Application 4 will extend tall buildings to the north of this TCA, and from more open parts across the north of the TCA there will be views to |

| | | |
|---|---|---|
| | | the north and south towards the taller buildings within Plot RB10, RB06, RB07, RB16 and RB17 in particular. These will however, generally be of a similar scale and massing as development currently under construction or recently completed within this TCA, which moderates the magnitude of change associated with further change in the surrounding context. Taking this into account, the magnitude of change associated with Application 4 is assessed as medium. Viewpoints within this TCA include Viewpoint 17: Rochdale Road. |
| Significance of effect (completed and operational) | Not significant (moderate) | The effect on the townscape character of New Cross (TCA10) that will result from Application 4 during the completed and operational phase, is assessed as not significant (moderate), neutral and long-term in duration. Although there will be an extension in the presence and scale of tall buildings to the north of the TCA within the adjacent Lower Irk Valley (TCA1), the high design quality of Application 4 compared to the existing townscape condition of the Site and the high-level of integration with the existing and evolving character of New Cross (TCA10) results in effects that are considered neutral on balance. |
| **TCA 11: City Centre** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility to changes results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | Low | The ZTV indicates that theoretical visibility of Application 4 will be intermittent from the City Centre. Visibility will be more widespread towards the north of the TCA around Victoria, in closer proximity to the Site, while towards the core of the TCA to the south there will be limited pattern of visibility from occasional streets and public spaces. This is due to the relatively fine urban grain and existing tall buildings within the city centre, which combine to limit outward views to the north. Application 4 will introduce additional tall buildings to the north of the city centre, from parts with an open outlook or alignment in this direction. Application 4 will generally be seen beyond existing tall buildings of a similar style, including completed or nearly completed buildings within the NOMA and New Cross areas to the north of the city centre. These areas tend to provide a buffer that limits changes arising from Application 4 on the core areas of the city centre, with only the taller buildings within Application 4, such as RB10 in particular, being partially visible in the backdrop (such as in Viewpoint 2 and 3). Generally, these taller buildings visible within Application 4 will be seen as similar in scale and massing due to the increased distance between the Site and the city centre. Application 4 will result in a low magnitude of change to the townscape character of the majority of the TCA, rising locally to the north of the TCA around the Victoria area to a medium magnitude of change.<br>Viewpoints within this TCA comprise Viewpoint 2: Corporation Street, Viewpoint 3: Manchester Cathedral, and Viewpoint 4: Smithfield. |
| Magnitude of change (completed and operational) | Not significant (moderate/ minor) from the majority of the TCA<br><br>Not significant (moderate) from localised | The effect on the townscape character of City Centre (TCA11) that will result from Application 4 during the completed and operational phase, is assessed as not significant (moderate/minor), neutral and long-term in duration form the majority of the TCA, increasing to not significant (moderate), neutral and long-term from localised area around Victoria to the north of the TCA. Although there will be an extension in the presence and scale of tall buildings to the north of the TCA, the high design quality, high-level of integration with the existing and evolving townscape to the north of the City Centre within NOMA and New Cross results in effects that are considered neutral on balance. |

| | | |
|---|---|---|
| | area around Victoria to the north of the TCA | |

## Preliminary Assessment – Conservation Areas (Application 4)

6.171 In order to ensure that the assessment of the effects of Application 4 on the townscape and appearance of Conservation Areas (CAs) is proportionate, **Table 6.14** presents a preliminary assessment of all of the CAs within the Study Area. It indicates which CAs are considered to have potential to undergo a significant effect as a result of Application 4 that require further assessment, and the CAs that do not require further assessment due to the lack of potential effects. Those with potential for significant effects are assessed further in **Table 6.15** and **6.16.**

***Table 6.14**: Preliminary Assessment of Effects on Conservation Areas (Application 4)*

| CA Receptor | Distance to Application 4 | Preliminary Assessment (Application 4) |
|---|---|---|
| Ancoats CA | 0.6 km | Yes, due to the potential for indirect effects on the townscape and appearance of the Ancoats CA during construction and operation, through visibility of the Proposed Development from this CA, as shown in the ZTV (**Figure 6.6**), and Viewpoint 5: Ancoats (**Figure 6.12**). |
| Cathedral CA | 0.5 km | Yes, due to the potential for indirect effects on the townscape and appearance of the Cathedral CA during construction and operation, through visibility of the Proposed Development from this CA, as shown in the ZTV (**Figure 6.6**), and Viewpoint 3: Manchester Cathedral (**Figure 6.10**). |
| Shudehill CA | 0.4 km | Yes, due to the potential for indirect effects on the townscape and appearance of the Shudehill CA during construction and operation, through visibility of the Proposed Development from this CA, as shown in the ZTV (**Figure 6.6**) and Viewpoint 2: Corporation Street (**Figure 6.9**). |
| Smithfield CA | 0.4 km | Yes, due to the potential for indirect effects on the townscape and appearance of the Smithfield CA during construction and operation, through visibility of the Proposed Development from this CA, as shown in the ZTV (**Figure 6.6**) and Viewpoint 4: Smithfield (**Figure 6.11**). |
| Stevenson Square CA | 0.7 km | No, due to the distance of Application 4 to Stevenson Square CA and limited potential for indirect effects on the character and appearance of the CA during construction and operation. Although there is theoretical visibility of the Proposed Development (Figure 6.6) in the skyline backdrop to this CA in views to the north, these are limited in nature. Stevenson Square CA is geographically and visually separated from the Proposed Development and the character of the area is likely to experience low levels of change during construction and operation. No potential for significant effects on character of CA and is not assessed further. |
| Upper King Street CA | 0.9 km | No, due to the distance of Application 4 to Upper King Street CA and limited potential for indirect effects on the character and appearance of the CA during construction and operation. Although |

| CA Receptor | Distance to Application 4 | Preliminary Assessment (Application 4) |
|---|---|---|
| | | there is theoretical visibility of the Proposed Development (**Figure 6.6)** across this area, these are very limited in nature. Upper King Street CA is geographically and visually separated from the Proposed Development and the character of the area is likely to experience low levels of change during construction and operation. No potential for significant effects on character of CA and is not assessed further. |
| St Ann's Square CA | 0.9 km | No. Although there is visibility of the Proposed Development from the northern edges of this CA, its character is likely to experience low levels of change during construction and operation, due to the distance, presence of intervening tall buildings/development and restricted visibility of the Proposed Development from the majority of this CA. No potential for significant effects on character of CA and is not assessed further. |
| Parsonage Gardens CA | 0.9 km | No. Although there is visibility of the Proposed Development from the northern edges of this CA, its character is likely to experience low levels of change during construction and operation, due to the distance, presence of intervening tall buildings/development and restricted visibility of the Proposed Development from the majority of this CA. No potential for significant effects on character of CA and is not assessed further. |
| Flat Iron CA | 1.0 km | No. Although there is visibility of the Proposed Development from the northern edges of this CA, its character is likely to experience low levels of change during construction and operation, due to the distance, presence of intervening tall buildings/development and restricted visibility of the Proposed Development from the majority of this CA. No potential for significant effects on character of CA and is not assessed further. |

## Demolition and Construction (Application 4)

6.172 The effects of Application 4 on the townscape and appearance of CAs during demolition and construction are assessed in **Table 6.15**, focusing on CAs identified in the preliminary assessment (**Table 6.14**) as requiring further assessment. A baseline description of each CA is set out **Table 6.8**.

***Table 6.15**: Assessment of CAs – Demolition and Construction (Application 4)*

| **Ancoats CA** | | |
|---|---|---|
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (demolition and construction) | Low | Demolition and construction activities within the Site will result in no direct changes to the townscape and appearance of Ancoats CA, and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will largely be screened behind intervening buildings, such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant will result in no changes to the character of Ancoats CA. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 4 construction period, |

| | | |
|---|---|---|
| | | together with the upper elements of partially constructed buildings, particularly those within the closer and taller plots.<br>Demolition and construction activities within the Site will not result in effects on the cotton spinning mills and housing which form the defining buildings within the CA. Application 4 may result in changes to the balance of manufacturing, transport and residential uses, which currently forms a defining feature within the CA, by introducing additional residential development seen to the north-west beyond the CA. However, this will be seen in the context of existing tall buildings, including some which are currently under construction, and as such is not considered to result in more than a low magnitude of change on the townscape and appearance of the CA. |
| Significance of effect (demolition and construction) | Not significant (moderate / minor) | The effect on the townscape character of the Ancoats CA that will result from Application 4 during demolition and construction is assessed as **not significant (moderate / minor)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Cathedral CA** | | |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (demolition and construction) | Low | Demolition and construction activities within the Site will result in no direct changes to the townscape and appearance of Cathedral CA, and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will largely be screened behind intervening buildings, such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant will result in no changes to the character of Cathedral CA. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 4 construction period, together with the upper elements of partially constructed buildings, particularly those within the closer and taller plots, including RB10.<br>Demolition and construction activities within the Site will not result in effects on the distinctive buildings within the CA, including the Cathedral, Chetham's Hospital school and Victorian-era commercial buildings. It may result in limited effects on the "confined solemnity of the Cathedral Yard", although these effects will be temporary and seen in the context of existing tall buildings to the north of the CA. As such, demolition and construction activities associated with Application 4 are not considered to result in more than a low magnitude of change on the townscape and appearance of the Cathedral CA. |
| Significance of effect (demolition and construction) | Not significant (moderate / minor) | The effect on the townscape character of the Cathedral CA that will result from Application 4 during demolition and construction is assessed as **not significant (moderate / minor)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Shudehill CA** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (demolition and construction) | Low | Demolition and construction activities within the Site will result in no direct changes to the townscape and appearance of Shudehill CA, and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will largely be screened behind intervening buildings, such that the demolition works, site |

| | | |
|---|---|---|
| | | compound, materials excavation/storage, drilling and smaller construction plant will result in no changes to the character of Shudehill CA. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 4 construction period, together with the upper elements of partially constructed buildings, particularly those within the closer and taller plots, including RB10.<br>Demolition and construction activity associated with Application 4 will have no effect on the built form within the CA, including either the large 20th Century buildings situated on the western side of the CA, or the older, smaller-scale properties to the east. It will largely be seen in the context of the larger-scale buildings on the western side of the CA, due to the position of Application 4 to the north and the orientation of the CA, as well as in the context of modern development to the north of the CA, across NOMA and New Cross TCAs. The magnitude of change is therefore considered to be low. |
| Significance of effect (demolition and construction) | Not significant (moderate/ minor) | The effect on the townscape character of Shudehill CA that will result from Application 4 during demolition and construction is assessed as **not significant (moderate/minor)**, adverse and medium-term in duration (occurring primarily between 2025 – 2032). |
| **Smithfield CA** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (demolition and construction) | Low | Demolition and construction activities within the Site will result in no direct changes to the townscape and appearance of Smithfield CA, and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will largely be screened behind intervening buildings, such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant will result in no changes to the character of Smithfield CA. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 4 construction period, together with the upper elements of partially constructed buildings, particularly those within the closer and taller plots. However, visibility of construction activity will be limited across the area, with theoretical visibility focussed towards the northern extent of the CA.<br>Demolition and construction activity associated with Application 4 will have no effect on the building typologies which form the key characteristic of this CA, including the former markets, now converted to alternative uses, or the small-scale Georgian houses. It will also have no effect on the contrast between the large-scale buildings focussed towards the south of the CA with the smaller-scale buildings around Turner Street and Back Turner Street. Visibility of demolition and construction activities will be most widespread across the northern part of the CA, where there is visibility of extensive regeneration occurring across the NOMA and New Cross TCAs. The magnitude of change is therefore considered to be low. |
| Significance of effect (demolition and construction) | Not significant (moderate / minor) | The effect on the townscape character of Smithfield CA that will result from Application 4 during demolition and construction is assessed as not significant (moderate / minor), adverse and medium-term in duration (occurring primarily between 2025 – 2032). |

## The Completed and Operational Development (Application 4)

6.173 The effects of Application 4 on the townscape and appearance of CAs for the completed and operational development are assessed in **Table 6.16**, focusing on the CAs identified in the preliminary assessment (**Table 6.14**) as requiring further assessment. A baseline description of each CA is set out **Table 6.8**.

***Table 6.16**: Assessment of CAs – Completed and Operational Development (Application 4)*

| | | |
|---|---|---|
| **Ancoats CA** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (completed and operational) | Low | The addition of Application 4 will be visible from much of this CA, particularly along streets with open views to the north-west. Elsewhere, visibility of Application 4 will be reduced by existing built form. Application 4 would be in keeping with other under construction and recently completed high-rise buildings within an area of intensive regeneration across the nearby New Cross and NOMA TCAs and would therefore be in keeping with the immediate townscape context. It would be seen beyond townscape which is of relatively low value. Application 4 will not result in any effects on the defining characteristic of the mill buildings and red brick housing across the CA. However, the balance of manufacturing, transport and residential uses which is identified as one of the key characteristics of the area may be altered by the increasing density of residential development beyond the CA. Taking this into account, the magnitude of change is assessed as low. Viewpoints within this CA comprise Viewpoint 5: Ancoats. |
| Significance of effect (completed and operational) | Not significant (moderate / minor) | The effect on the townscape character of the Ancoats CA that will result from Application 4 during the completed and operational phase, is assessed as **not significant (moderate / minor),** beneficial and long-term in duration. The large vertical scale of plots within Application 4 will be notable in the backdrop to the CA, behind commercial units and existing tall residential buildings. However, changes associated with Application 4 will relate well to the character and scale of development within the evolving city centre skyline extending into the backdrop of this CA, and will result in a beneficial effect on the relatively low value townscape setting beyond the CA. |
| **Cathedral CA** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (completed and operational) | Low | The addition of Application 4 will be visible from much of this CA, particularly across its northern extents. Application 4 would be in keeping with other under construction and recently completed high-rise buildings seen to the north of the CA within an area of intensive regeneration extending north of the historic city centre into the nearby New Cross and NOMA TCAs. Application 4 would therefore be in keeping with the immediate townscape context. Application 4 will not result in any effects on the historic buildings which form the key characteristic of this CA, including the Cathedral, Chetham's Hospital school and Victorian-era commercial buildings including the Corn Exchange. It may have a limited influence on the "confined solemnity of the Cathedral Yard" by introducing modern development into longer-distance views to the north, although this has been altered by existing modern development seen upon the |

| | | |
|---|---|---|
| | | same skyline. Taking this into account, the magnitude of change is assessed as low. Viewpoints within this CA comprise Viewpoint 3: Manchester Cathedral. |
| Significance of effect (completed and operational) | Not significant (moderate / minor) | The effect on the townscape character of Cathedral CA that will result from Application 4 during the completed and operational phase, is assessed as **not significant (moderate / minor)**, neutral and long-term in duration. Although Application 4 will introduce tall buildings seen upon the skyline to the north of this historic area, these will be seen in the context of existing development of a similar nature. The effect on the qualities for which the CA has been designated is considered to be minimal. |
| **Shudehill CA** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (completed and operational) | Low | The addition of Application 4 will be visible from much of this CA, largely limited to visibility of lower plots across the Site, although from parts RB10 will also be visible. Application 4 would be in keeping with other under construction and recently completed high-rise buildings seen to the north of the CA within an area of intensive regeneration extending north of the historic city centre into the nearby New Cross and NOMA TCAs. Application 4 would therefore be in keeping with the immediate townscape context. Application 4 will not result in any effects on the historic buildings which form the key characteristic of this CA, including the large-scale 20th Century buildings on the western side of the CA, or the more historic smaller-scale buildings to the east. The height and design of the buildings within Application 4 will provide a visual contrast with the historic buildings within the CA, but will be seen in the context of modern tall buildings to the immediate north of the CA, and will therefore be in keeping with the surrounding townscape context. Outward views from this area do not form a key feature of its characteristics. Viewpoints within this CA comprise Viewpoint 2: Corporation Street. |
| Significance of effect (completed and operational) | Not significant (moderate/ minor) | The effect on the townscape character of Shudehill CA that will result from Application 4 during the completed and operational phase, is assessed as **not significant (moderate/minor)**, neutral and long-term in duration. Although the large vertical scale of plots within Application 4 will be notable in the backdrop from parts of the CA, these will be seen in the context of existing tall buildings to the immediate north of the CA, and will therefore be in keeping with the surrounding townscape context. |
| **Smithfield CA** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (completed and operational) | Low | Visibility of Application 4 will be relatively limited across this CA, with most widespread visibility focussed along the northern extents of the CA. In this area, there is existing visibility of extensive regeneration occurring with the NOMA and New Cross TCAs, and Application 4 will therefore appear in keeping with the existing townscape context. Outward views do not form a key characteristic of this CA.<br>Application 4 will not result in any effects on the building typologies which form the key characteristic of this CA, including the former markets, now converted to alternative uses, or the small-scale Georgian houses. It will also have no effect on the contrast between the large-scale buildings focussed towards the south of the CA with the smaller-scale buildings around Turner Street and Back Turner Street. Taking this into account, the |

| | | |
|---|---|---|
| | | magnitude of change associated with Application 4 is considered to be no higher than low. Viewpoint 4 is located on the northern edge of this CA. |
| Significance of effect (completed and operational) | Not significant (moderate / minor) | The effect on the townscape and appearance of the Smithfield CA that will result from Application 4 during the completed and operational phase, is assessed as not significant (moderate / minor), neutral and long-term in duration. Changes associated with Application 4 will be in keeping with the character and scale of development within the evolving city centre skyline to the north. |

## Assessment of Likely Significant Visual Effects (Application 4)

### Demolition and Construction (Application 4)

6.174 The visual effects of Application 4 on representative viewpoints during demolition and construction are assessed in **Table 6.17**. The baseline conditions and value of each viewpoint has been described previously in **Table 6.10**.

***Table 6.17**: Visual Assessment – Demolition and Construction (Application 4)*

| **Viewpoint 1: St Michael's Flags and Angel Meadow Park (Figure 6.8b(i-ii))** | | |
|---|---|---|
| Sensitivity: | Medium | The combination of high value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction) | High | Demolition and construction works occurring at lower levels with the Site will be screened behind existing buildings, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings within plots RB10, RB07, RB06, RB16 and RB17 in particular. |
| Significance of effect: (demolition and construction) | Significant (major/moderate) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 1, is assessed as **significant (major/moderate)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 2: Corporation Street (Figure 6.9b)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | High | Demolition and construction works occurring at lower levels with the Site will be screened behind existing buildings, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings mainly within plot RB10, and partially within plots RB07 and RB06. |
| Significance of effect: | Significant (major/moderate) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 2, is assessed as |

| | | |
|---|---|---|
| (demolition and construction) | | **significant (major/moderate)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 3: Manchester Cathedral (Figure 6.10b)** | | |
| Sensitivity: | High | The combination of high value and high susceptibility results in the receptors experiencing this view having a high sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Low | Demolition and construction works occurring at lower levels with the Site will be screened behind existing buildings, with no views of the site compound, materials excavation/storage, drilling and smaller construction plant. Taller plant such as telescopic/support/tower cranes will be partially visible during the construction period, although largely screened by the intervening buildings. The upper elements of partially constructed buildings mainly within plot RB10 and partially within plot RB07, are also likely to be partially visible but largely contained behind existing buildings. |
| Significance of effect: (demolition and construction) | Not significant (moderate/minor) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 3, is assessed as **not significant (moderate/minor)**, neutral and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 4: Smithfield (Figure 6.11b)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Negligible | Construction works associated with Application 4 will be almost entirely not visible due to screening by existing built form in close proximity to the viewpoint. Demolition and construction works occurring at lower levels with the Site will be screened behind existing buildings. Taller plant such as telescopic/support/tower cranes may be partially visible during the construction period, but will largely be screened behind the existing buildings in the foreground of the view and not visible. |
| Significance of effect (demolition and construction): | Not significant (minor) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 4, is assessed as **not significant (minor)**, neutral and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 5: Ancoats (Figure 6.12b)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Medium | Demolition and construction works occurring at lower levels with the Site will be screened behind existing buildings, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings within plots RB10, RB07, RB06, RB16 and RB17 in particular. |
| Significance of effect (demolition | Not significant (moderate) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 5, is assessed as **not** |

| | | |
|---|---|---|
| and construction): | | **significant (moderate)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 6: Rochdale Road (Railway Bridge) (Figure 6.13b)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | High | Demolition and construction works occurring at lower levels with the Site will be screened behind the railway bridge on the western side of Rochdale Road, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings within all of the development plots. |
| Significance of effect (demolition and construction): | Significant (major/moderate) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 6, is assessed as **significant (major/moderate)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 7: Dantzic Street (Figure 6.14b)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Medium | Demolition and construction works occurring at lower levels with the Site will be screened behind existing buildings, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings within plots RB10, RB07, and RB06 in particular. |
| Significance of effect (demolition and construction): | Not significant (moderate) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 7, is assessed as **not significant (moderate)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 8: Sand Hills Park, Collyhurst (Figure 6.15b)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | High | Demolition and construction works occurring at lower levels with the Site will be screened behind the intervening vegetation within Sand Hills Park, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings within all of the development plots. |
| Significance of effect (demolition | Significant (major/moderate) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 8, is assessed as **significant (major/moderate)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |

| | | |
|---|---|---|
| and construction): | | |
| **Viewpoint 9: Dalton Street (Figure 6.16b)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | High | Demolition and construction works occurring at lower levels with the Site will be screened behind the intervening vegetation along Dalton Street, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Clearance of the vegetation within Plots NT02-NT04 may, however, open up views into the Site during construction. There may therefore be some limited views towards ground-level construction across the Site. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, at relatively close proximity, together with the upper elements of partially constructed buildings within plots RB10, RB07, RB06, RB16 and RB17 in particular. |
| Significance of effect (demolition and construction): | Significant (major/moderate) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 9, is assessed as **significant (major/moderate)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 10: Queen's Road (near Metrolink) (Figure 6.17b)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Medium | Demolition and construction works occurring at lower levels with the Site will be screened behind existing built form, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings within all the development plots, but particularly the taller buildings within RB10, RB07, RB06, RB16 and RB17 in particular. These elements will form a relatively small proportion of the overall view available from this location and will be located at relative distance. |
| Significance of effect (demolition and construction): | Not significant (moderate / minor) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 10, is assessed as **not significant (moderate / minor)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 11: Queen's Park (Figure 6.18b)** | | |
| Sensitivity: | Medium | The combination of medium value and low susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Low | Demolition and construction works occurring at lower levels with the Site will be screened behind existing built form and vegetation within Queens Park, with no views of the site compound, materials excavation/storage, drilling and smaller construction plant. Taller plant such as telescopic/support/tower cranes will be the main visible |

| | | |
|---|---|---|
| | | elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings within all the development plots, but particularly the taller buildings within RB10, RB07, RB06, RB16 and RB17. These elements will form a relatively small proportion of the overall view available from this location and will be located at relative distance and partially screened by vegetation. |
| Significance of effect (demolition and construction): | Not significant (moderate/minor) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 11, is assessed as **not significant (moderate/minor)**, neutral and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 12: Miles Platting (Figure 6.19b)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Low | Demolition and construction works occurring at lower levels with the Site will be screened behind existing buildings, with no views of the site compound, materials excavation/storage, drilling and smaller construction plant. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings within plots RB10, RB07, RB06, RB16 and RB17 in particular. |
| Significance of effect (demolition and construction): | Not significant (minor) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 12, is assessed as **not significant (minor)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 13: Manchester Fort (Figure 6.20b)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Medium | Demolition and construction works occurring at lower levels with the Site will be screened behind the low-rise retail units within Manchester Fort, with no views of the site compound, materials excavation/storage, drilling and smaller construction plant. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings within the majority of development plots, particularly the taller buildings within RB10, RB07, RB06, RB16 and RB17, but also the lower buildings within plots RB01-RB05C that will form the backdrop. |
| Significance of effect (demolition and construction): | Not significant (moderate/minor) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 13, is assessed as **not significant (moderate/minor)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 14: North Street (Figure 6.21b)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |

| | | |
|---|---|---|
| Magnitude of change (demolition and construction): | High | Demolition and construction works occurring at lower levels with the Site will be screened behind built form along North Street and Stanley Street, with no views of the site compound, materials excavation/storage, drilling and smaller construction plant. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings within the majority of development plots, particularly the taller buildings within RB10, RB07, RB06, RB16 and RB17, but also the lower buildings within plots RB01-RB05C that will form the backdrop and occupy a wide extent of the view to the south-east down North Street. |
| Significance of effect (demolition and construction): | Not significant (moderate) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 14, is assessed as **not significant (moderate/minor)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 15: St Chad's Street (Figure 6.22b(i-ii))** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Medium | Demolition and construction works occurring at lower levels with the Site will be largely screened behind built form and a change in level between St Chad's Street and Red Bank, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely to occur except within plots RB06 and RB07 directly along St Chads Street. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings, particularly the taller buildings within RB10, RB07, RB06, RB16 and RB17, that will form the backdrop. |
| Significance of effect (demolition and construction): | Not significant (moderate/minor) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 15, is assessed as **not significant (moderate/minor)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |
| **Viewpoint 16: Red Bank (Figure 6.23b)** | | |
| Sensitivity: | Medium | The combination of low value and high susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | High | Demolition and construction works occurring at lower levels with the Site are likely to be screened by the change in level associated with the railway viaduct, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings within plots RB10, RB07, RB06, RB16 and RB17 in particular. |
| Significance of effect (demolition and construction): | Significant (major/moderate) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 16, is assessed as **significant (major/moderate)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |

| **Viewpoint 17: Rochdale Road (Figure 6.24b)** | | |
|---|---|---|
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction) | High | Demolition and construction works occurring at lower levels with the Site will be screened behind existing built form to the west of Rochdale Road, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed buildings within the majority of the development plots, but particularly the taller buildings within plots RB10, RB07, RB06, RB16 and RB17. |
| Significance of effect (demolition and construction): | Significant (moderate) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 17, is assessed as **significant (moderate)**, adverse and medium-term in duration (occurring primarily between 2025 - 2032). |

## The Completed and Operational Development (Application 4)

6.175 The visual effects of Application 4 on representative viewpoints during completion and operation are assessed in **Table 6.18**. The baseline conditions and value of each viewpoint has been described previously in **Table 6.10**.

***Table 6.18**: Visual Assessment – Completed and Operational Development (Application 4)*

| **Viewpoint 1: St Michael's Flags and Angel Meadow Park (Figure 6.8b(i-ii))** | | |
|---|---|---|
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | Application 4 will be located at relatively close proximity and will introduce additional tall buildings into the view from this viewpoint. RB10 will be largely behind the Gate, Meadowside on the north side of St Michael's Flags and Angel Meadow Park, with its upper storeys and north façade visible. RB10 will rise above this building in terms of vertical scale but will be in keeping with the tall buildings in the foreground at the centre and side of the view. Several other blocks within Application 4 will be located behind development that is currently under construction. These will be located at a slightly greater distance from the viewpoint and will therefore appear smaller in scale. However, they will contribute to providing more visual enclosure in the view over St Michael's Flags and Angel Meadow Park, which previously afforded some openness in the view out to the Irk Valley. They will be larger in both vertical scale and massing than the buildings within Victoria Riverside which they will be seen beyond. |
| Significance of effect (completed and operational): | Significant (Major / moderate) | The effect of Application 4 on the view experienced by residents and people visiting St Michael's Flags and Angel Meadow Park, is assessed as significant (major / moderate), neutral and long-term in duration. These effects arise from the sensitivity of users of the greenspace and residents, combined with the magnitude of change arising from the vertical scale of RB10 and the introduction of the other plots into the view. In this direction, the view was previously fairly open towards the Lower Irk Valley, providing a contrast with surrounding built form visible at close proximity in other directions, but |

| | | |
|---|---|---|
| | | has been altered recently by other development. The introduction of Application 4 will contribute to providing further enclosure of the view over St Michael's Flags and Angel Meadow Park. |
| **Viewpoint 2: Corporation Street (Figure 6.9b)** | | |
| Sensitivity: | Medium | The combination of high value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | Application 4 will be located at relatively close proximity and will form additional tall buildings in the view from this viewpoint, seen in views to the north from the northern edge of Shudehill Conservation Area. The tall vertical and modern form of RB10 will appear behind 109 Corporation Street (a Grade II listed building) and its domed roof. RB10 will have notably greater vertical scale compared to the foreground listed building; such that it is likely to be visible in successive vertical views. It will appear similar to the vertical scale of New Victoria and 4 Angel Square that form part of the immediate edge of centre context to the city, although with a slim mass. RB10 will occupy a gap between other tall buildings and will draw the eye upwards. It is likely to become a prominent landmark in the view along Corporation Street. The majority of remaining Application 4 plots are not visible due to foreground development in the view, with just parts of plots RB06 and RB07 partially visible between RB10 and 4 Angel Square. |
| Significance of effect (completed and operational): | Significant (major / moderate) | The effect of Application 4 on the view experienced by pedestrians, motorists and people working in the local area is assessed as significant (major / moderate), adverse and long-term in duration. These effects arise primarily from the position of RB10, seen in the focal point of the view along the road, in combination with its vertical scale, contrast and position behind 109 Corporation Street (a Grade II listed building). The effect will be partially moderated by the limited view of the rest of the plots, which are behind foreground buildings. The presence of recently completed tall buildings at New Victoria and 4 Angel Square will also moderate the effect of Application 4. This is a localised effect on the view from the northern edge of Shudehill Conservation Area, and it is considered unlikely to translate to a wider significant effect on its character. |
| **Viewpoint 3: Manchester Cathedral (Figure 6.10)** | | |
| Sensitivity: | High | The combination of high value and high susceptibility results in the receptors experiencing this view having a high sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Low | Application 4 will be located in somewhat close proximity and will form additional tall buildings seen in the view from this part of Cathedral Conservation Area. The majority of Application 4 will be screened by the existing built skyline that forms the backdrop to Cathedral Gardens. This includes several modern tall buildings, including the recently completed New Victoria development. RB10 will be partially visible behind New Victoria and rising slightly above it in terms of its vertical scale. However, it will appear in keeping with the modern, tall buildings in the city skyline backdrop to Cathedral Gardens. |
| Significance of effect (completed and operational): | Not significant (moderate) | The effect of Application 4 on the view experienced by pedestrians, residents, visitors to the area and people working in the local area is assessed as not significant (moderate), neutral and long-term in duration. This effect will influence views from this viewpoint and the townscape character of Cathedral Conservation Area. These effects arise primarily from the position of Application 4 beyond the recently completed New Victoria development, with just RB10 seen rising slightly above New Victoria. |

| | | |
|---|---|---|
| | | Application 4 is likely to contribute to the existing modern skyline of tall buildings in the backdrop.<br>This is a localised effect on the view from the northern edge of Shudehill Conservation Area, and it is considered unlikely to translate to a wider significant effect on its character. |
| **Viewpoint 4: Smithfield (Figure 6.11)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Negligible | Application 4 will be almost entirely not visible due to it being almost completely screened behind the foreground Moda, Angel Gardens building on Rochdale Road. |
| Significance of effect (completed and operational): | Not significant (minor) | The effect of Application 4 on views from this location and on the townscape character of Smithfield Conservation Area is assessed as not significant (minor), neutral and long-term in duration. This is primarily as a result of the fact that only a very small proportion of Application 4 will be visible, due to it being almost completely screened behind the foreground Moda, Angel Gardens building. |
| **Viewpoint 5: Ancoats (Figure 6.12)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Medium | Application 4 will be located in somewhat close proximity and will form additional tall buildings seen in the view to the north-west from the northern edge of Ancoats Conservation Area. RB10 will be screened behind the under-construction Mulbury City building on Bendix Street in the foreground. Other plots such as RB06/RB07 and RB16/RB17 will be visible across Oldham Road and at receding scale with the increased distance, behind a foreground of mixed-use development with relatively low amenity value. This includes buildings associated with a Chinese supermarket and Manchester Central Community Fire Station. Although Application 4 is likely to contribute to providing more visual enclosure across Oldham Road, it is also likely to contribute to improving the visual amenity of the backdrop to Oldham Road and the northern edge of the Ancoats Conservation Area. |
| Significance of effect (completed and operational): | Not significant (moderate) | Application 4 is considered to result in not significant (moderate), beneficial and long-term in duration on views from the nearest edge of Ancoats on Oldham Road and on townscape character of the wider Ancoats Conservation Area. The existing townscape in the view is of moderate value and of relatively lower visual amenity and condition, with mixed uses. RB10will not be visible in the view, and the introduction of the visible plots (such as RB06/RB07 and RB16/RB17) is likely to improve the visual context to the north of Oldham Road. |
| **Viewpoint 6: Rochdale Road (Railway Bridge) (Figure 6.13)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | Application 4 will be located in close proximity to the viewpoint and will form a prominent feature in the view from this location. The full width of Application 4 will be visible across the view to the west, and it will occupy a relatively large proportion of the available view. Application 4 will be visible in the foreground of the view from this location. The vertical scale of some of the taller buildings, including RB10, RB16 and RB17, will increase the magnitude of change associated with their operation. As a result, |

| | | |
|---|---|---|
| | | Application 4 is likely to change the view of the Manchester skyline approaching the city from Rochdale Road and will likely be read as appearing to extend the taller scale of the city centre out towards the viewpoint along the Lower Irk Valley. |
| Significance of effect (completed and operational): | Significant (major / moderate) | Application 4 is considered to result in a significant (major/moderate), beneficial and long-term effect on views from Rochdale Road approaching the city centre. The view from this viewpoint is only of medium sensitivity, and does not include highly valued townscape. However, the view is likely to be subject to a high level of change due to the position of Application 4 in the foreground, and its vertical and horizontal spread in the view. The full extent of Application 4 will be appreciated in this view. It is likely to alter the view of the city centre skyline and will extend the tall building scale of the city centre out along the Lower Irk Valley towards the viewpoint. |
| **Viewpoint 7: Dantzic Street (Figure 6.14)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Medium | Application 4 will be located in close proximity to the viewpoint and will form a prominent feature in the view to the north from this location. RB10 will be seen at relatively close range beyond mid-rise development to the west of Dantzic Street. Two to three other plots will also be visible at a greater distance and smaller relative scale. The magnitude of change will be moderated by the scale of existing buildings in the foreground, including buildings within Meadowside to the east of Dantzic Street, to which RB10 will relate in scale. The relatively low value and visual amenity of parts of the existing streetscape will also moderate the magnitude of change. Application 4 is likely to contribute to improving the visual amenity of the Dantzic Street area. |
| Significance of effect (completed and operational): | Not significant (moderate) | Application 4 is considered to result in not significant (moderate), neutral and long-term effects on views from Dantzic Street. These primarily arise from the proximity and scale of RB10 in views to the north-west, as well as the medium sensitivity to change which is influenced by the relatively low value of the view from this location. Effects arising from the introduction of Application 4 are likely to be beneficial and improve the visual amenity of the Dantzic Street area. |
| **Viewpoint 8: Sand Hills Park, Collyhurst (Figure 6.15)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | Application 4 will be located in close proximity to the viewpoint and will form a prominent feature in the view to the west. The full width of Application 4 will be visible across the view to the west, and it will occupy a relatively large proportion of the available view. Application 4 will be visible in the foreground of the view from this location. The vertical scale of some of the taller buildings, including RB10, will increase the magnitude of change associated with their operation. The introduction of Application 4 into close proximity views from this location will change the view of the Manchester skyline, appearing to 'extend' the taller scale of the city centre out towards the viewpoint along the Lower Irk Valley. |
| Significance of effect (completed and operational): | Significant (major / moderate) | Application 4 is considered to result in significant (major/moderate), beneficial and long-term effects on views from this informal greenspace. The existing view is of medium sensitivity, and does not include highly valued townscape, but the view is likely to be subject to a high level of change due to the position of Application 4 in the foreground, and its vertical and horizontal spread in the view. The introduction of Application 4 into the |

| | | |
|---|---|---|
| | | view will alter the view of the city centre skyline and extend the tall buildings of the city centre out along the Lower Irk Valley towards the viewpoint. |
| **Viewpoint 9: Dalton Street (Figure 6.16)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | Application 4 will be located in close proximity to the viewpoint and will form a prominent feature in the view to the west. It will result in a high magnitude of change in the view from this viewpoint, primarily due to the vertical scale of the taller plots in the view such as RB10, RB16 and RB17; and their position within the foreground. Application 4 will result in a change to the incidental view of the Manchester skyline which is currently available from this viewpoint, and will appear to 'extend' the taller scale of the city centre out towards the viewpoint along the Lower Irk Valley. |
| Significance of effect (completed and operational): | Significant (major / moderate) | Application 4 is considered to result in a significant (major/moderate), neutral and long-term effect on views experienced mainly by local residents and road users from Dalton Road. The view is only of medium sensitivity, and does not include highly valued townscape. However, it is likely to be subject to a high level of change due to the position of Application 4 in the foreground, and its vertical scale and spread in the view. This will alter the view of the city centre skyline and extend the tall buildings of the city centre out along the Lower Irk Valley towards the viewpoint. |
| **Viewpoint 10: Queen's Road (near Metrolink) (Figure 6.17)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Medium | Application 4 will be located at increased distance from this viewpoint, and will form a relatively small proportion of the overall view available from this location. Due to this increased distance, the vertical scale of plots such as RB16 and RB17 will be reduced, and Application 4 will occupy the mid-ground of the view. RB10 will form the tallest building and focal point in the Manchester skyline. Application 4 will change the incidental view of the Manchester skyline from the Metrolink station approach and will appear to 'extend' the taller scale of the city centre out towards the viewpoint along the Lower Irk Valley. |
| Significance of effect (completed and operational): | Not significant (moderate / minor) | Application 4 will result in not significant (moderate / minor), neutral and long-term effects on views from Queens Road near Metrolink, which are of medium sensitivity due to the incidental nature of the view and lack of attention/interest of people using Metrolink or travelling on Queen's Road. Views experienced by these receptors will be subject to medium level of change at increasing range, with taller buildings within the Site forming new landmark features in the view of the Manchester city skyline. |
| **Viewpoint 11: Queen's Park (Figure 6.18)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational: | Low | Views towards Application 4 will be limited by vegetation within the park. In particular, there will be only limited visibility of the majority of the lower development blocks due to the intervening woodland around Queens Park, which screens views, particularly during summer months when the trees will be in leaf. Only the upper elements of the taller building plots are likely to be visible, above the tree line. These elements of Application 4, including RB10, RB06 and RB17will increase the influence of tall building in the city backdrop to the park, and will bring development of this scale into closer proximity than the existing development upon the Manchester city skyline. |

| | | |
|---|---|---|
| Significance of effect (completed and operational): | Not significant (moderate / minor) | Application 4 will result in a not significant (moderate / minor), neutral and long-term effect on views from Queens Park due to the limited visibility of most of the development blocks due to the intervening woodland around Queens Park. The upper elements of the taller development blocks will increase the influence of tall buildings in the city backdrop to Queens Park, but are not considered to increase the significance of the effect beyond not significant (moderate / minor) due to the contained nature of views from the park and the medium receptor sensitivity. |
| **Viewpoint 12: Miles Platting (Figure 6.19)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Low | Views towards Application 4 will be limited by existing built form within Miles Platting, and there will be limited visibility of just the upper elements of taller building plots such as RB10, RB16 and RB17 behind intervening residential areas. The lower building plots within Application 4 will be screened from view by the intervening foreground low-rise buildings. Despite the introduction of taller buildings within the context of relatively small-scale residential buildings in the immediate context, the magnitude of change associated with Application 4 will be relatively low. Although the upper elements of some of the development plots will be visible, this will represent a relatively small amount of development, and will have only a limited influence on existing views from this location. |
| Significance of effect (completed and operational): | Not significant (minor) | Application 4 will result in a not significant (minor), neutral and long-term effect on views experienced from Oldham Road within Miles Platting. Although Application 4 will introduce new taller buildings in the backdrop to the smaller scale residential context, a relatively limited proportion of the development blocks will be visible behind intervening residential areas, where recent changes have also taken place. |
| **Viewpoint 13: Manchester Fort (Figure 6.20)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Medium | Application 4 will form a new backdrop to Manchester Fort in the view. There will be limited visibility of the lower plots as they are situated behind the retail units of Manchester Fort, but the upper elements of the taller building plots are likely to form new landmarks in the backdrop to the setting of the Fort and increase the influence of the 'city centre' taller buildings within its backdrop (which are currently a relatively distant part of the skyline). Application 4 will occupy a relatively large extent of the view to the south-east from this viewpoint, which currently represents a more open direction of views. |
| Significance of effect (completed and operational): | Not significant (moderate / minor) | Application 4 will result in not significant (moderate / minor), neutral and long-term effects on views from Manchester Fort. Although the upper elements of the taller building plots are likely to form new landmarks in the backdrop to the setting of Manchester Fort, much of the lower plots are situated behind the retail units, and will therefore be largely screened from view. The views towards Application 4 will only be experienced by receptors of medium sensitivity, given their main attention focused on shopping/retail experience (rather than the views to the surrounding townscape) and the relatively low value of the retail townscape that occupies the foreground of the view. |
| **Viewpoint 14: North Street (Figure 6.21)** | | |

| | | |
|---|---|---|
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | Application 4 will be located in close proximity to this viewpoint and will occupy a large proportion of the view. The large vertical scale of RB10 will be notable in the view at the southern, city centre end of the site. The scale and massing of RB01-RB05 blocks will read 'as one', with a relatively wide contiguous mass across the view and no aspect through development plots across the Site. The scale and massing encloses the backdrop behind the low trading estates and commercial units in the foreground, although the longer distance aspect along Stanley Street will be retained. This affords views to the city centre, where other tall buildings are notable. There is an impression of the character and scale of development within the city centre extending out towards this inner-city commercial area. |
| Significance of effect (completed and operational): | Not significant (moderate) | Despite the high magnitude of change to the view resulting from Application 4 in the backdrop behind the trading estates and commercial units, the effect arising from Application 4 is assessed as not significant (moderate) beneficial and long-term. Changes associated with Application 4 occur to a view that is of low sensitivity to change, given the main activities of the users of the area and low levels of existing visual amenity, as well as the poor condition and low value of the townscape in the view. |
| **Viewpoint 15: St Chad's Street (Figure 6.22)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change ((completed and operational): | Medium | Application 4 will be seen in relatively close proximity to this viewpoint. RB10 will be of relatively tall vertical scale yet appears in the context of other recently built, tall residential buildings and compounds, and will be in keeping with the taller scale of development in this section of the view beyond St Chad's Roman Catholic Church. Other slightly lower plots will be visible along St Chad's Street, including RB12B, RB06 and RB07. These plots will appear as relatively contiguous blocks that terminate the view in this direction. However they will be viewed in the backdrop to trading/commercial units. Overall, Application 4 is not considered to result in a more than medium magnitude of change, due to the existing low amenity value of the surrounding townscape, and the position of RB10 seen in the context of existing tall buildings. |
| Significance of effect (completed and operational): | Not significant (moderate / minor) | Application 4 will result in a not significant (moderate / minor), neutral and long-term effect on the view from this viewpoint. Changes associated with Application 4 will occur to a view which is of low sensitivity to change of this type. This is as a result of the main activities of the users of the area, low levels of visual amenity in the view, and the poor condition and low value of the surrounding townscape. |
| **Viewpoint 16: Red Bank (Figure 6.23)** | | |
| Sensitivity: | Medium | The combination of low value and high susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | Application 4 will result in a high magnitude of change on the views experienced by residential receptors and train passengers from this location. This is primarily due to the tall vertical scale of RB10 at very close range which is likely to appear elevated above Red Bank and the railway viaduct/arches from street level. The scale and massing of the other plots (RB06/RB07 etc) will be less marked, and more in proportion to the |

| | | |
|---|---|---|
| | | surrounding context, with the scale reducing with the increasing distance of these blocks from the viewpoint. The primary effect will result from the tall vertical scale of RB10, seen at very close proximity and in the context of limited existing buildings of this scale. |
| Significance of effect (completed and operational): | Significant (major / moderate) | Application 4 will result in significant (major/moderate) adverse effects on the street level view from Red Bank. This is primarily due to the very close proximity of Application 4, with the tall vertical scale of RB10 particularly apparent and resulting in a high magnitude of change to views that are primarily experienced by local residents of the newer residential buildings on Red Bank. |
| **Viewpoint 17: Rochdale Road (Figure 6.24)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | Application 4 will be seen in close proximity to the west of this viewpoint, and will occupy a wide horizontal extent of the views in this somewhat open direction. RB10 will form a tall landmark at the southern, city centre end of the Site, with the plots receding in scale as they extend away from the city. The majority of the taller plots will be visible across Rochdale Road, behind a foreground of mixed-use development, trading estates and commercial units (of relatively low amenity value). The longer distance view north across the Irk Valley will be partially curtailed with Application 4 likely to contribute to provide more visual enclosure across Rochdale Road, while also contribute to improving the visual amenity of the backdrop to Rochdale Road at its approach to the city centre. It is likely to extend the emerging character of regeneration currently occurring within New Cross northwards. |
| Significance of effect (completed and operational): | Significant (moderate) | Application 4 is considered to result in a significant (moderate), beneficial and long-term effect on views from closest parts of Rochdale Road. The existing townscape in the view is of low value and of relatively lower visual amenity and condition, being dominated by mixed uses, commercial units and trading estates. Application 4 is likely to improve the visual context to the north-west of Rochdale Road on approach to the city centre and extend the emerging character of regeneration around New Cross. |

## Assessment of Cumulative Effects with Committed Schemes and their Significance – Red Bank (Application 4)

6.176 This section of the TVIA provides an assessment of the cumulative townscape and visual effects of Application 4 in conjunction with other committed development ('cumulative schemes').

6.177 The cumulative effects assessment (CEA) in this TVIA assesses the contribution of Application 4 to the effect arising with committed schemes, which are either under construction or where construction has not yet started. Cumulative schemes included in TVIA were agreed in consultation with MCC and are listed in Table 6.6 and mapped in Figure 6.5. These cumulative schemes are considered further within the following CEA. Photos of those under construction are also shown in Figure 6.5b.

6.178 AVRs in Figures 6.8 – 6.24 show Application 4 in the context of these cumulative schemes, with a scale verifiable wireline to indicate the location of cumulative schemes within the view. The baseline viewpoint photography also captures partially constructed developments within the 3D context.

6.179 The contribution of Application 4 to the cumulative effect upon the baseline character or view is assessed, in conjunction with these cumulative schemes, with the assessment of cumulative effect apportioning the amount of the effect that is attributable to Application 4.

6.180 The CEA for Application 4 focuses on the cumulative effects of the completed and operational development and does not consider its cumulative effects during demolition and construction, which cannot be accurately assessed due to the uncertainties of the construction phasing for cumulative schemes that are approved, but where construction is not started, and the uncertainly of overlaps with the construction phase for Application 4. Cumulative effects during demolition and construction are likely to be similar or less in magnitude than those assessed for the completed and operational development, of medium-term, adverse but temporary during the construction phase for Application 4.

### Likely Cumulative Townscape Effects and their Significance (Application 4)

6.181 The cumulative effects of Application 4 on townscape character for the completed and operational development are assessed in **Table 6.19**, focusing on the TCAs identified in the preliminary assessment (**Table 6.11**) as requiring further assessment. A baseline description of each TCA is set out **Table 6.7**.

6.182 A visualisation showing Application 4 and the Cumulative Schemes from Viewpoint 16 (Red Bank) has been omitted from **Figure 6.23**. This is because the Cumulative Schemes would not be visible from this viewpoint as they would be located behind the building massing of Plot RB10 which has been defined by the Parameter Plans.

***Table 6.19**: Cumulative Townscape Character Assessment – Completed and Operational Development (Application 4 – Cumulative)*

| | | |
|---|---|---|
| **TCA 1: Lower Irk Valley** | | |
| Sensitivity | Medium | The combination of low value and high susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | High | The cumulative magnitude of change to the character of the Lower Irk Valley (TCA1) resulting from the contribution of Application 4 to the cumulative schemes is assessed as high, as illustrated, and described further in Viewpoint 6, 8 and 9 (**Table 6.20**). |
| Significance of cumulative effect (completed and operational) | Significant (major/ moderate) | The contribution of Application 4 to the cumulative effect on the character of the Lower Irk Valley (TCA1) is assessed as significant (major/moderate), beneficial and long-term in duration. |
| **TCA 2: NOMA** | | |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | Negligible to medium | The cumulative magnitude of change to the perceived character of NOMA (TCA2) resulting from the contribution of Application 4 to the cumulative schemes is assessed as negligible to medium, as illustrated, and described further in Viewpoint 1 and 7 (**Table 6.20)**. |
| Significance of cumulative effect (completed and operational) | Not significant (moderate) | The contribution of Application 4 to the cumulative effect on the perceived character of NOMA (TCA2) is assessed as not significant (moderate), beneficial and long-term in duration. |
| **TCA 3: Strangeways** | | |
| Sensitivity | Low | The combination of low value and medium susceptibility results in this TCA having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | Low | The cumulative magnitude of change to the perceived character of Strangeways (TCA3) resulting from the contribution of Application 4 to the cumulative schemes is assessed as low, as illustrated, and described further in Viewpoint 14 and 15 (**Table 6.20)**. |
| Significance of cumulative effect (completed and operational) | Not significant (minor) | The contribution of Application 4 to the cumulative effect on the perceived character of Strangeways (TCA3) is assessed as not significant (minor), neutral and long-term in duration. |
| **TCA 6: Cheetham Hill** | | |
| Sensitivity | Medium | The combination of medium value and medium susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | Medium | The cumulative magnitude of change to the perceived character of Cheetham Hill (TCA6) resulting from the contribution of Application 4 to the cumulative schemes is assessed as medium, as illustrated, and described further in Viewpoint 10 (**Table 6.20)**. |

| | | |
|---|---|---|
| Significance of cumulative effect (completed and operational) | Medium | The contribution of Application 4 to the cumulative effect on the perceived character of Cheetham Hill (TCA6) is assessed as not significant (moderate), beneficial and long-term in duration. |
| **TCA 7: Collyhurst** | | |
| Sensitivity | Medium | The combination of medium value and medium susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | High | The cumulative magnitude of change to the perceived character of Collyhurst (TCA7) resulting from the contribution of Application 4 to the cumulative schemes is assessed as high from the closest areas of Collyhurst, as illustrated, and described further in Viewpoint 6 (**Table 6.20)**, with the magnitude of change reducing with distance to the north and east of the TCA. |
| Significance of cumulative effect (completed and operational) | Significant (major/ moderate) | The contribution of Application 4 to the cumulative effect on the perceived character of Collyhurst (TCA7) is assessed as significant (major/moderate), beneficial and long-term in duration from the closest areas of Collyhurst, reducing to not significant with increased distance to the north and east of the TCA. |
| **TCA 10: New Cross** | | |
| Sensitivity | Medium | The combination of the medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | Low | The cumulative magnitude of change to the perceived character of New Cross (TCA10) resulting from the contribution of Application 4 to the cumulative schemes is assessed as low, as illustrated, and described further in Viewpoint 4 and 17 (**Table 6.20)**. |
| Significance of effect (completed and operational) | Not significant (moderate / minor) | The contribution of Application 4 to the cumulative perceived effect on the character of New Cross (TCA10) is assessed as not significant (moderate/minor), beneficial and long-term in duration. |
| **TCA 11: City Centre (including Cathedral, Shudehill and Smithfield CAs** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility to changes results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | Low to negligible | The cumulative magnitude of change to the perceived character of the City Centre (TCA11), including the Cathedral, Shudehill and Smithfield Cas, resulting from the contribution of Application 4 to the cumulative schemes is assessed as low to negligible, as illustrated, and described further in Viewpoint 2, 3 and 4 (**Table 6.20)**. |
| Significance of cumulative effect (completed and operational) | Not significant (minor to moderate/ minor) | The contribution of Application 4 to the cumulative effect on the perceived character of City Centre (TCA11) is assessed as not significant (minor to moderate/minor), beneficial and long-term in duration. |

## Likely Cumulative Visual Effects and their Significance (Application 4)

6.183 The cumulative visual effects of Application 4 on representative viewpoints during completion and operation are assessed against the predicted baseline in **Table 6.20**. The baseline conditions and sensitivity of each viewpoint have been described previously in **Table 6.10**.

***Table 6.20**: Cumulative Visual Assessment – Completed and Operational Development (Application 4 – Cumulative)*

| | | |
|---|---|---|
| **Viewpoint 1: St Michael's Flags and Angel Meadow Park (Figure 6.8c(i-ii))** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Medium | Plot RB10 will continue to be viewed behind the Gate, Meadowside building, with its upper storeys and north façade visible. Meadowside (4) and Victoria Riverside (7) will occupy the foreground of the view across St Michael's Flags and Angel Meadow Park, completing screening Plots RB16 and RB17 of Application 4 which will be situated behind these cumulative schemes. Plot RB06 and Plot RB07 will be viewed adjacent to Victoria Riverside (7). The Gas Works (3) will also be seen in the view across St Michael's Flags and Angel Meadow Park. These three cumulative schemes (3, 4 and 7) will be visible at closer proximity and larger vertical scale in the view, contributing more to the cumulative effect. Most of the Application 4 plots, by comparison, will either not be visible, or are located at greater distance and partially subsumed behind the foreground cumulative schemes, such that they will appear more distant and recessive. The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is assessed as medium, primarily because some of the Application 4 plots will be located behind the cumulative schemes and will not be visible, and because the visible plots will be viewed in the context of a more developed foreground, in which further tall buildings will be introduced at Meadowside, Victoria Riverside and the Gasworks at larger scale, which will contribute more to the cumulative effect. |
| Significance of cumulative effect: (completed and operational) | Not significant (moderate) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (moderate), neutral and long-term in duration. |
| **Viewpoint 2: Corporation Street (Figure 6.9c)** | | |
| Sensitivity: | Medium | The combination of high value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Negligible | A narrow portion of 1 Lord Street (21) is likely to be visible between existing buildings. Other than this small amount of 1 Lord Street, there will be no further cumulative schemes visible in the view. The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is therefore assessed as negligible. The effect arising from Application 4 will essentially be as assessed in the project alone assessment (**Table 6.18**), with a |

| | | |
|---|---|---|
| | | negligible additional change when considered cumulatively with cumulative schemes. |
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (minor), neutral and long-term in duration. |
| **Viewpoint 3: Manchester Cathedral (Figure 6.10c)** | | |
| Sensitivity: | High | The combination of high value and high susceptibility results in the receptors experiencing this view having a high sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Zero | There will be no cumulative schemes visible in the view. A small corner of Victoria Riverside (7) is theoretically visible but will be screened by trees and intervening buildings. The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is therefore assessed as zero. The effect arising from Application 4 will essentially be as assessed in the project alone assessment (**Table 6.18**), with zero additional change when considered cumulatively with cumulative schemes. |
| Significance of cumulative effect: (completed and operational) | Not significant (no cumulative effect) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (no effect), neutral and long-term in duration. |
| **Viewpoint 4: Smithfield (Figure 6.11c)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Negligible | A number of cumulative schemes will be visible in the view, including The Gas Works (3), Meadowside (4), 25 Rochdale Road (5) and Swan House (10), which will increase the developed townscape context ling the streetscape north of Rochdale Road. Application 4 however, will be almost entirely not visible due to it being almost completely screened behind the foreground Moda, Angel Gardens building on Rochdale Road. The effect arising from Application 4 will essentially be as assessed in the project alone assessment (**Table 6.18**), with negligible additional change when considered cumulatively with cumulative schemes. |
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (minor), neutral and long-term in duration. |
| **Viewpoint 5: Ancoats (Figure 6.12c)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Zero | The Gas Works (3), Meadowside (4) and 87 Rochdale Road (8) will occupy the foreground of the view across Rochdale Road and are likely to completely screen all of Application 4 development plots, which are situated behind these cumulative schemes. The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is assessed as zero, because it is unlikely to be visible when considered in the context of the cumulative schemes. |

| | | |
|---|---|---|
| Significance of effect: (completed and operational) | Not significant (no cumulative effect) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (no effect), neutral and long-term in duration. |
| **Viewpoint 6: Rochdale Road (Railway Bridge) (Figure 6.13c)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | High | The Gas Works (3), Meadowside (4), Victoria Riverside (7), Cortland at Collier's Yard (24) and Waterloo Place (26) will all be visible in the view of the Manchester city centre skyline and will extend the tall building scale of the city towards the viewpoint. Application 4 represents a continuation of this effect that will be established by approved schemes and is likely be read as appearing to extend the taller scale of the city centre along the Lower Irk Valley. This effect is observed in the project alone assessment (**Table 6.18**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of Plot RB10 can be noted as comparable in height/scale to the committed schemes nearby at the Gas Works (3) and Meadowside (4). The gradual reduction in building scale reflected through the roofline will be evident as the development plots extend north along the Irk Valley away from the city centre. The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is assessed as high, due to its position to the fore of the cumulative schemes and the extended scale of tall buildings along part of the Lower Irk Valley. |
| Significance of cumulative effect: (completed and operational) | Significant (major / moderate) | The contribution of Application 4 to the cumulative effect on the view is assessed as significant (major/moderate), beneficial and long-term in duration. The view is only of medium sensitivity and does not include highly valued townscape but is likely to be subject to a high level of cumulative change due to the position of Application 4 in the foreground, and its vertical and horizontal spread in the view in addition to the cumulative schemes. In the context of cumulative scheme, it will appear visually more cohesive and connected with the taller building scale of the emerging city centre. |
| **Viewpoint 7: Dantzic Street (Figure 6.14c)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Negligible | A narrow portion of Victoria Riverside (4) is likely to be visible beyond the Gate, Meadowside building. Other than this small amount of Victoria Riverside (4), there will be no further cumulative schemes visible in the view. The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is therefore assessed as negligible. The effect arising from Application 4 will essentially be as assessed in the project alone assessment (**Table 6.18**), with a negligible additional change when considered cumulatively with cumulative schemes. |

| | | |
|---|---|---|
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (minor), neutral and long-term in duration. |
| **Viewpoint 8: Sand Hills Park, Collyhurst (Figure 6.15c)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | High | The Gas Works (3), Meadowside (4), Victoria Riverside (7), Cortland at Collier's Yard (24), Embankment Exchange (25) and Waterloo Place (26) will all be visible in the view of the Manchester city centre skyline and will extend and increase the tall building scale of the city in the view. Application 4 represents a continuation of this effect that will be established by approved schemes and is likely be read as appearing to further extend and increase the taller scale of the city centre along the Lower Irk Valley. This effect is observed in the project alone assessment (**Table 6.18**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of Plot RB10 can be noted as being taller in height/scale than the committed schemes nearby at the Gas Works (3), Meadowside (4) and Victoria Riverside (7) however this is largely as a result of perspective and its closer proximity to the viewpoint. The gradual reduction in building scale reflected through the roofline across the development plots will be evident as the development plots extend away from the city centre. The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is assessed as high, due to its position to the fore of the cumulative schemes and the extended scale of tall buildings into the foreground along part of the Lower Irk Valley. |
| Significance of cumulative effect: (completed and operational) | Significant (major / moderate) | The contribution of Application 4 to the cumulative effect on the view is assessed as significant (major/moderate), beneficial and long-term in duration. The view is only of medium sensitivity and does not include highly valued townscape but is likely to be subject to a high level of cumulative change due to the position of Application 4 in the foreground, and its vertical and horizontal spread in the view in addition to the cumulative schemes. In the context of cumulative scheme, it will appear visually more cohesive and connected with the taller building scale of the emerging city centre. |
| **Viewpoint 9: Dalton Street (Figure 6.16c)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | High | The Gas Works (3), Meadowside (4), Victoria Riverside (7), Meribel Street (15), Cortland at Collier's Yard (24) and Embankment Exchange (25) will all be visible in the view of the Manchester city centre skyline and will extend and increase the tall building scale of the city in the view. Application 4 will be located in close proximity to the viewpoint and will form a prominent feature in the view to the fore of these cumulative schemes. Application 4 represents a continuation of this effect that will be established by |

| | | |
|---|---|---|
| | | approved schemes and is likely be read as appearing to further extending and increase the taller scale of the city centre along the Lower Irk Valley. This effect is observed in the project alone assessment (**Table 6.18**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of Plot RB10 can be noted as similar in in height/scale to the committed schemes nearby at the Gas Works (3), Meadowside (4) and Victoria Riverside (7). The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is assessed as high, due to its position to the fore of the cumulative schemes and the increase scale of tall buildings into the foreground, particularly plots RB10, RB16 and RB17. |
| Significance of cumulative effect: (completed and operational) | Significant (major / moderate) | The contribution of Application 4 to the cumulative effect on the view is assessed as significant (major/moderate), beneficial and long-term in duration. The view is only of medium sensitivity and does not include highly valued townscape but is likely to be subject to a high level of cumulative change due to the position of Application 4 in the foreground, and its vertical and horizontal spread in the view in addition to the cumulative schemes. In the context of cumulative scheme, it will appear visually more cohesive and connected with the taller building scale of the emerging city centre. |
| **Viewpoint 10: Queen's Road (near Metrolink) (Figure 6.17c)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Medium | The Gas Works (3), Meadowside (4), Victoria Riverside (7), 87 Rochdale Road (8), Peeler's Yard (13), Cortland at Collier's Yard (24) and Waterloo Place (26) will all be visible in the view of the Manchester city centre skyline and will extend and increase the tall building scale of the distant city skyline in the view. Application 4 represents a continuation of this effect that will be established by approved schemes and is likely be read as appearing to further extend and increase the taller scale of the distant city centre skyline. This effect is observed in the project alone assessment (**Table 6.18**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of Plot RB10 can be noted as being taller in height/scale than the committed schemes nearby and will form a landmark as the tallest building in the city skyline. The gradual reduction in building scale reflected through the development plots height will be evident as they extend away from the city centre. Given the greater distance of Application 4, its diminished scale in the view and cohesion with the taller building scale of the emerging city centre, the cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is assessed as medium. |
| Significance of cumulative effect: (completed and operational) | Not significant (moderate / minor) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (moderate/minor), beneficial and long-term in duration. The view is only of low sensitivity and does not include highly valued townscape but is likely to be subject to a medium level of cumulative change due to the position of Application 4 to the fore of the cumulative schemes, and its vertical scale in the view. In the context of cumulative scheme, it will appear |

| | | |
|---|---|---|
| | | visually more cohesive and connected with the taller building scale of the emerging city centre. |
| **Viewpoint 11: Queen's Park (Figure 6.18c)** | | |
| Sensitivity: | Medium | The combination of medium value and low susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | The Gas Works (3), Victoria Riverside (7), Swan House (10), Cortland at Collier's Yard (24), Embankment Exchange (25), Waterloo Place (26) will all be partially visible in the distant view of the Manchester city centre skyline, through and above the tree line of Queens Park, and will extend and increase the tall building scale of the distant city skyline in the view. Application 4 represents a continuation of this effect that will be established by approved schemes and is likely be read as appearing to further extend and increase the taller scale of the distant city centre skyline. This effect is observed in the project alone assessment (**Table 6.18**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of Plot RB10 can be noted as being taller in height/scale than the committed schemes nearby and will form a landmark as the tallest building in the city skyline. The gradual reduction in building scale reflected through the development plots height will be evident as they extend away from the city centre. The cumulative effects of Application 4 will also be limited by vegetation within the park with only limited visibility of the majority of the lower development blocks due to the intervening woodland around Queens Park. Given these factors, the cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is assessed as low. |
| Significance of cumulative effect: (completed and operational) | Not significant (moderate / minor) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (moderate/minor), beneficial and long-term in duration. The view is only of medium sensitivity and does not include highly valued townscape but is likely to be subject to a low level of cumulative change due to its distance and intervening woodland, such that it is primarily the upper elements of the higher plots that add to view. In the context of cumulative scheme, these will appear visually more cohesive and connected with the taller building scale of the emerging city centre. |
| **Viewpoint 12: Miles Platting (Figure 6.19c)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | The upper storeys of the Gas Works (3), Meadowside (4), Victoria Riverside (7), Cortland at Collier's Yard (24) and Waterloo Place (26) may be visible in the view in the backdrop to the low-rise residential streets of Miles Platting. These cumulative schemes will introduce a taller building scale of the city skyline in the backdrop to the view. Application 4 represents a continuation of this effect that will be established by approved schemes and is likely be read as appearing to further extending the taller scale of the city centre in the backdrop. This effect is observed in the project alone assessment (**Table 6.18**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the |

| | | |
|---|---|---|
| | | taller building scale of the emerging city centre. The scale of Plot RB10 can be noted as similar in in height/scale to the committed schemes nearby at the Gas Works (3) and Meadowside (4). The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is assessed as low, due to the relatively small amount of Application visible, which is largely screened by the foreground townscape, and its integration with the cumulative schemes as part of the backdrop. |
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (minor), beneficial and long-term in duration. The view is only of low sensitivity and does not include highly valued townscape and is likely to be subject to a low level of cumulative change due to the position of Application 4 in the backdrop and its integration with the cumulative schemes that will establish a taller building scale of the emerging city centre. |
| **Viewpoint 13: Manchester Fort (Figure 6.20c)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Medium | The upper storeys of the Gas Works (3) and Victoria Riverside (7) will be visible in the view in the backdrop to the low-rise retail park of Manchester Fort. The upper elements of the taller building plots of Application 4 are likely to form new landmarks in the backdrop to the setting of the Fort in combination with the Gas Works (3) and Victoria Riverside (7) and increase the influence of the 'city centre' taller buildings within its backdrop (which are currently a relatively distant part of the skyline). This effect is observed in the project alone assessment (**Table 6.18**) and there will be limited difference in the context of the cumulative schemes, which will further the taller building scale of the emerging city centre. The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is therefore assessed as medium. |
| Significance of cumulative effect: (completed and operational) | Not significant (moderate / minor) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (moderate/minor), beneficial and long-term in duration. |
| **Viewpoint 14: North Street (Figure 6.21c)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | Only the upper storeys of The Gas Works (3) and Victoria Riverside (7) will be visible the view, as they are situated behind the development plots of Application 4. Other than this small amount of The Gas Works (3) and Victoria Riverside (7) there will be no further cumulative schemes visible in the view. The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is therefore assessed as low. The effect arising from Application 4 will essentially be as assessed in the project alone assessment (**Table 6.18**), with a low additional change when considered cumulatively, due to the lack of visibility of the cumulative schemes. |

| | | |
|---|---|---|
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (minor), neutral and long-term in duration. |
| **Viewpoint 15: St Chad's Street (Figure 6.22c(i-ii))** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | Only the upper storeys of Meadowside (4) and 1 Lord Street (21) will be visible the view, as they are situated largely behind the development plots of Application 4 or existing intervening buildings. Other than this small amount of Meadowside (4) and 1 Lord Street (21) there will be no further cumulative schemes visible in the view, as they are largely situated behind Application 4 from this perspective. The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is therefore assessed as low. The effect arising from Application 4 will essentially be as assessed in the project alone assessment (**Table 6.18**), with a low additional change when considered cumulatively, due to the lack of visibility of the cumulative schemes. |
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (minor), neutral and long-term in duration. |
| **Viewpoint 16: Red Bank (Figure 6.23c)** | | |
| Sensitivity: | Medium | The combination of low value and high susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Zero | There will be no cumulative schemes visible in the view, although there is potential for the upper storeys of Meadowside (4) and Victoria Riverside (7) to be visible without the vegetation along the railway viaduct, these would situated behind Plot RB10 and not visible when considered with Application 4. The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is therefore assessed as zero. The effect arising from Application 4 will essentially be as assessed in the project alone assessment (**Table 6.18**), with zero additional change when considered cumulatively with cumulative schemes. |
| Significance of cumulative effect: (completed and operational) | Not significant (no cumulative effect) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (no effect), neutral and long-term in duration. |
| **Viewpoint 17: Rochdale Road (Figure 6.24c)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Negligible | 87 Rochdale Road (8) will be viewed at close proximity in the foreground of the view across Rochdale Road, such that almost all of the Application 4 plots will be located behind this cumulative scheme and will not be visible in the view (with the exception of parts of the lower plots RB05A-C). All other cumulative schemes such as the Gas Works (3), Meadowside (4) and Victoria Riverside |

| | | |
|---|---|---|
| | | (7) will also be behind 87 Rochdale Road (8) and therefore not visible. 87 Rochdale Road (8) will therefore contribute most to the cumulative effect, with the cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes assessed as negligible. |
| Significance of cumulative effect: (completed and operational) | Not significant (negligible) | The contribution of Application 4 to the cumulative effect on the view is assessed as not significant (negligible), neutral and long-term in duration. |

## Assessment of Cumulative effects and their Significance (Application 4 + SRF with Committed Schemes)

### Approach

6.184 This section assesses the cumulative effects of Application 4 and the Victoria North SRF with committed schemes.

6.185 Committed cumulative schemes included in TVIA were agreed in consultation with MCC and are listed in **Table 6.6** and mapped in **Figure 6.5**. Plots included within the Victoria North SRF are also shown in **Figure 6.5**.

6.186 Due to the nature of the Victoria North SRF (which only identifies 'up to' heights with suggested scale, density and form), only a qualitative assessment of the effects in-combination with the Victoria North SRF is possible and no additional modelling or accurate visual representations (AVRs) have been produced to consider the cumulative effects with Victoria North SRF. The various plans presented for the neighbourhoods in the SRF are illustrative representations of the SRF-wide neighbourhood design and development principles, with building height parameters defined in some areas, whereas development density and typology precedents are provided for others, therefore only a high-level interpretation-based, descriptive (qualitive) assessment of the effects of Application 4 in-combination with the Victoria North SRF is possible as part of this TVIA.

6.187 Cumulative effects of Application 4 and the SRF are assessed in terms of their contribution to the cumulative effect with committed schemes. The assessment considers the contribution of the Application 4 and the SRF to the effect arising with committed schemes. The contribution of Application 4 and the SRF to the cumulative effect upon the baseline character/view is assessed, in conjunction with these committed schemes, with the assessment of cumulative effect apportioning the amount of the effect that is attributable to Application 4 and the SRF.

### Likely Cumulative Townscape Effects and their Significance (Application 4 + SRF with Committed Schemes)

6.188 Currently, the townscape character of Victoria North transitions from an urban and industrial grain on the fringes of the city centre, to a more suburban form towards Collyhurst and the north of the area. Similarly, the Irk Valley itself transitions along the valley from a hard-edged character at the south of the study area to a more natural

setting upstream towards Queens Park. Three distinct neighbourhoods define the baseline character within the Victoria North SRF area, characterised by different uses, built forms and physical features – Lower Irk Valley (TCA 1), Collyhurst (TCA 7) and New Cross (TCA 10) (**Figure 6.3**) that are reflective of the way the townscape character of the SRF area is experienced.

## Demolition and Construction

6.189 Demolition and construction works within the Application 4 site will result in physical changes to parts of the townscape within the Lower Irk Valley (TCA1) and similar works within the wider Victoria North SRF area will result in physical changes to parts of the townscape within Collyhurst (TCA 7) and New Cross (TCA 10). These changes may occur in addition to construction effects associated with committed schemes occurring within New Cross (TCA 10), including at the Gas Works (3), 87 Rochdale Road (8), 40 Swan Street (9), Swan House (10), New Cross Central (11) and Peelers Yard (13) and within the nearby NOMA area (TCA 2), including Meadowside (4), 25 Rochdale Road (5) and Angel Square (6). Demolition and construction of other committed schemes in the wider townscape, such as in Salford (TCA 12), where there is also a concentration of committed schemes, will result in a wider presence of taller construction plant (particularly tower cranes) and partially constructed tall buildings in the wider city centre skyline, in combination with those associated with Application 4 and the SRF.

6.190 Construction activities of Application 4 and the SRF will result in direct changes to the townscape character within the Site and indirect changes to the perceived character of the wider townscape, in addition to those construction activities associated with committed schemes. Cumulative effects on townscape character will occur as a result of the demolition and construction works occurring through the phased build out duration of Application 4 and the SRF, together with committed schemes, particularly between 2025 – 2032 for Application 4 and over a 15-20 year period for the SRF. Over this period, cumulative effects on townscape character are likely to result from the construction works within the Application 4 site and wider SRF area, together with construction of other committed schemes in the wider townscape, with an early focus of effects around construction activity in the southern parts of the SRF area within the Red Bank and New Cross neighbourhoods, and the adjacent NOMA area.

6.191 Changes to townscape character may result from the introduction of site compounds; materials excavation, storage and handling; piling used for the buildings' foundations; construction plant particularly taller cranes (telescopic, support, tower and tracked cranes); and smaller plant including dump trucks, concrete mixers, piling rigs, lorries, skip wagons, excavators and rollers. Increased construction traffic on the local road network is also likely to have some influence on the perceived character. Views of partially constructed buildings and tower cranes are likely to be features of the extended Manchester city centre skyline within the Victoria North area, particularly in the southern parts of the SRF area within the Red Bank and New Cross neighbourhoods.

6.192 During demolition and construction, the contribution of Application 4 and the SRF to the cumulative effect with committed schemes, on the character of the Lower Irk Valley (TCA 1), Collyhurst (TCA 7) and New Cross (TCA 10) is assessed as likely to be significant (major to major / moderate), adverse and medium to long-term in duration, with effects reducing to not significant on the perceived character of the wider townscape outside the Victoria North

SRF. Adverse effects are likely to arise during construction due to the introduction of construction plant and partially constructed buildings, with the adversity of effects reducing during the construction period, as the balance of construction works reduces in favour of completed development materialising through the phased build out of Application 4 and the SRF, and other committed schemes being completed in the surrounding townscape.

## The Completed and Operational Development

6.193 During completion and operation, Application 4 will form the new Red Bank neighbourhood/character area (defined in the Victoria North SRF) within the existing Lower Irk Valley (TCA 1). New development within the wider Victoria North SRF area outside the Red Bank Neighbourhood (Application 4), is also likely to change the character of the Lower Irk Valley, Collyhurst and New Cross TCAs, reinforcing the existing communities and establishing a series of integrated neighbourhoods within these areas, which extend Manchester's city centre to the north/north-east. In addition to the Red Bank Neighbourhood, a further six interconnected neighbourhoods are likely to emerge, each with their own individual character: Collyhurst Village; South Collyhurst; New Cross; New Town; Vauxhall Gardens; and Eggington Street and Smedley Dip (as shown in Figure 16 of the SRF). These changes to townscape character are likely to be transformative to the townscape character, when considered in-combination with committed schemes within New Cross (TCA 10) (including the Gas Works (3), 87 Rochdale Road (8), 40 Swan Street (9), Swan House (10), New Cross Central (11) and Peelers Yard (13)) and within the nearby NOMA area (TCA 2) (including Meadowside (4), 25 Rochdale Road (5) and Angel Square (6)).

6.194 The contribution of Application 4 and the SRF to the cumulative effect with committed schemes on the character of the Lower Irk Valley (TCA 1), Collyhurst (TCA 7) and New Cross (TCA 10) townscape character areas is assessed as likely to be significant (major to major/moderate), beneficial and long-term in duration. Significant effects on townscape character of the SRF area are likely to occur due to the scale and nature of the transformational, residential-led regeneration scheme of the SRF, of which the Red Bank Neighbourhood is part, together with the completed committed schemes in the adjacent townscape. These significant effects are likely to arise due to the widespread change in character expected through the implementation of the distinct neighbourhoods within the Victoria North SRF that will emerge as distinct TCAs, together with completed committed schemes in the adjacent townscape, with effects considered as beneficial due to changes from the relatively degraded baseline character within parts of the Irk Valley and the 'good design' of high quality buildings and places, green infrastructure, retail, social, community, health and education facilities and access improvements that will be delivered as part of the SRF.

6.195 Although the contribution of Application 4 and the SRF to the cumulative effect with committed schemes is likely to be significant on areas within the SRF where character change is expected to occur (TCA 1, 7 and 10), the effect on perceived character of the wider townscape of the TVIA study area is likely to be not significant, where only indirect changes may occur to the backdrop and setting of the wider townscape, including on TCA 2, 3, 4, 5, 6, 8, 9, 11 and 12, and the associated Conservation Areas (CAs) that cover parts of this wider townscape.

## Likely Cumulative Visual Effects and their Significance (Application 4 + SRF with Committed Schemes)

### Demolition and Construction

6.196 Demolition and construction works within the Application 4 site will result in changes to views within the Lower Irk Valley (TCA1) and similar works within the wider Victoria North SRF area will result in changes to views of the townscape from nearby areas, in addition to construction effects associated with committed schemes. Construction activities of Application 4 and the SRF will result in direct changes to the views, in addition to visible construction activities associated with committed schemes. Cumulative effects on views will occur as a result of the demolition and construction works occurring through the phased build out duration of Application 4 and the SRF, together with committed schemes, particularly between 2025 – 2032 for Application 4 and over a 15-20 year period for the SRF.

6.197 Over this period, cumulative effects on views are likely to result from the construction works within the Application 4 site and wider SRF area, together with construction of other committed schemes in the wider townscape, with an early focus of effects around construction activity in the southern parts of the SRF area within the Red Bank and New Cross neighbourhoods, and the adjacent NOMA area.

6.198 Over this period, effects on views are likely to result from the construction works within the Application 4 site and wider SRF area, including views of site compounds; materials excavation, storage and handling; piling used for the buildings' foundations; construction plant particularly taller cranes (telescopic, support, tower and tracked cranes); and smaller plant including dump trucks, concrete mixers, piling rigs, lorries, skip wagons, excavators and rollers. Increased construction traffic on the local road network is also likely to have some influence on views locally. Views of partially constructed buildings and tower cranes are likely to be features of the extended Manchester city centre skyline within the Victoria North area, particularly in the southern parts of the SRF area within the Red Bank and New Cross neighbourhoods.

6.199 During demolition and construction, the contribution of Application 4 and the SRF to the cumulative effect with committed schemes, on the views in the locality of the Application 4 site and within the Victoria North SRF area, is assessed as likely to be significant (major to major/moderate), adverse and medium to long-term in duration, with effects reducing to not significant on views from the wider townscape outside the Victoria North SRF.

### Completed and Operational Development

6.200 During completion and operation, visual effects will arise as a result of the contribution of Application 4 and the SRF with committed schemes, with effects on visual receptors/views occurring particularly within the new Red Bank neighbourhood and within the wider Victoria North SRF area, where the completion of new neighbourhoods will have a significant and transformative effect on views at the local level, as well as having less significant, yet notable

effects extending Manchester's city centre skyline in the backdrop to views from the wider study area outside the North Victoria SRF.

6.201 The contribution of Application 4 and the SRF to the cumulative effect with committed schemes is likely to be significant on views within the Victoria North SRF area, where transformative change is expected to occur to existing views, such as in views from St Michael's Flags and Angel Meadow Park (Viewpoint 1), limited parts of the northern edges of the city centre (Viewpoint 2), Rochdale Road (Viewpoint 6 and 17) and the closest parts of Collyhurst (Viewpoint 8 and 9). The additional effect of the SRF is likely to contribute to significant effects from other viewpoints on the edge of the SRF area, including from the closest parts of Ancoats (Viewpoint 5), Miles Platting (Viewpoint 12) and potentially Cheetham Hill (Viewpoint 10) depending on the scale, form and density of building plots that may occupy the foreground of these views. The cumulative effect of Application 4 and the SRF, with committed schemes on views locally from these areas are likely to be significant due to the extension of the city centre scale of tall buildings within the SRF area, in combination with committed schemes, resulting in significant change to the Manchester city centre skyline to the north of the city.

6.202 The cumulative effect of Application 4 and the SRF, with committed schemes on views from the wider townscape of the TVIA study area is likely to be notable, however effects are assessed not significant where less direct changes may occur to the backdrop of views of the wider townscape and skyline, including on views from the Cathedral, Smithfield and Shudehill areas of the city centre (Viewpoint 3 and 4) where changes to views will be limited by the intervening townscape, from the Strangeways area to the west (Viewpoint 14 and 15) which is more distant from the Victoria North SRF area and is of relatively lower sensitivity to change, and from more enclosed views such as from Queens Park to the north (Viewpoint 11).

## Conclusions (Application 4)

6.203 Overall, Application 4 will result in some significant effects on the townscape and visual resource of the Study Area, ranging from beneficial to adverse in nature. These significant effects will tend to be identified locally on the closest views and character areas, with the wider views and townscape within the Study Area experiencing a lower magnitude of change as a result of the introduction of Application 4.

6.204 Across the Study Area, there are occasional high sensitivity views, for example around Manchester Cathedral. Where a high sensitivity is identified at a viewpoint, this is mainly due to the value of the townscape (e.g. a viewpoint located within a Conservation Area), or particular visitor facilities. However, the sensitivity of the majority of viewpoints is medium. The sensitivity is generally moderated either by the lower / medium value of the townscape in views (e.g. within the Irk Valley and adjacent commercial or mixed use areas), or the lower / medium susceptibility to change (e.g. where receptors experience tall buildings / construction in existing views, and are likely to be accustomed to changes associated with urban regeneration in the surrounding townscape, which moderates their susceptibility to further change. Low sensitivity views are experienced from more distant areas, including retail parks at Manchester Fort to the north, and commercial areas to the west within Strangeways.

6.205 Townscape character across the Study Area is generally assessed as medium or low sensitivity. Areas of medium townscape sensitivity occur across the Lower Irk Valley, NOMA, the Transport and Education TCA, Cheetham Hill, Collyhurst, Ancoats, New Cross and City Centre TCAs. Factors which contribute towards a relatively higher townscape sensitivity include the openness of the townscape and the role of the Lower Irk Valley in providing a setting to the TCA; local value attributed to the townscape by residents and visitors; and designations including Conservations Areas and any listed buildings present within the TCA.

6.206 A high magnitude of change on views and townscape as a result of Application 4 generally occurs only at close range, for example at VP1: St Michael's Flags and Angel Meadow Park; VP2: Corporation Street; from the closest parts of Collyhurst to the north-east; from the closest parts of Rochdale Road to the east; and from the closest parts of Strangeways to the west, including Red Bank itself.

6.207 Some significant effects are identified locally on the closest views, including VP1: St Michael's Flags and Angel Meadow Park; VP2: Corporation Street; VP 6: Rochdale Road (Railway Bridge); VP 8: Sand Hills Park, Collyhurst; VP 9: Dalton Street; and VP16: Red Bank. From VP2: Corporation Street and VP16: Red Bank, these effects will be adverse. From VP6: Rochdale Road (Railway Bridge) and VP8: Sand Hills Park, Collyhurst, the effect will be beneficial, while the significant effects experienced at the remaining viewpoints will be neutral. Significant beneficial effects on townscape character are predicted to occur within TCA1: Lower Irk Valley and TCA7: Collyhurst. There will be no significant effects on Conservation Areas resulting from Application 4.

6.208 Significant effects tend to occur as a result of the width of Application 4 visible across the view, its foreground position, the vertical scale of some of the taller buildings (RB10, RB16 and RB17), and the likelihood of Application 4 being viewed as appearing to extend the taller scale of the city centre out towards viewpoints along the Lower Irk Valley. Although significant, effects are generally assessed as being beneficial to the visual amenity and character of the Lower Irk Valley, due to the 'good design' of high-quality buildings and places, as well as the relatively poor current amenity and character within the valley.

6.209 Not significant effects of lower magnitude are predicted to occur to the majority of viewpoints, including from viewpoints within three of the four main Conservation Areas on the northern edge of the City Centre, including VP3: Manchester Cathedral, VP4: Smithfield, and VP5: Ancoats. Although a significant visual effect is predicted from VP2: Corporation Street, this is not considered to translate to significant effects on the townscape of the Shudehill Conservation Area, given the limited extent of visibility of Application 4 across the Conservation Area, and the focus from within the Conservation Area on the internal townscape, as opposed to outward views. Other not significant effects occur on views and townscape to the west (Strangeways, Manchester Fort) and from the more distant residential areas of Cheetham Hill, Miles Platting, and Ancoats. Not significant effects of moderate magnitude occur on views and townscape character within the NOMA and New Cross TCAs, which are subject to ongoing change in character and visual amenity as a result of construction and committed development.

6.210 When Application 4 is assessed alongside cumulative developments, cumulative effects tend to be further 'mitigated', because Application 4 represents a continuation of the effect that will be established by approved schemes, which appear to extend the city centre skyline northwards towards the Lower Irk Valley. In the context of the cumulative schemes, Application 4 will appear visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of Plot RB10, which represents the tallest plot within Application 4, can be noted as being comparable in height and scale to committed schemes nearby at the Gas Works (3) and Meadowside (4). The quality of design through detailed design works undertaken as part of the detailed plot design will also contribute to mitigating the cumulative effects of the proposed development when considered in the context of committed schemes.

6.211 The gradual reduction in building scale will be evident as the development plots extend north along the Irk Valley away from the city centre, and will respond to the surrounding context which comprises larger-scale buildings within the city centre to the south, and smaller-scale, low- and mid-rise buildings across residential areas to the north and east.

6.212 Overall, Application 4 is considered to result in significant effects on the visual and townscape resource of the Study Area from the closest proximity areas only. This includes significant adverse effects on the visual amenity experienced at two viewpoints, while all other significant effects will be neutral or beneficial. This is largely as a result of the scale of Application 4 in the view, its position in the foreground, and its role in appearing to extend the taller scale of the city centre out towards the Lower Irk Valley. These effects will reduce when Application 4 is considered alongside cumulative schemes, as it will be more in keeping with the emerging pattern of development to the north of the city centre. The high design quality of the buildings and their response to the surrounding townscape context is likely to result in beneficial effects on the visual amenity and character of the Lower Irk Valley.

# NT02-NT04 (Application 5)

## Project Design Scenario – Basis for ES Assessment

6.213 A description of the approach to the ES Assessment for Application 4 and Application 5 is provided in the Red Bank (Application 4) section above.

6.214 Development Plots NT02, NT03 and NT04, which constitute Application 5, are located within the New Town Development Area, along with Development Plots RB16 and RB17 within Application 4.

6.215 Application 5 is defined by the development specification (Appendix II), the Design and Access Statement (DAS) and Application 5 Drawing Package submitted in support of Application 5. The development specification provides details covering the quantum of residential and non-residential uses however, it is primarily the DAS and drawing package that inform the basis for the TVIA in this ES.

### Phasing

6.216 The high-level anticipated phasing of delivery of the two applications is shown in **Figure 5.13**, which informs the assessment of intra-development phase impacts. NT02-04 constitutes the first phase, and proposed phasing is Q4 2023 to Q4 2029. Individual plots will be brought forward within the estimated build out duration.

6.217 While there would be some overlap of the HIF works with the NT02-04 works as the Red Bank ground works are scheduled for completion in 2024, it is assumed that the HIF Works would be substantially complete by the time that works on the NT02-04 site begin.

## Embedded Mitigation (Application 5)

6.218 This section describes the measures which have been 'embedded' into the Development.

### Demolition and Construction

6.219 Prior to the commencement of any demolition, hoardings would be erected around the perimeter of the works within the Site, so that the visual effects of demolition will be minimised from adjoining pedestrian routes.

6.220 The site compound will be carefully positioned within the Site to avoid unnecessary visual effect to adjacent receptors. It is proposed to utilise the compound area to offload, store and handle materials as well as for welfare facilities where appropriate.

6.221 Contractors and their subcontractors would be expected to maintain a tidy site and where practical, to operate a 'just-in-time' policy for the delivery and supply of materials for the works. Excavated materials would primarily be removed from Site via HGVs for transportation to nearby construction or disposal sites.

6.222 As part of the Construction Environment Management Plan (CEMP), procedures and management measures to ensure the protection of ecological resources, including habitats (where retained) and protected species will be included. All trees that are to be retained on-Site will be subject to protective measures in line with NJUG 4 Guidelines.

6.223 Working hours will be subject to agreement with MCC. However, it has been assumed that standard working hours would be followed, Monday – Friday 07.30 – 1800; Saturday 0800-1300 and no working on Sundays, which would minimise the visual effects of construction works experienced during evenings and weekends.

6.224 It is assumed that construction lighting will not include floodlighting and that there will be a curfew on other construction lighting at 23:00 hrs, to ensure that no lighting will be kept switched on overnight aside from low level lighting (for security / safety purposes). Construction works lighting to involve the use of well-located modern light fittings as part of a CEMP and in accordance with current best practice standards to minimise lighting intrusion to surrounding receptors.

6.225 The top of a tower crane is likely to be higher than the top of the Proposed Development, so it may be more visible than the finished buildings. This temporary effect is common as a consequence of building activity in cities and there is no practical way of avoiding it. The primary mitigation measure will therefore be the completion of the construction works and the short-term, temporary duration of the effect.

## The Completed and Operational Development

6.226 Operational phase embedded mitigation measures are incorporated into the design of Application 5 as primary mitigation. The design of Application 5 is described in Chapter 5 – Proposed Development and the Design and Access Statement (DAS) submitted as part of the planning application.

6.227 The operational development incorporates high quality buildings and places, which are fundamental to achieving well-designed places that are healthy, greener, enduring and successful in practice. Application 5 demonstrates embedded 'good design', by providing a setting for a diverse range of uses and activities; buildings, landscape and infrastructure that are likely to endure and evolve incrementally; and a richness of experience, including visual, such as views across the landscape of the Irk Valley or the detail of a well-design building.

6.228 The primary mitigation measures most relevant to townscape and visual effects that are incorporated into the design of Application 5 are summarised as follows, as described in the DAS:

- The strategy for Application 5 responds to the wider Red Bank Illustrative Masterplan vision, in particular incorporating the concept of creating neighbourhoods with distinct character areas, differentiated by density and height, use, building typology and dwelling mix.
- The wild urbanism concept, which also drives the design of Application 4, would be applied to the more detailed scale of Application 5 through the use of biophilic design, including:

- Nature in the space: incorporating natural elements in design;
- Natural analogues: using nature-inspired shapes, patterns, colours and textures; and
- Nature of the space: reproducing the layout of natural environments.

- Green connections would be maximised through both public realm and architectural intervention, recognising the potential role of the Site as a key connection between the Irk Valley and St Michael's Flags and Angel Meadow Park.
- The tallest buildings within Application 5 would be located adjacent to the railway, and massing would be arranged to maximise permeability and aspect.
- The interior of each of the plots would be designed as a visually permeable courtyard, providing an accessible green space and connecting to surrounding green spaces including St Catherine's Wood and St Michael's Flags and Angel Meadow Park.
- The streets and courtyards would act as green stepping stones, connecting St Catherine's Wood to Victoria North and Angels Meadow Park.
- Travis Square, which would run north-south between Dantzic Street and Dulwich Street, would create a woodland habitat, comprised of woodland and woodland edge typologies.
- Building massing and breaks in the building form would be designed to create framed views out to the surrounding streetscape, river valley and St Catherine's Wood. The materials palette would respond to the surrounding context:
    - Towers 1 and 3, which form the tallest buildings within Application 5, would be finished with anodised aluminium in a range of colours, with full-height windows, responding to the materiality of the towers within the adjacent Victoria Riverside, as well as development within the wider city centre to the south.
    - Tower 2 would be finished with a purple-brown brick, responding to the neighbouring masterplan proposals and the context with a transition between Victoria Riverside and NT04.
    - The mid-rise elements within NT02 – NT03 comprise a pale grey brick to respond to more traditional residential materiality.
- Towers 4 and 5 would comprise primarily a mix of yellow and buff bricks, while midrise elements within NT04 would comprise a darker yellow and red brick mix. This would respond to the surrounding context to the north-east, which includes distinctive red brick buildings.

6.229 These measures 'embedded' into the proposed development help it to integrate with its townscape and visual context and provided embedded mitigation with respect to townscape and visual effects.

## Assessment of Likely Significant Townscape Effects (Application 5)

### Introduction

6.230 Townscape character is the distinct and recognisable pattern of elements that occurs consistently in a particular area of townscape, and the way that this pattern is perceived. Effects on townscape character would occur both within the Site, where the existing townscape and pattern of elements would be directly altered by the addition of Application 5; and contextually, where visibility of Application 5 may alter the way in which the townscape would be perceived.

6.231 Representative viewpoints are referred to in this assessment as they give a useful indication of the appearance of Application 5 from different townscape character areas. It should be noted however, that levels of magnitude of effect on townscape receptors are generally found to be lower than the magnitude of effect on viewpoints that lie within these townscape character areas. This means that if a viewpoint is assessed to undergo a medium-high magnitude of effect it does not necessarily follow that the townscape character area within which it lies would also undergo a medium-high magnitude of effect, but could undergo a medium magnitude of effect instead, for example. This is because the effects on viewpoints are assessed within the context of a specific outlook of Application 5 and are usually specifically selected to gain a direct view towards the application site. Application 5 is the principal consideration in the viewpoint assessment, and influences that lie in other areas of the view are considered to a lesser degree. The townscape character of a receptor is not, however, determined so specifically by the outlook over Application 5, and there are many other considerations, both visual and perceptual, that combine to give an area its townscape character. This means that the degree of influence Application 5 can be slightly less on townscape character than on a specific view.

## Preliminary Assessment – Townscape Character (Application 5)

6.232 In order to ensure that the assessment of the effects of Application 5 on townscape character is proportionate, **Table 6.21** presents a preliminary assessment of all of the TCAs within the Study Area. It indicates which TCAs are considered to have potential to undergo a significant effect as a result of Application 4 that require further assessment, and the TCAs that do not require further assessment due to the lack of potential effects. Those with potential for significant effects are assessed further in **Table 6.22 and 6.23**.

***Table 6.21**: Preliminary Assessment of Effects on Townscape Character (Application 5)*

| TCA Receptor | Distance to Application 5 | Preliminary Assessment |
|---|---|---|
| TCA 1: Lower Irk Valley | 0 km | Yes, due to the position of Application 5 within TCA1 Lower Irk Valley and the potential for direct effects to its townscape character during construction and operation, as shown in Viewpoint 8 and 9 (**Figure 6.15, 6.16** and **Figure 6.23**). |
| TCA 2: NOMA | 0.1 km | Yes, due to the proximity of Application 5 to TCA 2: NOMA and potential for indirect effects on character during construction and operation, through visibility of the Proposed Development from this TCA, as shown in the ZTV (**Figure 6.7**) and Viewpoint 1 (**Figure 6.8**). |
| TCA 3: Strangeways | 0.3 km | Yes, due to proximity of Application 5 to TCA3: Strangeways and potential for indirect effects on character during construction and operation, through visibility of the Proposed Development from this |

| TCA Receptor | Distance to Application 5 | Preliminary Assessment |
|---|---|---|
| | | TCA, as shown in the ZTV (**Figure 6.7**) and Viewpoint 14 and 15 (**Figure 6.21** and **6.22**). |
| TCA 4: Manchester Fort | 0.5 km | No. Although there is visibility of the Proposed Development from this TCA, its retail park character has a low sensitivity to changes associated with the Proposed Development. No potential for significant effects on character of TCA and is not assessed further. |
| TCA 5: Transport & Education | 0.4 km | No. Although there is visibility of the Proposed Development from this TCA, its character defined by transport and education facilities has a low sensitivity to changes associated with the Proposed Development, during construction and operation. No potential for significant effects on character of TCA and is not assessed further. |
| TCA 6: Cheetham Hill | 0.9 km | No, due to distance of Application 5 to TCA6: Cheetham Hill and limited potential for indirect effects on character during construction and operation. Although there is visibility of the Proposed Development (**Figure 6.7**) in the skyline backdrop to this TCA in views towards the city centre, such as Viewpoint 10 (**Figure 6.17**), Cheetham Hill is geographically and visually separated from Proposed Development and the character of Cheetham Hill is likely to experience low levels of change during construction and operation. No potential for significant effects on character of TCA and is not assessed further. |
| TCA 7: Collyhurst | 0.3 km | Yes, due to proximity of Application 5 to TCA7: Collyhurst and potential for indirect effects on character during construction and operation, through visibility of the Proposed Development in the backdrop to this TCA in views and extent of visibility as shown in the ZTV (**Figure 6.7**) and Viewpoint 6 (**Figure 6.13**). |
| TCA 8: Miles Platting | 0.4 km | No. Although there is visibility of the Proposed Development from this TCA, its character is likely to experience low levels of change during construction and operation, due to the distance and restricted visibility of the Proposed Development, as shown in Viewpoint 12 (**Figure 6.19**). No potential for significant effects on character of TCA and is not assessed further. |
| TCA 9: Ancoats | 0.6 km | No. Although there is visibility of the proposed development from the northern edges of this TCA, its character is likely to experience low levels of change during construction and operation, due to the distance, presence of intervening tall buildings/development and restricted visibility of the Proposed Development from the majority of this TCA, as shown (as a worst-case in Viewpoint 5 (**Figure 6.12**). No potential for significant effects on character of TCA and is not assessed further. |
| TCA 10: New Cross | 0 km | Yes, due to proximity of Application 5 to TCA10: New Cross and potential for indirect effects on character during construction and operation, through visibility of the Proposed Development in the backdrop to this TCA in views and extent of visibility as shown in the ZTV (**Figure 6.7**) and Viewpoint 17 (**Figure 6.24**). |
| TCA 11: City Centre | 0.5 km | No. Although there is theoretical visibility of the Proposed Development from this TCA, its character, during construction and operation, is likely to experience low levels of change due to its distance, the presence of tall buildings in the intervening townscape and restricted visibility of the Proposed Development from this TCA (**Figure 6.7**). |
| TCA 12: Salford | 0.9 km | No. Although there is theoretical visibility of the Proposed Development from this TCA, its character during construction and |

| TCA Receptor | Distance to Application 5 | Preliminary Assessment |
|---|---|---|
| | | operation, is likely to experience low levels of change due to its distance, the presence of tall buildings in the intervening townscape and restricted visibility of the Proposed Development from this TCA (**Figure 6.7**). |

## Demolition and Construction (Application 5)

6.233 The effects of Application 5 on townscape character during demolition and construction are assessed in **Table 6.22**, focusing on the TCAs identified in the preliminary assessment (**Table 6.21**) as requiring further assessment. A baseline description of each TCA is set out **Table 6.7**.

***Table 6.22**: Assessment of Townscape Character – Demolition and Construction (Application 5)*

| **TCA 1: Lower Irk Valley** | | |
|---|---|---|
| Sensitivity | Medium | The combination of low value and high susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | High | Demolition works within the Site will result in physical changes to parts of the townscape within the Lower Irk Valley (TCA1). The parking/warehouse unit within the site (off Dantzic Street) will be demolished, as well as demolition of several walls within the Site. Hoardings will be erected around the perimeter of the demolition works to minimise effects.<br>Construction activities will result in direct changes to the townscape character locally within the Site and indirect changes to the perceived character of the wider TCA outside the Site. Changes to townscape character will occur as a result of the construction works occurring through the phased build out duration. Construction effects are likely to occur during their construction phase between 2023 – 2029.<br>Changes to townscape character will result from the construction works within the Site, including the introduction of the site compound; materials excavation, storage and handling; flight auger piling used for the buildings' foundations across all plots; construction plant particularly taller cranes (telescopic, support, tower and tracked cranes); and smaller plant including dump trucks, concrete mixers, piling rigs, lorries, skip wagons, excavators and rollers. Construction traffic will also be present within the TCA accessing plots NT02-04 via Collyhurst Road. The magnitude of change to the perceived townscape character of the Lower Irk Valley (TCA1) that will result from Application 5 during demolition and construction is assessed as high. |
| Significance of effect (demolition and construction) | Significant (major / moderate) | The effect on the townscape character of a localised area of the Lower Irk Valley (TCA1) that will result from Application 5 during demolition and construction is assessed as **significant (major/moderate)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029) within and in close proximity to the site. |
| **TCA 2: NOMA** | | |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | Medium | Demolition and construction activities with the Site will result in no direct changes to the townscape character of TCA 2: NOMA and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction |

| | | |
|---|---|---|
| | | works occurring at lower levels with the Site will be screened behind intervening buildings and the change in level of the railway viaduct, such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant resulting in no changes to the character of TCA2. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 5 construction period, together with the upper elements of partially constructed buildings, particularly those within the southern part of the Site, to the north of Dulwich Street, including Tower 1 and Tower 3.<br>The character of TCA 2: NOMA is undergoing regeneration and redevelopment, with several areas undergoing construction and further development planned. Changes associated with construction of Application 5 in the adjacent Irk Valley (TCA1) are similar to and have associations with the changes already taking place with this TCA, which moderates the perceived changes to its townscape context. The magnitude of change to the perceived townscape character of the NOMA (TCA2) that will result from Application 5 during demolition and construction is assessed as medium. |
| Significance of effect (demolition and construction) | Not significant (moderate) | The effect on the townscape character of NOMA (TCA2) that will result from Application 5 during demolition and construction is assessed as not significant (moderate), adverse and medium-term in duration (occurring primarily between 2023 - 2029). |
| **TCA 3: Strangeways** | | |
| Sensitivity | Low | The combination of medium value and low susceptibility results in this TCA having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | Medium | Demolition and construction activities with the Site will result in no direct changes to the townscape character of TCA 3: Strangeways and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will largely be screened behind intervening buildings, such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant will result in no changes to the character of TCA3. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 5 construction period, together with the upper elements of partially constructed buildings, particularly those within the taller plots, including Tower 1, Tower 3 and Tower 4. Visibility of these construction works will be more widespread across northern and eastern parts of TCA 3, with reduced visibility to the south and west.<br>The character of TCA 3: Strangeways is defined by mixed-use low-rise industrial and commercial units and around the Green Quarter has also experienced recent high-rise development. The existing and emerging city centre skyline is visible in its backdrop with a number of tall buildings under construction and the skyline marked by tower cranes. Changes associated with construction of Application 5 in the adjacent Irk Valley (TCA1) are similar to and have associations with the changes already taking place, which moderates the perceived changes to its townscape context. The magnitude of change to the perceived townscape character of TCA 3: Strangeways that will result from Application 5 during demolition and construction is assessed as medium from the closest areas of the TCA. The wider Strangeways TCA extends to the west at greater distance and will be subject to a low magnitude of change. |
| Significance of effect | Not significant | The effect on the townscape character of Strangeways (TCA3) that will result from Application 4 during demolition and construction is assessed as not significant (moderate/minor), adverse and medium-term in duration |

| | | |
|---|---|---|
| (demolition and construction) | (moderate / minor) | (occurring primarily between 2025 - 2032), reducing with distance on the wider Strangeways TCA3 extending to the west. |
| **TCA 7: Collyhurst** | | |
| Sensitivity | Medium | The combination of medium value and medium susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | Medium | Demolition and construction activities with the Site will result in no direct changes to the townscape character of TCA 7: Collyhurst and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will largely be screened behind intervening buildings, landform and vegetation such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant resulting in limited changes to the character of TCA7. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 5 construction period, together with the upper elements of partially constructed buildings, particularly those within the closer and taller plots within NT04, which will form the closest proximity elements of Application 5.<br>The character of TCA 7: Collyhurst is defined by a mix of low-rise and high-rise residential development. The existing and emerging city centre skyline is visible in its backdrop with a number of tall buildings under construction and the skyline marked by tower cranes. Changes associated with construction of Application 5 in the adjacent Irk Valley (TCA1) are similar to and have associations with the changes already taking place, which moderates the perceived changes to its townscape context, although Application 5 will bring these changes into closer proximity to TCA 7. The magnitude of change to the perceived townscape character of Collyhurst (TCA7) that will result from Application 5 during demolition and construction is assessed as high from the closest areas of the TCA. The wider Collyhurst TCA extends to the north and east at greater distance and will be subject to a low magnitude of change. |
| Significance of effect (demolition and construction) | Significant (major/ moderate) | The effect on the townscape character of Collyhurst (TCA7) that will result from Application 4 during demolition and construction is assessed as significant (major/moderate), adverse and medium-term in duration (occurring primarily between 2023 - 2029), reducing with distance on the wider Collyhurst TCA7 extending to the north and east. |
| **TCA 10: New Cross** | | |
| Sensitivity | Medium | The combination of the medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | Medium | Demolition and construction activities with the Site will result in no direct changes to the townscape character of TCA 10: New Cross and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will largely be screened behind hoarding and intervening buildings, the change in level of the railway viaduct and vegetation, such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant will result in limited change to the character of TCA 10. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the TCA during the Application 5 construction period, together with the upper elements of partially constructed buildings, |

| | | |
|---|---|---|
| | | particularly those within the closer and taller plots, including Towers 1, 3 and 4.<br>The character of TCA 10: New Cross is undergoing regeneration and redevelopment, with several areas undergoing construction (Mulbury City, Bendix Street is nearing completion) and further development is approved. Changes associated with construction of Application 5 in the adjacent Irk Valley (TCA1) are similar to and have associations with the changes already taking place with this TCA, which moderates the perceived changes to its townscape context. The magnitude of change to the perceived townscape character of the New Cross (TCA10) that will result from Application 5 during demolition and construction is assessed as medium. |
| Significance of effect (demolition and construction) | Not significant (moderate) | The effect on the townscape character of New Cross (TCA10) that will result from Application 5 during demolition and construction is assessed as not significant (moderate), adverse and medium-term in duration (occurring primarily between 2023 - 2029). |

## The Completed and Operational Development (Application 5)

6.234 The effects of Application 5 on townscape character for the completed and operational development are assessed in **Table 6.23**, focusing on the TCAs identified in the preliminary assessment (**Table 6.21**) as requiring further assessment. A baseline description of each TCA is set out **Table 6.7**.

***Table 6.23**: Assessment of Townscape Character – Completed and Operational Development (Application 5)*

| **TCA 1: Lower Irk Valley** | | |
|---|---|---|
| Sensitivity | Medium | The combination of low value and high susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | High | Application 5 will result in physical changes to the townscape of this TCA across its southern extent. Application 5 is likely to alter the character of the area from a generally formerly industrial area, featuring land uses including industrial buildings and vacant plots, to an area of high-density residential development, featuring areas of green infrastructure. The character of the area will be more in keeping with the adjacent NOMA and New Cross TCAs, where development of this type is currently taking place.<br>The ZTV indicates that the addition of Application 5 to this TCA will be highly visible throughout. Actual visibility is likely to be somewhat reduced across northern parts of the TCA by screening provided by vegetation cover.<br>Application 5 will also alter the setting that the TCA provides in views from neighbouring TCAs, appearing to bring the city centre skyline of Manchester into closer proximity to residential areas on the north-eastern edge of the city.<br>Taking this into account the magnitude of change is assessed as high for this TCA.<br>Viewpoints within this TCA comprise Viewpoint 8: Sand Hill Park, Collyhurst, and Viewpoint 9: Dalton Street. Viewpoint 16: Red Bank and Viewpoint 6: Rochdale Road (Railway Bridge) are located on the boundary between this TCA and the neighbouring Strangeways TCA and Collyhurst TCA, respectively. |
| Significance of effect (completed and operational) | Significant (major/ moderate) | The effect on the townscape character of the River Irk Valley (TCA1) that will result from Application 5 during the completed and |

| | | |
|---|---|---|
| | | operational phase, is assessed as significant (major/moderate), beneficial and long-term in duration. |
| **TCA 2: NOMA** | | |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | Medium | The addition of Application 5 will be highly visible from most areas within this TCA, particularly north-eastern parts of the TCA. Areas around the Co-op building and within the grid of streets to the north of Rochdale Road will have more limited visibility of Application 5, due to screening by existing built form.<br>At the moment, the Site and the wider Lower Irk Valley TCA provide a more open setting in views from parts of this TCA. The addition of Application 5 to the adjacent Lower Irk Valley TCA will result in views towards a more developed backdrop from this TCA. However, the buildings within Application 5 will be similar in nature to buildings currently under construction and recently built within this TCA, and as such would be experienced within an immediate townscape context that is not uncharacteristic. Application 5 would introduce further built development that is taller than the immediately surrounding and historic pattern of development, but that is similar in nature to newly completed and under construction tall buildings in this area. Taking this into account the magnitude of change is assessed as medium for this TCA.<br>Viewpoints within this TCA comprise Viewpoint 1: St Michael's Flags and Angel Meadow Park, and Viewpoint 7: Dantzic Street. |
| Significance of effect (completed and operational) | Not significant (moderate) | The effect on the townscape character of NOMA (TCA2) that will result from Application 5 during the completed and operational phase, is assessed as not significant (moderate), beneficial and long-term in duration. Although there may be a perceived loss of a more open outlook from parts of the TCA, the high design quality of Application 5 compared to the existing townscape condition of the Site and the high level of integration with the existing character of the TCA results in effects that are considered neutral on balance. |
| **TCA 3: Strangeways** | | |
| Sensitivity | Low | The combination of medium value and low susceptibility results in this TCA having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | Low | The ZTV shows that theoretical visibility of Application 5 will be somewhat limited across this TCA, given the close urban grain of buildings, which limits outward views from the TCA. Application 4 would be in keeping with other under construction and recently completed high-rise buildings within an area of intensive regeneration across the nearby New Cross and NOMA TCAs and would therefore be in keeping with the immediate townscape context. It would bring development of this kind into slightly closer proximity to this TCA. The vertical scale of Application 5 will be notable in the backdrop the TCA, partially enclosing the backdrop behind the low trading estates and commercial units, although the longer distance aspect to the city centre will be retained. There will be an impression of the character and scale of development within the city centre extending out towards this TCA. Taking this into account the magnitude of change is assessed as low. Viewpoints within this TCA comprise Viewpoint 14: North Street, and Viewpoint |

| | | |
|---|---|---|
| | | 15: St Chad's Street. Viewpoint 16: Red Bank is located on the boundary between this TCA and Lower Irk Valley TCA. |
| Significance of effect (completed and operational) | Not significant (minor) | The effect on the townscape character of Strangeways (TCA3) that will result from Application 5 during the completed and operational phase, is assessed as not significant (minor), beneficial and long-term in duration. Although the vertical scale of plots within Application 5 will be notable in the backdrop to the TCA, behind the low trading estates and commercial units, changes associated with Application 5 occur to the TCA that is of low sensitivity to change, given the relatively poor condition and low value of the townscape, and will relate well to the character and scale of development within the evolving city centre skyline extending into the backdrop of this TCA. Effects are also considered to reduce on the wider TCA to the west with increasing distance from the Site. |
| **TCA 7: Collyhurst** | | |
| Sensitivity | Medium | The combination of medium value and medium susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | Medium | The ZTV indicates that visibility of Application 5 will be widespread across this TCA, particularly across more open parts to the south and west within closest proximity to the Site. Existing low-rise residential development within parts towards the north and east will limit outwards views towards Application 5 from these residential areas, and the ZTV shows a more intermittent pattern of visibility across this area. Existing tall buildings along Rochdale Road will limit visibility along parts of this route,<br>Currently, the Site and the wider Lower Irk Valley TCA provide a more open setting in views to the south-west from parts of this TCA, and form a 'green buffer' between high-rise development towards Manchester city centre and low-rise residential development across this TCA. The addition of Application 5 to the adjacent Lower Irk Valley TCA will introduce further built development that is taller than the immediately surrounding pattern of development and may appear to extend Manchester city centre towards this TCA in the backdrop. Across southern parts of the TCA, the addition of Application 5 will change the surrounding context and introduce tall buildings into close proximity to low-rise, low-density residential development. Application 5 will be located in close proximity to current redevelopment activity taking place in the adjacent New Cross TCA, and will therefore be seen in this context from Collyhurst TCA. Parts of the adjacent Lower Irk Valley TCA to the north-west of this TCA will remain unchanged, and will continue to provide a more open outlook for the northern parts of the Collyhurst TCA. Taking this into account the magnitude of change to the perceived character of the closest, adjacent parts of the TCA to its south and west, is assessed as medium, reducing with distance to the north and east. Viewpoints within this TCA include Viewpoint 6: Rochdale Road (Railway Bridge). |
| Significance of effect (completed and operational) | Significant (moderate) | The effect on the townscape character of the closest parts of Collyhurst (TCA7) that will result from Application 5 during the completed and operational phase, is assessed as significant (moderate), beneficial and long-term in duration on the closest areas of the Collyhurst (TCA7). Although the larger vertical scale of plots within Application 5 may appear to extend Manchester city |

| | | |
|---|---|---|
| | | centre along the Lower Irk Valley towards this TCA in its backdrop, changes associated with Application 5 will relate well to the character and scale of development within the evolving city centre skyline and introduce built elements of high design quality compared to the existing townscape condition. Effects are also considered to reduce and become not significant on the perceived character of the wider TCA to the north and east with increasing distance from the Site. |
| **TCA 10: New Cross** | | |
| Sensitivity | Medium | The combination of the medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | Medium | The ZTV indicates that theoretical visibility across this TCA would be relatively widespread, with the exception of areas where existing built form limits views to the north. This is restricted to small pockets of the TCA, including within streets featuring tall buildings and a tight grid pattern to the south of Rochdale Road, and around industrial units further north. Elsewhere, there will be relatively close-proximity views towards Application 5. This TCA currently forms the edge of high-rise development within Manchester city centre, and views to the north from within it are partially open over the neighbouring Lower Irk Valley TCA, although the intervening railway corridor and viaduct provides a visual and physical buffer. Application 5 will extend tall buildings to the north of this TCA, and from more open parts across the north of the TCA there will be views to the north and south towards the taller towers (1-5) in particular. However, these will generally be of a similar scale and massing as development currently under construction or recently completed within this TCA, which moderates the magnitude of change associated with further change in the surrounding context. Taking this into account, the magnitude of change associated with Application 5 is assessed as medium. Viewpoints within this TCA include Viewpoint 17: Rochdale Road. |
| Significance of effect (completed and operational) | Not significant (moderate) | The effect on the townscape character of New Cross (TCA10) that will result from Application 5 during the completed and operational phase, is assessed as not significant (moderate / minor), neutral and long-term in duration. Although there will be an extension in the presence and scale of tall buildings to the north of the TCA within the adjacent Lower Irk Valley (TCA1), the high design quality of Application 5 compared to the existing townscape condition of the Site and the high level of integration with the existing and evolving character of New Cross (TCA10) results in effects that are considered neutral on balance. |

## Preliminary Assessment – Conservation Areas (Application 5)

6.235 In order to ensure that the assessment of the effects of Application 5 on the townscape and appearance of CAs is proportionate, **Table 6.24** presents a preliminary assessment of all of the CAs within the Study Area. It indicates which CAs are considered to have potential to undergo a significant effect as a result of Application 5 that require further assessment, and the CAs that do not require further assessment due to the lack of potential effects. Those with potential for significant effects are assessed further in **Table 6.25** and **6.26.**

***Table 6.24**: Preliminary Assessment of Effects on Conservation Areas (Application 5)*

| CA Receptor | Distance to Application 5 | Preliminary Assessment (Application 5) |
|---|---|---|
| Ancoats CA | 0.6 km | Yes, due to the potential for indirect effects on the townscape and appearance of the Ancoats CA during construction and operation, through visibility of the Proposed Development from this CA, as shown in the ZTV (**Figure 6.7**), and Viewpoint 5: Ancoats (**Figure 6.12**). |
| Cathedral CA | 0.7 km | No. Although there is visibility of the Proposed Development from parts of this CA, as shown on the ZTV (**Figure 6.7**), this is generally very limited, as shown in Viewpoint 3: Manchester Cathedral (**Figure 6.10**). Its character is likely to experience low levels of change during construction and operation, due to the distance, presence of intervening tall buildings/development and restricted visibility of the Proposed Development from the majority of this CA. No potential for significant effects on character of CA and is not assessed further. |
| Shudehill CA | 0.7 km | No. Although there is visibility of the Proposed Development from parts of this CA, its character is likely to experience low levels of change during construction and operation, due to the distance, presence of intervening tall buildings/development and restricted visibility of the Proposed Development from the majority of this CA, as illustrated by the ZTV in **Figure 6.7**, and Viewpoint 2: Corporation Street (**Figure 6.9**). No potential for significant effects on character of CA and is not assessed further. |
| Smithfield CA | 0.6 km | No. Although there is visibility of the Proposed Development from parts of this CA, its character is likely to experience low levels of change during construction and operation, due to the distance, presence of intervening tall buildings/development and restricted visibility of the Proposed Development from the majority of this CA, as illustrated by the ZTV in **Figure 6.7** and Viewpoint 4: Smithfield (**Figure 6.11**). No potential for significant effects on character of CA and is not assessed further. |
| Stevenson Square CA | 0.7 km | No, due to the distance of Application 5 to Stevenson Square CA and limited potential for indirect effects on the character and appearance of the CA during construction and operation. Theoretical visibility of the Proposed Development is very limited, as illustrated by the ZTV in **Figure 6.7**. Stevenson Square CA is geographically and visually separated from the Proposed Development and the character of the area is likely to experience low levels of change during construction and operation. No potential for significant effects on character of CA and is not assessed further. |
| Upper King Street CA | 1.0 km | No, due to the distance of Application 5 to Upper King Street CA and limited potential for indirect effects on the character and appearance of the CA during construction and operation. Theoretical visibility of the Proposed Development is very limited, as illustrated by the ZTV in **Figure 6.7**. Upper King Street CA is geographically and visually separated from the Proposed Development and the character of the area is likely to experience low levels of change during construction and operation. No potential for significant effects on character of CA and is not assessed further. |
| St Ann's Square CA | 1.1 km | No, due to the distance of Application 5 to St Ann's Square CA and limited potential for indirect effects on the character and |

| CA Receptor | Distance to Application 5 | Preliminary Assessment (Application 5) |
|---|---|---|
| | | appearance of the CA during construction and operation. Theoretical visibility of the Proposed Development is very limited, as illustrated by the ZTV in **Figure 6.7**. St Ann's Square CA is geographically and visually separated from the Proposed Development and the character of the area is likely to experience low levels of change during construction and operation. No potential for significant effects on character of CA and is not assessed further. |
| Parsonage Gardens CA | 1.2 km | No, due to the distance of Application 5 to Parsonage Gardens CA and limited potential for indirect effects on the character and appearance of the CA during construction and operation. Theoretical visibility of the Proposed Development is very limited, as illustrated by the ZTV in **Figure 6.7**. Parsonage Gardens CA is geographically and visually separated from the Proposed Development and the character of the area is likely to experience low levels of change during construction and operation. No potential for significant effects on character of CA and is not assessed further. |
| Flat Iron CA | 1.2 km | No, due to the distance of Application 5 to Flat Iron CA and limited potential for indirect effects on the character and appearance of the CA during construction and operation. Theoretical visibility of the Proposed Development is very limited, as illustrated by the ZTV in **Figure 6.7**. Flat Iron CA is geographically and visually separated from the Proposed Development and the character of the area is likely to experience low levels of change during construction and operation. No potential for significant effects on character of CA and is not assessed further. |

## Demolition and Construction (Application 5)

6.236 The effects of Application 5 on the townscape and appearance of CAs during demolition and construction are assessed in **Table 6.25**, focusing on CAs identified in the preliminary assessment (**Table 6.24**) as requiring further assessment. A baseline description of each CA is set out **Table 6.8**.

***Table 6.25**: Assessment of CAs – Demolition and Construction (Application 5)*

| Ancoats CA | | |
|---|---|---|
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (demolition and construction) | Low | Demolition and construction activities within the Site will result in no direct changes to the townscape and appearance of Ancoats CA, and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction works occurring at lower levels with the Site will largely be screened behind intervening buildings, such that the demolition works, site compound, materials excavation/storage, drilling and smaller construction plant will result in no changes to the character of Ancoats CA. Taller plant such as telescopic/support/tower cranes within the Site will be visible in the townscape context of the CA during the Application 5 construction period, together with the upper elements of partially constructed buildings, particularly the tallest towers across plots NT02 – NT04. |

| | | |
|---|---|---|
| | | Demolition and construction activities within the Site will not result in effects on the cotton spinning mills and housing which form the defining buildings within the CA. Application 5 may result in changes to the balance of manufacturing, transport and residential uses, which currently forms a defining feature within the CA, by introducing additional residential development seen to the north-west beyond the CA. However, this will be seen in the context of existing tall buildings, including some which are currently under construction, and as such is not considered to result in more than a low magnitude of change on the townscape and appearance of the CA. |
| Significance of effect (demolition and construction) | Not significant (moderate / minor) | The effect on the townscape character of the Ancoats CA that will result from Application 5 during demolition and construction is assessed as **not significant (moderate / minor)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029). |

## The Completed and Operational Development (Application 5)

6.237 The effects of Application 5 on the townscape and appearance of CAs for the completed and operational development are assessed in **Table 6.26**, focusing on the CAs identified in the preliminary assessment (**Table 6.24**) as requiring further assessment. A baseline description of each CA is set out **Table 6.8**.

***Table 6.26**: Assessment of CAs – Completed and Operational Development (Application 5)*

| **Ancoats CA** | | |
|---|---|---|
| Sensitivity | Medium | The combination of high value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (completed and operational) | Low | The addition of Application 5 will be visible from much of this CA, particularly along streets with open views to the north-west. Elsewhere, visibility of Application 5 will be reduced by existing built form. Application 5 will be in keeping with other under construction and recently completed high-rise buildings within an area of intensive regeneration across the nearby New Cross and NOMA TCAs and will therefore be in keeping with the immediate townscape context. It will be seen beyond townscape which is of relatively low value.<br>Application 5 will not result in any effects on the defining characteristic of the mill buildings and red brick housing across the CA. However, the balance of manufacturing, transport and residential uses which is identified as one of the key characteristics of the area may be altered by the increasing density of residential development beyond the CA. Taking this into account, the magnitude of change is assessed as low. Viewpoints within this CA comprise Viewpoint 5: Ancoats (**Figure 6.12**). |
| Significance of effect (completed and operational) | Not significant (moderate / minor) | The effect on the townscape character of the Ancoats CA that will result from Application 5 during the completed and operational phase, is assessed as not significant (moderate / minor), beneficial and long-term in duration. The large vertical scale of plots within Application 5 will be notable in the backdrop to the CA, behind commercial units and existing tall residential buildings. However, changes associated with Application 5 will relate well to the character and scale of development within the evolving city centre skyline extending into the backdrop of this CA, and will result in a beneficial effect on the relatively low value townscape setting beyond the CA. |

## Assessment of Likely Significant Visual Effects (Application 5)

### Demolition and Construction (Application 5)

6.238 The visual effects of Application 5 on representative viewpoints during demolition and construction are assessed in **Table 6.27**. The baseline conditions and value of each viewpoint has been described previously in **Table 6.10**.

***Table 6.27**: Visual Assessment – Demolition and Construction (Application 5)*

| | | |
|---|---|---|
| **Viewpoint 1: St Michael's Flags and Angel Meadow Park (Figure 6.8d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction) | Medium | Demolition and construction works occurring at lower levels with the Site will be screened behind existing buildings, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 5 during the construction period, together with the upper elements of partially constructed buildings including Towers 1 and 3, within NT02 and NT03 respectively, in particular. These elements will form a relatively small proportion of the overall view available from this location. |
| Significance of effect (demolition and construction): | Significant (moderate) | The visual effect of Application 5 during demolition and construction on the view experienced by receptors at Viewpoint 1, is assessed as **significant (moderate)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029). |
| **Viewpoint 2: Corporation Street (Figure 6.9d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in Table 6.10). |
| Magnitude of change (demolition and construction): | Zero | Construction activity associated with Application 5 would be screened from view from this viewpoint by existing built form, and there would therefore be zero. |
| Significance of effect (demolition and construction): | No effect | Application 5 would result in no effect on the view from this viewpoint. |
| **Viewpoint 3: Manchester Cathedral (Figure 6.10d)** | | |
| Sensitivity: | High | The combination of high value and high susceptibility results in the receptors experiencing this view having a high sensitivity to change associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Zero | Construction activity associated with Application 5 would be screened from view from this viewpoint by existing built form, and there would therefore be zero. |
| Significance of effect (demolition and construction): | No effect | Application 5 would result in no effect on the view from this viewpoint. |

| | | |
|---|---|---|
| **Viewpoint 4: Smithfield (Figure 6.11d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Negligible | Construction works associated with Application 5 will be almost entirely not visible due to screening by existing built form in close proximity to the viewpoint. Demolition and construction works occurring at lower levels with the Site will be screened behind existing buildings. Taller plant such as telescopic/support/tower cranes may be partially visible during the construction period, but will largely be screened behind the existing buildings in the foreground of the view and not visible. There will be visibility of the upper elements of partially constructed buildings comprising Tower 3 within NT03 and Tower 5 within NT04 beyond built form on Rochdale Road. |
| Significance of effect (demolition and construction): | Not significant (minor) | The visual effect of Application 5 during demolition and construction on the view experienced by receptors at Viewpoint 4, is assessed as **not significant (minor)**, neutral and medium-term in duration (occurring primarily between 2023 - 2029). |
| **Viewpoint 5: Ancoats (Figure 6.12d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Low | Demolition and construction works occurring at lower levels with the Site will be screened behind existing buildings, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 5 during the construction period, together with the upper elements of partially constructed buildings, including Tower 1 within NT02 in particular, as well as Midrise 3 within NT03 and Tower 4 / 5 within NT04. |
| Significance of effect (demolition and construction): | Not significant (moderate / minor) | The visual effect of Application 5 during demolition and construction on the view experienced by receptors at Viewpoint 5, is assessed as **not significant (moderate / minor)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029). |
| **Viewpoint 6: Rochdale Road (Railway Bridge) (Figure 6.13d)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Medium | Demolition and construction works occurring at lower levels with the Site will be screened behind the railway bridge on the western side of Rochdale Road, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 4 during the construction period, together with the upper elements of partially constructed |

| | | |
|---|---|---|
| | | buildings within all of the development plots, including Towers 1, 3 and 5. These elements will form a relatively small proportion of the overall view available from this location. |
| Significance of effect (demolition and construction): | Significant (moderate) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 6, is assessed as **significant (moderate)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029). |
| **Viewpoint 7: Dantzic Street (Figure 6.14d)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Zero | Construction activity associated with Application 5 would be screened from view from this viewpoint by existing built form, and the magnitude of change would therefore be zero. |
| Significance of effect (demolition and construction): | No effect | Application 5 would result in no effect on the view from this viewpoint. |
| **Viewpoint 8: Sand Hills Park, Collyhurst (Figure 6.15d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in Table 6.10). |
| Magnitude of change (demolition and construction): | Medium | Demolition and construction works occurring at lower levels within the Site will be screened behind the intervening vegetation within Sand Hills Park. Views of the site compound, materials excavation/storage, drilling and smaller construction plant will be unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 5 during the construction period, together with the upper elements of partially constructed buildings within all of the development plots. This will include Tower 4 and Tower 5 within NT04 in particular, as these will form the closest proximity elements of Application 5, although emerging buildings within NT02 and NT03 will also be visible. These elements will form a relatively small proportion of the overall view available from this location. |
| Significance of effect (demolition and construction): | Significant (moderate) | The visual effect of Application 5 during demolition and construction on the view experienced by receptors at Viewpoint 8, is assessed as **significant (moderate)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029). |
| **Viewpoint 9: Dalton Street (Figure 6.16d)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | High | Views of demolition and construction works occurring at lower levels within the Site are likely to be available, due to clearance of vegetation along the site boundary. These views may comprise visibility of the site compound, materials excavation/storage, drilling and smaller construction plant. However, taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 5 during the |

| | | |
|---|---|---|
| | | construction period, seen at close proximity, together with the upper elements of partially constructed buildings. In particular, Tower 5 within NT04 will form a close proximity element of Application 5, seen in the foreground of this view. Other emerging buildings within Application 5 will be visible beyond to a lesser extent. |
| Significance of effect (demolition and construction): | Significant (major / moderate) | The visual effect of Application 5 during demolition and construction on the view experienced by receptors at Viewpoint 9, is assessed as **significant (major/moderate)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029). |
| **Viewpoint 10: Queen's Road (near Metrolink) (Figure 6.17d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Low | Demolition and construction works occurring at lower levels within the Site will be screened behind existing built form, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 5 during the construction period, together with the upper elements of partially constructed buildings within all the development plots, but particularly Towers 1 – 5, which represent the tallest buildings across plots NT02 – NT04. Other emerging buildings will also be visible. These elements will form a relatively small proportion of the overall view available from this location and will be located at relative distance. |
| Significance of effect (demolition and construction): | Not significant (moderate / minor) | The visual effect of Application 5 during demolition and construction on the view experienced by receptors at Viewpoint 10, is assessed as **not significant (minor)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029). |
| **Viewpoint 11: Queen's Park (Figure 6.18d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Low | Demolition and construction works occurring at lower levels with the Site will be screened behind existing built form and vegetation within Queens Park, with no views of the site compound, materials excavation/storage, drilling and smaller construction plant. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 5 during the construction period, together with the upper elements of the tallest partially constructed buildings within NT02 and NT03. Construction works associated with buildings within NT04, and smaller buildings across all development plots, will be screened from view. Where visible, these elements will form a relatively small proportion of the overall view available from this location and will be located at relative distance and partially screened by vegetation. |

| | | |
|---|---|---|
| Significance of effect (demolition and construction): | Not significant (moderate / minor) | The visual effect of Application 5 during demolition and construction on the view experienced by receptors at Viewpoint 11, is assessed as **not significant (moderate/minor)**, neutral and medium-term in duration (occurring primarily between 2023 - 2029). |
| **Viewpoint 12: Miles Platting (Figure 6.19d)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Low | Demolition and construction works occurring at lower levels within the Site will be screened behind existing buildings, with no views of the site compound, materials excavation/storage, drilling and smaller construction plant. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 5 during the construction period, together with the upper elements of the three tallest partially constructed buildings across the Site, comprising Towers 1, 3 and 5, within NT02, NT03 and NT04 respectively. |
| Significance of effect (demolition and construction): | Not significant (minor) | The visual effect of Application 5 during demolition and construction on the view experienced by receptors at Viewpoint 12, is assessed as **not significant (minor)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029). |
| **Viewpoint 13: Manchester Fort (Figure 6.20d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Low | Demolition and construction works occurring at lower levels within the Site will be screened behind the low-rise retail units within Manchester Fort, with no views of the site compound, materials excavation/storage, drilling and smaller construction plant. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 5 during the construction period, together with the upper elements of the tallest partially constructed buildings within Application 5. This will comprise Tower 5 within NT04 and Tower 1 within NT02, with very limited visibility towards other partially constructed buildings. |
| Significance of effect (demolition and construction): | Not significant (minor) | The visual effect of Application 5 during demolition and construction on the view experienced by receptors at Viewpoint 13, is assessed as **not significant (minor)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029). |
| **Viewpoint 14: North Street (Figure 6.21d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Medium | Demolition and construction works occurring at lower levels within the Site will be screened behind built form along North Street and Stanley Street, with no views of the site compound, materials excavation/storage, drilling and smaller construction plant. Taller plant such as |

| | | |
|---|---|---|
| | | telescopic/support/tower cranes will be the main visible elements of Application 5 during the construction period, together with the upper elements of partially constructed buildings across all three development plots, particularly Towers 1 – 5. |
| Significance of effect (demolition and construction): | Not significant (moderate / minor) | The visual effect of Application 4 during demolition and construction on the view experienced by receptors at Viewpoint 14, is assessed as **not significant (moderate/minor)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029). |
| **Viewpoint 15: St Chad's Street (Figure 6.22d)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Low | Demolition and construction works occurring at lower levels within the Site will be largely screened behind built form and a change in level between St Chad's Street and Red Bank, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely to occur. Taller plant such as telescopic/support/tower cranes will be the main visible elements of Application 5 during the construction period, together with the upper elements of partially constructed buildings, particularly the tallest visible buildings Towers 1 and 3 within NT02 and NT03, as well as lower elements within these plots. Construction works associated with buildings within NT04 will largely be screened by built form from this location. |
| Significance of effect (demolition and construction): | Not significant (minor) | The visual effect of Application 5 during demolition and construction on the view experienced by receptors at Viewpoint 15, is assessed as **not significant (minor)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029). |
| **Viewpoint 16: Red Bank (Figure 6.23d)** | | |
| Sensitivity: | Medium | The combination of low value and high susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Zero | Construction activity associated with Application 5 would be screened from view from this viewpoint by the viaduct, and there would therefore be zero. |
| Significance of effect (demolition and construction): | No effect | Application 5 would result in no effect on the view from this viewpoint. |
| **Viewpoint 17: Rochdale Road (Figure 6.24d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction) | High | Demolition and construction works occurring at lower levels within the Site will be screened behind existing built form to the west of Rochdale Road, with views of the site compound, materials excavation/storage, drilling and smaller construction plant unlikely. Taller plant such as |

| | | |
|---|---|---|
| | | telescopic/support/tower cranes will be the main visible elements of Application 5 during the construction period, together with the upper elements of partially constructed buildings within all three development plots. In particular, Towers 1, 3 and 5 will form prominent features, due to their greater elevation and position in closer proximity to the viewpoint. |
| Significance of effect (demolition and construction): | Not significant (moderate) | The visual effect of Application 5 during demolition and construction on the view experienced by receptors at Viewpoint 17, is assessed as **not significant (moderate)**, adverse and medium-term in duration (occurring primarily between 2023 - 2029). |

## The Completed and Operational Development (Application 5)

6.239 The visual effects of Application 5 on representative viewpoints during completion and operation are assessed in **Table 6.28**. The baseline conditions and value of each viewpoint has been described previously in **Table 6.10**.

***Table 6.28**: Visual Assessment – Completed and Operational Development (Application 5)*

| **Viewpoint 1: St Michael's Flags and Angel Meadow Park (Figure 6.8d)** | | |
|---|---|---|
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Medium | Application 5 will be located at relatively close proximity and will introduce additional tall buildings into the view from this viewpoint. Application 5 will contribute to providing more visual enclosure in the view over St Michael's Flags andAngel Meadow Park, which previously afforded some openness in the view out to the Irk Valley. Tower 1 within NT02 will form the most prominent feature of Application 5 from this viewpoint, given its position in closest proximity, combined with its higher elevation than other elements of Application 5. Tower 3 within NT03 will also be visible, set slightly behind Tower 1 and at slightly lower elevation. Other elements of Application 5 will broadly be screened from view, either by buildings within Application 5, or existing vegetation along Old Mount Street. However, these buildings will be in keeping with the pattern, scale and massing of development recently established.. The materiality of buildings within NT02 and NT03 will relate well to the surrounding context, with the façade primarily formed of glass. This will be in keeping with the emerging pattern of development occurring in proximity to this development, including at Victoria Riverside and within the wider TCA 2: NOMA. Application 5 will occupy a relatively contained proportion of the wider view available from this location. |
| Significance of effect (completed and operational: | Significant (moderate) | The effect of Application 5 on the view experienced by residents and people visiting St Michael's Flags and Angel Meadow Park, is assessed as **significant (moderate)**, neutral and long-term in duration. These effects arise from the sensitivity of users of the greenspace and residents, combined with the magnitude of change arising from the scale and massing of buildings within Application |

| | | |
|---|---|---|
| | | 5, and the increased visual enclosure created by their introduction into the view. |
| **Viewpoint 2: Corporation Street (Figure 6.9d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in Table 6.10). |
| Magnitude of change (completed and operational): | Zero | Application 5 would not be visible from this viewpoint, due to screening by existing built form to the north-east of the viewpoint. There would therefore be zero change associated with Application 5. |
| Significance of effect (completed and operational: | No effect | The effect of Application 5 is assessed as not significant (no effect), neutral and long-term on the view experienced from this viewpoint. |
| **Viewpoint 3: Manchester Cathedral (Figure 6.10d)** | | |
| Sensitivity: | High | The combination of high value and high susceptibility results in the receptors experiencing this view having a high sensitivity to change associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Zero | Application 5 would not be visible from this viewpoint, due to screening by existing built form and vegetation to the north-east of the viewpoint. There would therefore be zero change associated with Application 5. |
| Significance of effect (completed and operational: | No effect | The effect of Application 5 is assessed as not significant (no effect), neutral and long-term on the view experienced from this viewpoint. |
| **Viewpoint 4: Smithfield (Figure 6.11d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Negligible | Visibility of Application 5 will be restricted to limited views of the upper floors of Tower 3 within NT03 and Tower 5 within NT04. These will be seen set beyond existing mid-rise residential development along Rochdale Road. All other elements of Application 5 will be screened by existing built form. Application 5 will be seen in the context of tall buildings in close proximity to the viewpoint, including at Moda, Angel Gardens. |
| Significance of effect (completed and operational: | Not significant (minor) | The effect of Application 5 on views from this location and on the townscape character of Smithfield Conservation Area is considered to be **not significant (minor)**, neutral and long-term in duration. This is primarily as a result of the fact that only a very small proportion of Application 5 will be visible, due to the majority of it being screened behind existing built form along Rochdale Road. |
| **Viewpoint 5: Ancoats (Figure 6.12d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |

| | | |
|---|---|---|
| Magnitude of change (completed and operational): | Low | Application 5 will form additional tall buildings seen in the view to the north-west from the northern edge of Ancoats Conservation Area. Parts of Application 5 will be screened behind development on Oldham Road, with the upper parts of three buildings visible to varying degrees. Tower 1 within NT02 will form the most prominent feature of Application 5, given its position in more open views along Thompson Street, and its greater elevation than other visible elements of Application 5. Other visible buildings will comprise Midrise 3 within NT03, and Tower 4 within NT04. Views of Tower 3 in particular will be very limited, due to screening by existing built form along Oldham Road. The towers will be visible at receding scale with the increased distance to the Site, behind a foreground of mixed-use development with relatively low amenity value. This includes buildings associated with a Chinese supermarket and Manchester Central Community Fire Station. Although Application 5 is likely to contribute to providing more visual enclosure across Oldham Road, it is also likely to contribute to improving the visual amenity of the backdrop to Oldham Road and the northern edge of the Ancoats Conservation Area. The façades of the visible buildings within Application 5 will be primarily glass, which will be slightly at odds with the existing building materiality, and which will appear to extend city centre development towards this viewpoint. |
| Significance of effect (completed and operational: | Not significant (moderate / minor) | Application 5 is considered to result in **not significant (moderate / minor)**, beneficial and long-term effects on views from the nearest edge of Ancoats on Oldham Road and on townscape character of the wider Ancoats Conservation Area. The existing townscape in the view is of moderate value and of relatively lower visual amenity and condition, with mixed uses. Only a proportion of the buildings within the Site will be visible, and the lower parts of these buildings and the wider Site will not be visible in the view. The introduction of the upper parts of several buildings is likely to improve the visual context to the north of Oldham Road. |
| **Viewpoint 6: Rochdale Road (Railway Bridge) (Figure 6.13d)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Medium | Application 5 will be located in close proximity to the viewpoint and will form a prominent feature in the view from this location. The full width of Application 5 will be visible across the view to the south-west. It will occupy a position in front of existing views towards tall buildings, albeit at greater distance within Manchester city centre. It will be seen alongside the high-rise Emmeline Apartments, although buildings within Application 5 will be taller in vertical scale than this existing residential development.<br>Buildings within NT02, NT03 and NT04 will all be visible, including Towers 1, 3, 4 and 5. Tower 4 will form the most prominent feature of Application 5, given its closer proximity to the viewpoint than other elements of Application 5. Due to the orientation and massing of the buildings within Application 5, views between the development plots towards Manchester city centre will not be available.<br>Open views over the Lower Irk Valley will be retained to the north of Application 5. However, the tall vertical scale of the buildings will be emphasised by their relatively close proximity to the viewpoint. Application 5 is likely to change the view of the Manchester skyline |

| | | |
|---|---|---|
| | | approaching the city from Rochdale Road and will likely be read as appearing to extend the taller scale of the city centre out towards the viewpoint along the Lower Irk Valley. The facades of buildings within NT02 and NT03 will be primarily glass, which will relate well to their position at the city centre end of the Site, while the brick of the buildings within NT04 will be in keeping with the surrounding materiality of buildings within Collyhurst, to the north and east of the Site. |
| Significance of effect (completed and operational: | Significant (moderate) | Application 5 is considered to result in **significant (moderate)**, beneficial and long-term effects on views from Rochdale Road approaching the city centre. The view from this viewpoint is of medium sensitivity, and does not include highly valued townscape. However, the view is likely to be subject to a medium magnitude of change due to the position of Application 5 in the foreground, and its vertical scale. The full extent of Application 5 will be appreciated in this view, with all four towers visible to the south-west. It is likely to alter the view of the city centre skyline and will extend the tall building scale of the city centre out along the Lower Irk Valley towards the viewpoint. |
| **Viewpoint 7: Dantzic Street (Figure 6.14d)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Zero | Application 5 would not be visible from this viewpoint, due to screening by existing built form at Meadowside (4) to the north of the viewpoint. There would therefore be zero change associated with Application 5. |
| Significance of effect (completed and operational: | No effect | The effect of Application 5 is assessed as not significant (no effect), neutral and long-term on the view experienced from this viewpoint. |
| **Viewpoint 8: Sand Hills Park, Collyhurst (Figure 6.15d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in Table 6.10). |
| Magnitude of change (completed and operational): | Medium | Application 5 will be located in close proximity to the viewpoint and will form a relatively prominent feature in the view to the south-west. The majority of buildings within Application 5 will be seen to almost their full extents, including Tower 4 and Tower 5 within NT04, which will form the closest proximity elements of Application 5. Towers 1, 2 and 3, within NT02 and NT03, will be seen beyond buildings within NT04.<br>Application 5 will be seen in front of existing tall buildings within Manchester city centre, albeit at closer proximity, which will emphasise their tall vertical scale. More distant views to the south-west will be retained between Tower 5 and the rest of the buildings within Application 5, which will help to break up the overall massing. The materiality of the buildings within Application 5 will be of high quality, and the primarily glass facades of buildings within NT02 and NT03 will relate well to the city centre skyline seen beyond. The |

| | | |
|---|---|---|
| | | proximity and scale of the buildings will increase the magnitude of change associated with them.<br>The introduction of Application 5 into close proximity views from this location will change the view of the Manchester skyline, appearing to 'extend' the taller scale of the city centre out towards the viewpoint along the Lower Irk Valley. |
| Significance of effect (completed and operational: | Significant (moderate) | Application 5 is considered to result in **significant (moderate**), beneficial and long-term effects on views from this informal greenspace. The existing view is of medium sensitivity, and does not include highly valued townscape, but the view is likely to be subject to a medium magnitude of change due to the position of Application 5 in the foreground, and its vertical scale in the view. The introduction of Application 5 into the view to the south-west will alter the view of the city centre skyline and extend the tall buildings of the city centre out along the Lower Irk Valley towards the viewpoint. |
| **Viewpoint 9: Dalton Street (Figure 6.16d)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | Application 5 will be located in close proximity to the viewpoint and will form a prominent feature in the view to the west. It will result in a high magnitude of change in the view from this viewpoint, primarily due to the vertical scale of Tower 5 within NT04, which will be seen to the immediate west of Dalton Street. Views towards other elements of Application 5 will be available beyond Tower 5, including Towers within NT02 and NT03. However, views towards these buildings will be limited by the position that Tower 5 occupies in the foreground of the view. The materiality of these buildings will be in keeping with the surrounding context, responding to the red brick which forms the primary building material across Collyhurst and the surrounding area. The materiality of buildings within NT02 and NT03, positioned towards the south of the Site, will be primarily glass and will respond to the existing views of buildings within the city centre skyline seen to the south from this viewpoint, albeit that Application 5 will obscure these existing views. The taller towers proposed within Application 5 will obscure the incidental view of the Manchester skyline which is currently available from this viewpoint, containing the view in close proximity to the viewpoint. It will appear to 'extend' the taller scale of the city centre out towards the viewpoint along the Lower Irk Valley. |
| Significance of effect (completed and operational: | Significant (major / moderate) | Application 5 is considered to result in a **significant (major/moderate**), beneficial and long-term effect on views experienced mainly by local residents and road users from Dalton Road. The view is of medium sensitivity, and does not include highly valued townscape. However, it is likely to be subject to a high level of change due to the vertical scale and position of buildings within Application 5, primarily the close proximity Tower 5. This will alter the view of the city centre skyline and extend the tall buildings of the city centre out along the Lower Irk Valley towards the viewpoint. |
| **Viewpoint 10: Queen's Road (near Metrolink) (Figure 6.17 d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes |

| | | |
|---|---|---|
| | | associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Low | Application 5 will be located at increased distance from this viewpoint, and will form a relatively small proportion of the overall view available from this location. Buildings within NT02, NT03 and NT04 will all be visible, including the tallest elements of each plot. Due to the increased distance of this viewpoint, the vertical scale of the plots will be reduced, and Application 5 will occupy the mid-ground of the view. Buildings within each plot will be seen as discrete features, with views towards the city centre maintained between each plot. Buildings within NT02 and NT03 will be positioned towards the south of the Site, closest to the city centre, and their primarily glass facades will relate well to the existing building materiality across the city centre. The materiality of buildings within NT04, which will primarily be brick, will respond to the building form to the north and east of the Site, and will be in keeping with the materiality of other buildings seen from this viewpoint.<br>The buildings will appear to a similar extent above the horizon as other tall buildings within Manchester city centre. Application 5 will change the incidental view of the Manchester skyline from the Metrolink station approach and will appear to 'extend' the taller scale of the city centre out towards the viewpoint along the Lower Irk Valley. Buildings within Application 5 will occupy a relatively limited extent of the overall view available from this location. |
| Significance of effect (completed and operational: | Not significant (minor) | Application 5 will result in **not significant (moderate / minor),** neutral and long-term effects on views from Queens Road near Metrolink, which are of medium sensitivity due to the incidental nature of the view and lack of attention/interest of people using Metrolink or travelling on Queen's Road. Views experienced by these receptors will be subject to a low level of change at increasing range, with taller buildings within the Site forming new landmark features in the view of the Manchester city skyline. |
| **Viewpoint 11: Queen's Park (Figure 6.18d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Low | Views towards Application 5 will be limited by vegetation within the park. From this location, buildings within NT04 will be almost completely screened from view by woodland within Queens Park, particularly during summer months when the trees will be in leaf. Only the upper elements of the tallest buildings within NT02 and NT03 are likely to be visible, above the tree line. The primarily glass facades of buildings within NT02 and NT03 will relate well to the materiality of existing buildings within the city centre. Application 5 will increase the influence of tall building in the city backdrop to the park, and will bring development of this scale into closer proximity than the existing development upon the Manchester city skyline. This is considered to result in a low magnitude of change. |
| Significance of effect (completed and operational: | Not significant (moderate / minor) | Application 5 will result in a **not significant (moderate / minor**), neutral and long-term effect on views from Queens Park due to the limited visibility of most of the buildings due to the intervening woodland around Queens Park. The upper elements of the taller buildings within NT02 and NT03 will increase the influence of tall buildings in the city backdrop to Queens Park, but are not |

| | | |
|---|---|---|
| | | considered to increase the significance of the effect beyond not significant (moderate / minor) due to the contained nature of views from the park and the medium receptor sensitivity. |
| **Viewpoint 12: Miles Platting (Figure 6.19d)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Low | Views towards Application 5 will be limited by existing built form within Miles Platting, and there will be limited visibility of just the upper elements of taller buildings behind intervening residential areas. Three towers, within NT02, NT03 and NT04, will be visible beyond existing built form. Lower buildings across the development plots will be screened from view by the intervening foreground low-rise buildings. Despite the introduction of taller buildings within the context of relatively small-scale residential buildings in the immediate context, the magnitude of change associated with Application 5 will be low. Although the upper elements of three buildings will be visible, they will be seen only slightly higher above the horizon than existing built form, and will have only a limited influence on existing views from this location. The primarily glass facades of the buildings within NT02 and NT03 will be slightly at odds with the primarily brick materiality of the existing built form visible from this viewpoint, and will appear to bring development of a similar type to that occurring in the city centre into closer proximity to this viewpoint. |
| Significance of effect (completed and operational: | Not significant (minor) | Application 5 will result in a **not significant (minor**), neutral and long-term effect on views experienced from Oldham Road within Miles Platting. Although Application 5 will introduce new taller buildings in the backdrop to the smaller scale residential context, a relatively limited proportion of buildings within Application 5 will be visible behind intervening residential areas, where recent changes have also taken place. |
| **Viewpoint 13: Manchester Fort (Figure 6.20d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Low | The upper parts of Tower 5 within NT04 and Tower 1 within NT02 will be visible beyond Manchester Fort. There will be filtered views towards another tower within NT03, although this will be largely screened beyond vegetation within Manchester Fort. There will be limited visibility of other parts of Application 5 as they are situated behind the retail units of Manchester Fort. The buildings will be seen at a similar extent above the horizon as tall buildings within Manchester City Centre and NOMA which are visible further south-west. Application 5 will appear to extend the city centre skyline towards the viewpoint. The primarily glass façade of Tower 1 will be in keeping with the materiality of buildings within the city centre. These factors will combine to result in a low magnitude of change. |
| Significance of effect (completed and operational: | Not significant (minor) | Application 5 will result in **not significant (minor)**, neutral and long-term effects on views from Manchester Fort. Although the upper elements of several taller buildings will be visible beyond retail units within Manchester Fort, the majority of buildings within Application 5 will be screened from view. The views towards |

| | | |
|---|---|---|
| | | Application 5 will only be experienced by receptors of low sensitivity, given their main attention focused on shopping/retail experience (rather than the views to the surrounding townscape) and the relatively low value of the retail townscape that occupies the foreground of the view. |
| **Viewpoint 14: North Street (Figure 6.21d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Medium | Application 5 will be located in close proximity to this viewpoint and will occupy a relatively large proportion of the view. Buildings within each of the plots will be visible, including Tower 1 within NT02, Towers 2 and 3 within NT03, and Towers 4 and 5 within NT04. The large vertical scale of several buildings, particularly Tower 1 within NT02, will be notable in the view at the south-western, city centre end of the site. The individual buildings within each plot will be read quite clearly, with an open view between each when seen from this location. The scale and massing will contrast with the surrounding low trading estates and commercial units in the foreground, but longer-distance views towards tall buildings on the Manchester city centre skyline will be retained. The scale and massing of buildings within Application 5 will appear larger than buildings within the city centre, partly due to the closer proximity of Application 5. However, there will be an impression of the character and scale of development within the city centre extending out towards this inner-city commercial area. Buildings within NT02 and NT03 will be seen in closest proximity to the city centre, and the primarily glass facades of these buildings will relate well to the existing materiality of buildings within the city centre. The brick of buildings within NT04, towards the north-east of the Site, will be in keeping with the red brick form of buildings in the immediate context of this viewpoint. |
| Significance of effect (completed and operational: | Not significant (moderate / minor) | Despite the medium magnitude of change to the view resulting from Application 5 in the backdrop behind the trading estates and commercial units, the effect arising from Application 5 is considered to be **not significant (moderate / minor**), beneficial and long-term in duration. Changes associated with Application 5 occur to a view that is of low sensitivity to change, given the main activities of the users of the area and low levels of existing visual amenity, as well as the poor condition and low value of the townscape in the view. Buildings within Application 5 are likely to improve the visual context to the south-east of North Street. |
| **Viewpoint 15: St Chad's Street (Figure 6.22d)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Low | Application 5 will be seen in somewhat close proximity to this viewpoint. Several buildings will be visible, with Towers 1 and 3, within NT02 and NT03 respectively, forming the most prominent visible elements. These buildings, along with several lower buildings within Application 5, will be seen along St Chad's Street beyond low-rise trading and commercial units. The primarily glass facades of buildings within NT02 and NT03 will be in keeping with the emerging |

| | | |
|---|---|---|
| | | development at Victoria Riverside. Views between the separate buildings will be retained, which will help to break up the massing of the buildings and integrate them into the surrounding context. These buildings will occupy a small proportion of the overall view. Although they will contrast with the low trading estates seen in this direction of the view, they will be in keeping with close-proximity residential development within Green Quarter to the south of this view and will therefore not appear out of keeping with the surrounding context. Overall, Application 5 is considered to result in a low magnitude of change due to the existing low amenity value of the surrounding townscape. |
| Significance of effect (completed and operational: | Not significant (minor) | Application 5 will result in **not significant (minor)**, neutral and long-term effects on the view from this viewpoint. Changes associated with Application 5 will occur to a view which is of low sensitivity to change of this type. This is as a result of the main activities of the users of the area, low levels of visual amenity in the view, and the poor condition and low value of the surrounding townscape. Buildings within Application 5 are likely to improve the visual context to the south-east of St Chad's Street. |
| **Viewpoint 16: Red Bank (Figure 6.23d)** | | |
| Sensitivity: | Medium | The combination of low value and high susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Zero | Application 5 would not be visible from this viewpoint, due to screening by the built form of the viaduct to the north-east of the viewpoint. There would therefore be zero change associated with Application 5. |
| Significance of effect (completed and operational: | No effect | The effect of Application 5 is assessed as not significant (no effect), neutral and long-term on the view experienced from this viewpoint. |
| **Viewpoint 17: Rochdale Road (Figure 6.24d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | Application 5 will be seen in close proximity to the west of this viewpoint, and will occupy a wide horizontal extent of the views in this somewhat open direction. Tower 1 within NT02 will form a particularly prominent feature, due to its close proximity to the viewpoint as well as its elevation, although there are several tall buildings across the Site. Buildings located towards the south of the Site will be most visible from this location, including the Clubhouse and Tower 1 within NT02, and Towers 2 and 3 within NT03. As well as these tall buildings, several other buildings within Application 5 will be visible, including midrise and lower elements. Views between the majority of the buildings within Application 5 will be retained, which will help to reduce visual effects associated with their massing. The majority of the buildings will be visible across Rochdale Road, behind a foreground of mixed-use development, trading estates and commercial units (of relatively low amenity value). Some of the smaller buildings are likely to be mostly |

| | | |
|---|---|---|
| | | screened from view by existing built form. Application 5 will be seen alongside buildings which are currently under construction within Victoria Riverside, and will be slightly larger in scale. The primarily glass facades of visible buildings across the Site will be in keeping with the existing materiality of buildings within the city centre skyline, seen to the south-west from this viewpoint.<br>Application 5 is likely to contribute to providing more visual enclosure across Rochdale Road but will also contribute to improving the visual amenity of the backdrop to Rochdale Road at its approach to the city centre. It is likely to extend the emerging character of regeneration currently occurring within New Cross northwards. |
| Significance of effect (completed and operational: | Significant (moderate) | Application 5 is considered to result in **significant (moderate**), beneficial and long-term effects on views from the closest parts of Rochdale Road. The existing townscape in the view is of low value and of relatively lower visual amenity and condition, being dominated by mixed uses, commercial units and trading estates. Application 5 is likely to improve the visual context to the north-west of Rochdale Road on approach to the city centre and extend the emerging character of regeneration around New Cross. |

## Assessment of Cumulative Effects and their Significance (NT02 – NT04 Application 5)

6.240 This section of the TVIA provides an assessment of the cumulative townscape and visual effects of Application 5 in conjunction with other committed development ('cumulative schemes').

6.241 The cumulative effects assessment (CEA) in this TVIA assesses the contribution of Application 5 to the effect arising with committed schemes, which are either under construction or where construction has not yet started. Cumulative schemes included in TVIA were agreed in consultation with MCC and are listed in **Table 6.6** and mapped in **Figure 6.5**. These cumulative schemes are considered further within the following CEA. Photos of those under construction are also shown in Figure 6.5b.

6.242 AVRs in **Figures 6.8 – 6.24** show Application 5 in the context of these cumulative schemes, with a scale verifiable wireline to indicate the location of cumulative schemes within the view. The baseline viewpoint photography also captures partially constructed developments within the 3D context.

6.243 The contribution of Application 5 to the cumulative effect upon the baseline character or view is assessed, in conjunction with these cumulative schemes, with the assessment of cumulative effect apportioning the amount of the effect that is attributable to Application 5.

6.244 The CEA for Application 5 focuses on the cumulative effects of the completed and operational development and does not consider its cumulative effects during demolition and construction, which cannot be accurately assessed due to the uncertainties of the construction phasing for cumulative schemes that are approved, but where construction is not started, and the uncertainly of overlaps with the construction phase for Application 5.

Cumulative effects during demolition and construction are likely to be similar or less in magnitude than those assessed for the completed and operational development, of medium-term, adverse but temporary during the construction phase for Application 5.

## Likely Cumulative Townscape Effects and their Significance (Application 5)

6.245 The cumulative effects of Application 5 on townscape character for the completed and operational development are assessed in **Table 6.29**, focusing on the TCAs identified in the preliminary assessment (**Table 6.21**) as requiring further assessment. A baseline description of each TCA is set out **Table 6.7**.

***Table 6.29**: Cumulative Townscape Character Assessment – Completed and Operational Development (Application 5)*

| | | |
|---|---|---|
| **TCA 1: Lower Irk Valley** | | |
| Sensitivity | Medium | The combination of low value and high susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | High to medium | The cumulative magnitude of change to the character of the Lower Irk Valley (TCA1) resulting from the contribution of Application 5 to the cumulative schemes is assessed as high, as illustrated, and described further in Viewpoint 6, 8 and 9 (**Table 6.30**). |
| Significance of effect (completed and operational) | Significant (major/ moderate to moderate) | The contribution of Application 5 to the cumulative effect on the character of the Lower Irk Valley (TCA1) is assessed as significant (major/moderate to moderate), beneficial and long-term in duration. |
| **TCA 2: NOMA** | | |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | Low | The cumulative magnitude of change to the perceived character of NOMA (TCA2) resulting from the contribution of Application 5 to the cumulative schemes is assessed as low, as illustrated, and described further in Viewpoint 1 and 7 (**Table 6.30)**. |
| Significance of effect (completed and operational) | Not significant (moderate / minor) | The contribution of Application 5 to the cumulative effect on the perceived character of NOMA (TCA2) is assessed as not significant (moderate), beneficial and long-term in duration. |
| **TCA 3: Strangeways** | | |
| Sensitivity | Low | The combination of medium value and low susceptibility results in this TCA having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed | Medium to low | The cumulative magnitude of change to the perceived character of Strangeways (TCA3) resulting from the contribution of Application 5 to the cumulative schemes is assessed as low, as illustrated, and described further in Viewpoints 14 and 15 (**Table 6.30**). |

| | | |
|---|---|---|
| and operational) | | |
| Significance of effect (completed and operational) | Not significant (moderate / minor to minor) | The contribution of Application 5 to the cumulative effect on the perceived character of Strangeways (TCA3) is assessed as not significant (moderate / minor to minor), beneficial and long-term in duration. |
| **TCA 7: Collyhurst** | | |
| Sensitivity | Medium | The combination of medium value and medium susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | Medium | The cumulative magnitude of change to the perceived character of Collyhurst (TCA7) resulting from the contribution of Application 5 to the cumulative schemes is assessed as medium from the closest areas of Collyhurst, as illustrated, and described further in Viewpoint 6 (**Table 6.30)**, with the magnitude of change reducing with distance to the north and east of the TCA. |
| Significance of effect (completed and operational) | Significant (major/ moderate) | The contribution of Application 4 to the cumulative effect on the perceived character of Collyhurst (TCA7) is assessed as significant (major/moderate), beneficial and long-term in duration from the closest areas of Collyhurst, reducing to not significant with increased distance to the north and east of the TCA. |
| **TCA 10: New Cross** | | |
| Sensitivity | Medium | The combination of the medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | Low to zero | The cumulative magnitude of change to the perceived character of New Cross (TCA10) resulting from the contribution of Application 5 to the cumulative schemes is assessed as low, as illustrated, and described further in Viewpoint 4 and 17 (**Table 6.30)**. |
| Significance of effect (completed and operational) | Not significant (moderate / minor) to no effect | The contribution of Application 5 to the cumulative perceived effect on the character of New Cross (TCA10) is assessed as not significant (moderate/minor) to no effect, beneficial and long-term in duration. |

## Likely Cumulative Visual Effects and their Significance

6.246 The cumulative visual effects of Application 5 on representative viewpoints during completion and operation are assessed against the predicted baseline in **Table 6.30**. The baseline conditions and sensitivity of each viewpoint have been described previously in **Table 6.10**.

***Table 6.30****: Cumulative Visual Assessment – Completed and Operational Development (Application 5)*

| **Viewpoint 1: St Michael's Flags and Angel Meadow Park (Figure 6.8e(i-ii))** | | |
|---|---|---|
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | Meadowside (4) will occupy the foreground of the view across St Michael's Flags and Angel Meadow Park, completely screening views of Tower 1 and partially screening views of Tower 3. Available |

| | | |
|---|---|---|
| | | views towards Tower 3 will be alongside The Gas Works (3), which will be visible at closer proximity and larger vertical scale in the view. Victoria Riverside (7) will also be available at closer proximity and larger vertical scale to the left of Application 5 in this view.<br>The cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is assessed as low, primarily because the majority of the Application 5 buildings will be located behind the cumulative schemes and will not be visible, and because the visible buildings will be viewed in the context of a more developed foreground, in which further tall buildings will be introduced at Victoria Riverside (7), Meadowside (4), and the Gasworks (3), at larger scale. These developments will contribute more to the cumulative effect. |
| Significance of effect: (completed and operational) | Not significant (moderate / minor) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (moderate / minor), neutral and long-term in duration. |
| **Viewpoint 2: Corporation Street (Figure 6.9e)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Zero | Application 5 would not be visible from this viewpoint, due to screening by existing built form to the north-east of the viewpoint. The cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is therefore assessed as zero. |
| Significance of effect: (completed and operational) | Not significant (no cumulative effect) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (no effect), neutral and long-term in duration. |
| **Viewpoint 3: Manchester Cathedral (Figure 6.10e)** | | |
| Sensitivity: | High | The combination of high value and high susceptibility results in the receptors experiencing this view having a high sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Zero | Application 5 would not be visible from this viewpoint, due to screening by existing built form to the north-east of the viewpoint. The cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is therefore assessed as zero. |
| Significance of effect: (completed and operational) | Not significant (no cumulative effect) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (no effect), neutral and long-term in duration. |
| **Viewpoint 4: Smithfield (Figure 6.11e)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Zero | The Gas Works (3) and 25 Rochdale Road (5) will occupy a foreground position in the view across Rochdale Road and are likely to completely screen all of the Application 5 buildings, which are situated behind these cumulative schemes. The cumulative magnitude of change resulting from the contribution of Application |

| | | |
|---|---|---|
| | | 5 to the cumulative schemes is assessed as zero, because it is unlikely to be visible when considered in the context of the cumulative schemes. |
| Significance of effect: (completed and operational) | Not significant (no cumulative effect) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (no effect), neutral and long-term in duration. |
| **Viewpoint 5: Ancoats (Figure 6.12e)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Negligible | The Gas Works (3) and 87 Rochdale Road (8) will occupy a foreground position in the view across Rochdale Road and are likely to largely screen views of the buildings within Application 5. The cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is assessed as negligible, because it is likely that there will be views towards the very upper parts of two buildings only. |
| Significance of effect: (completed and operational) | Not significant (minor) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (minor), neutral and long-term in duration. |
| **Viewpoint 6: Rochdale Road (Railway Bridge) (Figure 6.13e)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Medium | The Gas Works (3), Meadowside (4), Victoria Riverside (7), Cortland at Collier's Yard (24) and Waterloo Place (26) will all be visible in the view of the Manchester city centre skyline and will extend the tall building scale of the city towards the viewpoint. Application 5 represents a continuation of this effect that will be established by approved schemes and is likely be read as appearing to extend the taller scale of the city centre along the Lower Irk Valley. This effect is observed in the project alone assessment (**Table 6.28**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of Towers 1, 3 and 5 can be noted as comparable in height/scale to the committed schemes nearby at the Gas Works (3) and Meadowside (4). The cumulative magnitude of change resulting from the contribution of Application 4 to the cumulative schemes is assessed as medium, due to its position to the fore of the cumulative schemes and the extended scale of tall buildings along part of the Lower Irk Valley, as well as the relatively small proportion of the overall view that it occupies. |
| Significance of effect: (completed and operational) | Significant (moderate) | The contribution of Application 5 to the cumulative effect on the view is assessed as significant (moderate), beneficial and long-term in duration. The view is only of medium sensitivity and does not include highly valued townscape but is likely to be subject to a medium level of cumulative change due to the position of Application 5 in the foreground, and its vertical and horizontal spread in the view in addition to the cumulative schemes. In the context of cumulative schemes, it will appear visually more |

| | | |
|---|---|---|
| | | cohesive and connected with the taller building scale of the emerging city centre. |
| **Viewpoint 7: Dantzic Street (Figure 6.14e)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Zero | Application 5 would not be visible from this viewpoint, due to screening by existing built form to the north-east of the viewpoint. The cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is therefore assessed as zero. |
| Significance of effect: (completed and operational) | Not significant (no cumulative effect) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (no effect), neutral and long-term in duration. |
| **Viewpoint 8: Sand Hills Park, Collyhurst (Figure 6.15e)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Medium | The Gas Works (3), Meadowside (4), Victoria Riverside (7), Great Ducie Street (14), Cortland at Collier's Yard (24), Embankment Exchange (25) and Waterloo Place (26) will all be visible in the view of the Manchester city centre skyline and will extend and increase the tall building scale of the city in the view. Application 5 represents a continuation of this effect that will be established by approved schemes and is likely be read as appearing to further extend and increase the taller scale of the city centre along the Lower Irk Valley. This effect is observed in the project alone assessment (**Table 6.28**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. Elements of several of these cumulative schemes will be screened from view by Application 5, including parts of The Gas Works (3) and Meadowside (4). The scale of the buildings within Application 5 will be larger in scale and height than the visible committed schemes, partially as a result of perspective and its closer proximity to the viewpoint. The cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is assessed as medium. This is due to its position to the fore of the cumulative schemes and the extended scale of tall buildings into the foreground along part of the Lower Irk Valley, as well as the relatively contained proportion of the overall view that the buildings within Application 5 will occupy. |
| Significance of effect: (completed and operational) | Significant (moderate) | The contribution of Application 5 to the cumulative effect on the view is assessed as significant (moderate), beneficial and long-term in duration. The view is only of medium sensitivity and does not include highly valued townscape but is likely to be subject to a medium level of cumulative change due to the position of Application 4 in the foreground, and its vertical scale in the view, as well as its horizontal spread alongside the cumulative schemes. In the context of cumulative schemes, it will appear visually more cohesive and connected with the taller building scale of the emerging city centre. |

| | | |
|---|---|---|
| **Viewpoint 9: Dalton Street (Figure 6.16e)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | High | The Gas Works (3), Meadowside (4), Meribel Street (15) and Cortland at Collier's Yard (24) may all be partially visible and will extend and increase the tall building scale of the city in the view, however there is considerable intervening screening be vegetation and boundary walls. Application 5 will be located in close proximity to the viewpoint and will form a prominent feature in the view to the fore and will effectively block views of the most of the other cumulative schemes. Application 5 is likely be read as appearing to further extend and increase the taller scale of the city centre along the Lower Irk Valley. This effect is observed in the project alone assessment (**Table 6.28**), however in the context of the cumulative schemes, it is likely to appear visually more cohesive and connected with the taller building scale of the emerging city centre. Application 5 will be subject to a degree of screening by vegetation in the foreground, which helps to integrate it into the view. It will also be seen in closer proximity to the viewpoint. The cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is assessed as high, due to its position to the fore of the cumulative schemes and the increasing scale of tall buildings into the foreground, particularly Tower 5 within NT04. |
| Significance of effect: (completed and operational) | Significant (major / moderate) | Other cumulative schemes will be only partially visible from this location, due in part to existing screening, as well as screening by buildings within Application 5, and the close proximity Tower 5 will represent the most notable change. The contribution of Application 5 to the cumulative effect on the view is assessed as significant (major/moderate), beneficial and long-term in duration. The view is only of medium sensitivity and does not include highly valued townscape. However, it is likely to be subject to a high level of cumulative change due to the vertical scale and position of buildings within Application 5 in addition to the cumulative schemes, primarily the close proximity Tower 5. |
| **Viewpoint 10: Queen's Road (near Metrolink) (Figure 6.17e)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Medium | The Gas Works (3), Meadowside (4), Victoria Riverside (7), 87 Rochdale Road (8), Peeler's Yard (13), Cortland at Collier's Yard (24) and Waterloo Place (26) will all be visible in the view of the Manchester city centre skyline and will extend and increase the tall building scale of the distant city skyline in the view. Application 5 represents a continuation of this effect that will be established by approved schemes and is likely be read as appearing to further extend and increase the taller scale of the distant city centre skyline. This effect is observed in the project alone assessment (**Table 6.28**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of the tallest buildings, including Towers 1, 3 and 5, will be similar in height / scale as the committed schemes nearby, including The Gas Works |

| | | |
|---|---|---|
| | | (3), Meadowside (4), and Victoria Riverside (7). Given the distance between Application 5 and this viewpoint, its diminished scale in the view, and cohesion with the taller building scale of the emerging city centre, the cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is assessed as medium. |
| Significance of effect: (completed and operational) | Not significant (moderate / minor) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (moderate/minor), beneficial and long-term in duration. The view is only of low sensitivity and does not include highly valued townscape but is likely to be subject to a medium level of cumulative change due to the position of Application 5 to the fore of the cumulative schemes, and its vertical scale in the view. In the context of cumulative schemes, it will appear visually more cohesive and connected with the taller building scale of the emerging city centre. |
| **Viewpoint 11: Queen's Park (Figure 6.18e)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | The Gas Works (3), Meadowside (4), Victoria Riverside (7), Swan House (10), Great Ducie Street (14), Cortland at Collier's Yard (24), Embankment Exchange (25), and Waterloo Place (26) will all be partially visible in the distant view of the Manchester city centre skyline, through and above the tree line of Queens Park, and will extend and increase the tall building scale of the distant city skyline in the view. Application 5 represents a continuation of this effect that will be established by approved schemes and is likely to be read as appearing to further extend and increase the taller scale of the distant city centre skyline. This effect is observed in the project alone assessment (**Table 6.28**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of buildings within Application 5 will be slightly smaller than the scale of several approved schemes, including The Gas Works (3), Meadowside (4), and Victoria Riverside (7). The cumulative effects of Application 5 will also be limited by vegetation within the park with only limited visibility of the tallest buildings due to the intervening woodland around Queens Park. Given these factors, the cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is assessed as low. |
| Significance of effect: (completed and operational) | Not significant (moderate / minor) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (moderate/minor), beneficial and long-term in duration. The view is only of medium sensitivity and does not include highly valued townscape but is likely to be subject to a low level of cumulative change due to its distance and intervening woodland, such that it is primarily the upper elements of the higher plots that add to view. In the context of cumulative schemes, these will appear visually more cohesive and connected with the taller building scale of the emerging city centre. |
| **Viewpoint 12: Miles Platting (Figure 6.19e)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to |

| | | |
|---|---|---|
| | | changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | The upper storeys of the Gas Works (3), Meadowside (4), Victoria Riverside (7), Cortland at Collier's Yard (24) and Waterloo Place (26) may be visible in the view in the backdrop to the low-rise residential streets of Miles Platting. These cumulative schemes will introduce a taller building scale of the city skyline in the backdrop to the view. Application 5 represents a continuation of this effect that will be established by approved schemes and is likely be read as appearing to further extend the taller scale of the city centre in the backdrop. This effect is observed in the project alone assessment (**Table 6.28**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The visible towers can be noted as similar in height/scale to the committed schemes nearby at the Gas Works (3), Meadowside (4) and Victoria Riverside (7). The cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is assessed as low, due to the relatively small amount of Application 5 visible, which is largely screened by the foreground townscape, and its integration with the cumulative schemes as part of the backdrop. |
| Significance of effect: (completed and operational) | Not significant (minor) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (minor), beneficial and long-term in duration. The view is only of low sensitivity and does not include highly valued townscape and is likely to be subject to a low level of cumulative change due to the position of Application 5 in the backdrop and its integration with the cumulative schemes that will establish a taller building scale of the emerging city centre. |
| **Viewpoint 13: Manchester Fort (Figure 6.20e)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | The upper storeys of the Gas Works (3), Meadowside (4), Victoria Riverside (7), Swan House (10) and 1 Lord Street (21) will be visible in the view in the backdrop to the low-rise retail park of Manchester Fort. The upper elements of two buildings within Application 5 are likely to form new landmarks in the backdrop to the setting of the Fort in combination with these cumulative schemes, and increase the influence of the 'city centre' taller buildings within its backdrop (which are currently a relatively distant part of the skyline). This effect is observed in the project alone assessment (**Table 6.28**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of the visible towers can be noted as similar in height/scale to the committed schemes nearby at Meadowside (4) and Victoria Riverside (7). The cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is assessed as low, due to the relatively small amount of Application 5 visible, which is largely screened by the foreground townscape, and its integration with the cumulative schemes as part of the backdrop. |
| Significance of effect: | Not significant (minor) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (minor), beneficial and long-term in duration. |

| | | |
|---|---|---|
| (completed and operational) | | |
| **Viewpoint 14: North Street (Figure 6.21e)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Medium | The upper storeys of the Gas Works (3), Meadowside (4), 2 and 3 Angel Square (6), Victoria Riverside (7), and Swan House (10) will be visible in the view, situated at a similar distance from the viewpoint as the buildings within Application 5. The buildings within Application 5 are likely to form new landmarks in the backdrop to the existing low-rise industrial units in combination with these cumulative schemes, and increase the influence of the 'city centre' taller buildings within this backdrop. This effect is observed in the project alone assessment (**Table 6.28**) however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The buildings within Application 5 will be similar in vertical scale and massing to buildings within Meadowside (4) and Victoria Riverside (7). Buildings within Application 5 will occupy a horizontal spread that is similar to all the approved schemes, and will therefore form a notable addition to the cumulative baseline. The cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is therefore assessed as medium, due to the extension of scale of the city centre backdrop and the proportion of the view that buildings within Application 5 will occupy, and its integration with the cumulative schemes as part of the backdrop. |
| Significance of effect: (completed and operational) | Not significant (moderate/minor) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (moderate), beneficial and long-term in duration. On balance these moderate effects are assessed as not significant due to the low sensitivity townscape, despite the high level of cumulative change in the backdrop arising from the contribution of Application 5 to the cumulative schemes. |
| **Viewpoint 15: St Chad's Street (Figure 6.22e)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | The upper storeys of the Gas Works (3), Meadowside (4) and Victoria Riverside (7) will be visible in the view, situated at a similar distance from the viewpoint as the buildings within Application 5. The buildings within Application 5 are likely to form new landmarks in the backdrop to the existing low-rise industrial units in combination with these cumulative schemes, and increase the influence of the 'city centre' taller buildings within this backdrop. This effect is observed in the project alone assessment (**Table 6.28**) however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The buildings within Application 5 will be similar in massing and will appear smaller in vertical scale than buildings within Meadowside (4) and Victoria Riverside (7). The cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is assessed as low, due to |

| | | |
|---|---|---|
| | | the relatively small amount of Application 5 visible, which is largely screened by the foreground townscape, and its integration with the cumulative schemes as part of the backdrop. |
| Significance of effect: (completed and operational) | Not significant (minor) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (minor), beneficial and long-term in duration. |
| **Viewpoint 16: Red Bank (Figure 6.23e)** | | |
| Sensitivity: | Medium | The combination of low value and high susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Zero | Application 5 would not be visible from this viewpoint, due to screening by existing built form to the north-east of the viewpoint. The cumulative magnitude of change resulting from the contribution of Application 5 to the cumulative schemes is therefore assessed as zero. |
| Significance of effect: (completed and operational) | Not significant (no cumulative effect) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (no effect), neutral and long-term in duration. |
| **Viewpoint 17: Rochdale Road (Figure 6.24e)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | 87 Rochdale Road (8) will be viewed at close proximity in the foreground of the view across Rochdale Road. The majority of the Application 5 buildings will be located behind this cumulative scheme, although there will be views available towards buildings at the north-eastern end of the Site, including Towers 4 and 5 within NT04, seen at greater distance from the viewpoint than 87 Rochdale Road (8). Buildings within Application 5 will be seen at greater distance from the viewpoint than 87 Rochdale Road (8) and will appear smaller in vertical scale. All other cumulative schemes such as the Gas Works (3), Meadowside (4) and Victoria Riverside (7) will also be behind 87 Rochdale Road (8) and therefore not visible. 87 Rochdale Road (8) will contribute most to the cumulative effect, with the cumulative magnitude of change resulting from the contribution of Application 5 assessed as low. |
| Significance of effect: (completed and operational) | Not significant (minor) | The contribution of Application 5 to the cumulative effect on the view is assessed as not significant (no effect), neutral and long-term in duration. |

## Assessment of Cumulative effects and their Significance (Application 5 + SRF with Committed Schemes)

6.247 This section assesses the cumulative effects of Application 5 and the Victoria North SRF with committed schemes.

6.248 Committed cumulative schemes included in TVIA were agreed in consultation with MCC and are listed in **Table 6.6** and mapped in **Figure 6.5**. Plots included within the Victoria North SRF are also shown in **Figure 6.5**.

6.249 Due to the nature of the Victoria North SRF (which only identifies 'up to' heights with suggested scale, density and form), only a qualitative assessment of the effects in-combination with the Victoria North SRF is possible and no additional modelling or accurate visual representations (AVRs) have been produced to consider the cumulative effects with Victoria North SRF. The various plans presented for the neighbourhoods in the SRF are illustrative representations of the SRF-wide neighbourhood design and development principles, with building height parameters defined in some areas, whereas development density and typology precedents are provided for others, therefore only a high-level interpretation-based, descriptive (qualitive) assessment of the effects of Application 4 in-combination with the Victoria North SRF is possible as part of this TVIA.

6.250 Cumulative effects of Application 5 and the SRF are assessed in terms of their contribution to the cumulative effect with committed schemes. The assessment considers the contribution of the Application 5 and the SRF to the effect arising with committed schemes. The contribution of Application 5 and the SRF to the cumulative effect upon the baseline character/view is assessed, in conjunction with these committed schemes, with the assessment of cumulative effect apportioning the amount of the effect that is attributable to Application 5 and the SRF.

## Likely Cumulative Townscape Effects and their Significance (Application 5 + SRF with Committed Schemes)

6.251 Currently, the townscape character of Victoria North transitions from an urban and industrial grain on the fringes of the city centre, to a more suburban form towards Collyhurst and the north of the area. Similarly, the Irk Valley itself transitions along the valley from a hard-edged character at the south of the study area to a more natural setting upstream towards Queens Park. Three distinct neighbourhoods define the baseline character within the Victoria North SRF area, characterised by different uses, built forms and physical features – Lower Irk Valley (TCA 1), Collyhurst (TCA 7) and New Cross (TCA 10) (**Figure 6.3**) that are reflective of the way the townscape character of the SRF area is experienced.

### Demolition and Construction

6.252 Demolition and construction works within the Application 5 site will result in physical changes to parts of the townscape within the Lower Irk Valley (TCA1) and similar works within the wider Victoria North SRF area will result in physical changes to parts of the townscape within Collyhurst (TCA 7) and New Cross (TCA 10). These changes may occur in addition to construction effects associated with committed schemes occurring within New Cross (TCA 10), including at the Gas Works (3), 87 Rochdale Road (8), 40 Swan Street (9), Swan House (10), New Cross Central (11) and Peelers Yard (13) and within the nearby NOMA area (TCA 2), including Meadowside (4), 25 Rochdale Road (5) and Angel Square (6). Demolition and construction of other committed schemes in the wider townscape, such as in Salford (TCA 12) , where there is also a concentration of committed schemes, will result in a wider presence

of taller construction plant (particularly tower cranes) and partially constructed tall buildings in the wider city centre skyline, in combination with those associated with Application 5 and the SRF.

6.253 Construction activities of Application 5 and the SRF will result in direct changes to the townscape character within the Site and indirect changes to the perceived character of the wider townscape, in addition to those construction activities associated with committed schemes. Cumulative effects on townscape character will occur as a result of the demolition and construction works occurring through the phased build out duration of Application 5 and the SRF, together with committed schemes, particularly between 2023 – 2029 for Application 4 and over a 15-20 year period for the SRF. Over this period, cumulative effects on townscape character are likely to result from the construction works within the Application 5 site and wider SRF area, together with construction of other committed schemes in the wider townscape, with an early focus of effects around construction activity in the southern parts of the SRF area within the Red Bank and New Cross neighbourhoods, and the adjacent NOMA area.

6.254 Changes to townscape character may result from the introduction of site compounds; materials excavation, storage and handling; piling used for the buildings' foundations; construction plant particularly taller cranes (telescopic, support, tower and tracked cranes); and smaller plant including dump trucks, concrete mixers, piling rigs, lorries, skip wagons, excavators and rollers. Increased construction traffic on the local road network is also likely to have some influence on the perceived character. Views of partially constructed buildings and tower cranes are likely to be features of the extended Manchester city centre skyline within the Victoria North area, particularly in the southern parts of the SRF area within the Red Bank and New Cross neighbourhoods.

6.255 During demolition and construction, the contribution of Application 5 and the SRF to the cumulative effect with committed schemes, on the character of the Lower Irk Valley (TCA 1), Collyhurst (TCA 7) and New Cross (TCA 10) is assessed as likely to be significant (major to major/moderate), adverse and medium to long-term in duration, with effects reducing to not significant on the perceived character of the wider townscape outside the Victoria North SRF. Adverse townscape effects are likely to arise during construction due to the introduction of construction plant and partially constructed buildings, with the adversity of townscape effects reducing during the construction period, as the balance of construction works reduces in favour of completed development materialising through the phased build out of Application 5 and the SRF, and other committed schemes being completed in the surrounding townscape.

## The Completed and Operational Development

6.256 During completion and operation, Application 5 will form part of the New Town neighbourhood (defined in the Victoria North SRF) within the existing Lower Irk Valley (TCA 1). New development within the wider Victoria North SRF area outside the Application 5 site, is also likely to change the character of the Lower Irk Valley, Collyhurst and New Cross TCAs, reinforcing the existing communities and establishing a series of integrated neighbourhoods within these areas, which extend Manchester's city centre to the north/north-east. In addition to the New Town neighbourhood, a further six interconnected neighbourhoods are likely to emerge, each with their own individual character: Collyhurst Village; South Collyhurst; New Cross; Red Bank; Vauxhall Gardens; and Eggington Street and

Smedley Dip (as shown in Figure 16 of the SRF). These changes to townscape character are likely to be transformative to the townscape character, when considered in-combination with committed schemes within New Cross (TCA 10) (including the Gas Works (3), 87 Rochdale Road (8), 40 Swan Street (9), Swan House (10), New Cross Central (11) and Peelers Yard (13)) and within the nearby NOMA area (TCA 2) (including Meadowside (4), 25 Rochdale Road (5) and Angel Square (6)).

6.257 The contribution of Application 5 and the SRF to the cumulative effect with committed schemes on the character of the Lower Irk Valley (TCA 1), Collyhurst (TCA 7) and New Cross (TCA 10) townscape character areas is assessed as likely to be significant (major to major/moderate), beneficial and long-term in duration. Significant effects on townscape character of the SRF area are likely to occur due to the scale and nature of the transformational, residential-led regeneration scheme of the SRF, of which Application 5 is part, together with the with the completed committed schemes in the adjacent townscape. These significant effects are likely to arise due to the widespread change in character expected through the implementation of the distinct neighbourhoods within the Victoria North SRF that will emerge as distinct TCAs, together with completed committed schemes in the adjacent townscape, with effects considered as beneficial due to changes from the relatively degraded baseline character within parts of the Irk Valley and the 'good design' of high quality buildings and places, green infrastructure, retail, social, community, health and education facilities and access improvements that will be delivered as part of the SRF.

6.258 Although the contribution of Application 5 and the SRF to the cumulative effect with committed schemes is likely to be significant on areas within the SRF where character change is expected to occur (TCA 1, 7 and 10), the effect on perceived character of the wider townscape of the TVIA study area is likely to be not significant, where only indirect changes may occur to the backdrop and setting of the wider townscape, including on TCA 2, 3, 4, 5, 6, 8, 9, 11 and 12, and the associated Conservation Areas (CAs) that cover parts of this wider townscape.

## Likely Cumulative Visual Effects and their Significance (Application 4 + SRF with Committed Schemes)

### Demolition and Construction

6.259 Demolition and construction works within the Application 5 site will result in changes to views within the Lower Irk Valley (TCA1) and similar works within the wider Victoria North SRF area will result in changes to views of the townscape from nearby areas, in addition to construction effects associated with committed schemes. Construction activities of Application 5 and the SRF will result in direct changes to the views, in addition to visible construction activities associated with committed schemes. Cumulative effects on views will occur as a result of the demolition and construction works occurring through the phased build out duration of Application 5 and the SRF, together with committed schemes, particularly between 2023 – 2029 for Application 5 and over a 15-20 year period for the SRF.

6.260 Over this period, cumulative effects on views are likely to result from the construction works within the Application 5 site and wider SRF area, together with construction of other committed schemes in the wider townscape, with

an early focus of effects around construction activity in the southern parts of the SRF area within the New Town and Red Bank neighbourhoods, and the adjacent New Cross and NOMA areas.

6.261 Over this period, effects on views are likely to result from the construction works within the Application 5 site and wider SRF area, including views of site compounds; materials excavation, storage and handling; piling used for the buildings' foundations; construction plant particularly taller cranes (telescopic, support, tower and tracked cranes); and smaller plant including dump trucks, concrete mixers, piling rigs, lorries, skip wagons, excavators and rollers. Increased construction traffic on the local road network is also likely to have some influence on views locally. Views of partially constructed buildings and tower cranes are likely to be features of the extended Manchester city centre skyline within the Victoria North area, particularly in the southern parts of the SRF area within the Red Bank and New Cross neighbourhoods.

6.262 During demolition and construction, the contribution of Application 5 and the SRF to the cumulative effect with committed schemes, on the views in the locality of the Application 5 site and within the Victoria North SRF area, is assessed as likely to be significant (major to major/moderate), adverse and medium to long-term in duration, with effects reducing to not significant on views from the wider townscape outside the Victoria North SRF. Adverse visual effects are likely to arise during construction due to the introduction of construction plant and partially constructed buildings, with the adversity of visual effects reducing during the construction period, as the balance of construction works reduces in favour of completed development materialising through the phased build out of Application 5 and the SRF, and other committed schemes being completed in views of the surrounding townscape.

### The Completed and Operational Development

6.263 During operation, visual effects will arise as a result of the contribution of Application 5 and the SRF with committed schemes, with effects on visual receptors/views occurring particularly within the new Red Bank neighbourhood and within the wider Victoria North SRF area, where the completion of new neighbourhoods will have a significant and transformative effect on views at the local level, as well as having less significant, yet notable effects extending Manchester's city centre skyline in the backdrop to views from the wider study area outside the North Victoria SRF.

6.264 The contribution of Application 5 and the SRF to the cumulative effect with committed schemes is likely to be significant on views within the Victoria North SRF area, where transformative change is expected to occur to existing views, such as in views from St Michael's Flags and Angel Meadow Park (Viewpoint 1), limited parts of the northern edges of the city centre (Viewpoint 2), Rochdale Road (Viewpoint 6 and 17) and the closest parts of Collyhurst (Viewpoint 8 and 9). The additional effect of the SRF is likely to contribute to significant effects from other viewpoints on the edge of the SRF area, including from the closest parts of Ancoats (Viewpoint 5), Miles Platting (Viewpoint 12) and potentially Cheetham Hill (Viewpoint 10) depending on the scale, form and density of building plots that may occupy the foreground of these views. The cumulative effect of Application 5 and the SRF, with committed schemes on views locally from these areas are likely to be significant due to the extension of the

city centre scale of tall buildings within the SRF area, in combination with committed schemes, resulting in significant change to the Manchester city centre skyline to the north of the city.

6.265 The cumulative effect of Application 5 and the SRF, with committed schemes on views from the wider townscape of the TVIA study area is likely to be notable, however effects are assessed not significant where less direct changes may occur to the backdrop of views of the wider townscape and skyline, including on views from the Cathedral, Smithfield and Shudehill areas of the city centre (Viewpoint 3 and 4) where changes to views will be limited by the intervening townscape, from the Strangeways area to the west (Viewpoint 14 and 15) which is more distant from the Victoria North SRF area and is of relatively lower sensitivity to change, and from more enclosed views such as from Queens Park to the north (Viewpoint 11).

## Conclusions (Application 5)

6.266 Overall, Application 5 will result in some significant effects on the townscape and visual resource of the Study Area, ranging from beneficial to neutral in nature. These significant effects will tend to be identified locally on the closest views and character areas, with the wider views and townscape within the Study Area experiencing a lower magnitude of change as a result of the introduction of Application 5.

6.267 Across the Study Area, there are occasional high sensitivity views, for example around Manchester Cathedral. Where a high sensitivity is identified at a viewpoint, this is mainly due to the value of the townscape (e.g. a viewpoint located within a Conservation Area), or particular visitor facilities. However, the sensitivity of the majority of viewpoints is medium. The sensitivity is generally moderated either by the lower / medium value of the townscape in views (e.g. within the Irk Valley and adjacent commercial or mixed use areas), or the lower / medium susceptibility to change (e.g. where receptors experience tall buildings / construction in existing views, and are likely to be accustomed to changes associated with urban regeneration in the surrounding townscape, which moderates their susceptibility to further change. Low sensitivity views are experienced from more distant areas, including retail parks at Manchester Fort to the north, and commercial areas to the west within Strangeways.

6.268 Townscape character across the Study Area is generally assessed as medium or low sensitivity. Areas of medium townscape sensitivity occur across the Lower Irk Valley, NOMA, Transport & Education, Cheetham Hill, Collyhurst, Ancoats, New Cross and City Centre TCAs. Factors which contribute towards a relatively higher townscape sensitivity include the openness of the townscape and the role of the Lower Irk Valley in providing a setting to the TCA; local value attributed to the townscape by residents and visitors; and designations including Conservations Areas and any listed buildings present within the TCA.

6.269 A high magnitude of change on views and townscape as a result of Application 5 generally occurs only at close range, for example within the closest parts of Collyhurst to the north-east, including at VP9: Dalton Street and VP17: Rochdale Road.

6.270 Some significant effects are identified locally on the closest views, including VP1: St Michael's Flags and Angel Meadow Park; VP 6: Rochdale Road (Railway Bridge); VP 8: Sand Hills Park, Collyhurst; VP 9: Dalton Street; and VP17: Rochdale Road. Of these five significant effects, four are considered to be beneficial in nature, with the remaining effect, observed at VP1: St Michael's Flags and Angel Meadow Park, being neutral. Significant effects on townscape character are predicted to occur within TCA1: Lower Irk Valley and TCA7: Collyhurst, both of which will be beneficial in nature.

6.271 Significant effects tend to occur as a result of the foreground position of Application 5 in the view, the vertical scale of some of the taller buildings (Towers 2, 3 and 5), and the likelihood of Application 5 being viewed as appearing to extend the taller scale of the city centre out towards viewpoints along the Lower Irk Valley. Although significant, effects are generally assessed as being beneficial to the visual amenity and character of the Lower Irk Valley, due to the 'good design' of high-quality buildings and places, as well as the relatively poor current amenity and character within the valley.

6.272 Not significant effects are predicted to occur to the majority of viewpoints. Effects of a minor level are predicted to occur at VP4: Smithfield; VP1: Queen's Road (near Metrolink); VP12: Miles Platting; VP13: Manchester Fort; and VP15: St Chad's Street. Not significant effects of moderate / minor level occur on views at VP5: Ancoats; VP11: Queen's Park; and VP14: North Street. There will be no effect on several of the viewpoints within the Study Area, including VP2: Corporation Street; VP3: Manchester Cathedral; Viewpoint 7: Dantzic Street; and Viewpoint 16: Red Bank. This is due to screening by existing built form.

6.273 Significant effects on townscape are predicted to occur within TCA1: Lower Irk Valley and TCA7: Collyhurst, which represent the closest TCAs to Application 5. Beyond these close proximity areas, townscape effects are considered to be not significant. These will be of a moderate level within the NOMA and New Cross TCAs, which are subject to ongoing change in character and visual amenity as a result of construction and committed development. Effects on TCA3: Strangeways are predicted to be not significant (minor), with all remaining TCAs experiencing a limited or no effect as a result of Application 5.

6.274 There will be no significant effects on Conservation Areas resulting from Application 5. From viewpoints within the four main Conservation Areas on the northern edge of the City Centre, effects ranging from not significant (moderate / minor) to not significant (no effect) will be experienced. Application 5 is predicted to result in not significant (moderate / minor) results on townscape within the Ancoats Conservation Area, with all other Conservation Areas experiencing effects of a lower magnitude.

6.275 When Application 5 is assessed alongside cumulative developments, cumulative effects tend to be further 'mitigated', because Application 5 represents a continuation of the effect that will be established by approved schemes, which appear to extend the city centre skyline northwards towards the Lower Irk Valley. In the context of the cumulative schemes, Application 5 will appear visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of towers proposed within NT02-NT04, including Tower 1 (34 storeys),

Tower 4 (24 storeys) and Tower 5 (28 storeys), which represents the tallest buildings within Application 5, can be noted as being comparable in height and scale to committed schemes nearby at the Gas Works (3) and Victoria Riverside (7).

6.276 The materiality of buildings within Application 5 will respond to its surrounding context, and will integrate the proposal with the surrounding townscape. Across plots NT02 and NT03 at the southern, city centre end of the Site, the towers will be finished with anodised aluminium, and will feature full-height windows, which will respond to existing buildings and development taking place across the emerging city centre to the south. Across plot NT04, at the north-eastern end of the Site, the predominant material for the towers will be brick, including a colour palette of red, yellow and buff. This will respond to the historical typology of red brick buildings which are prevalent across the wider Study Area, as well as responding to more modern red-brick residential development occurring within Collyhurst and Miles Platting.

6.277 Overall, Application 5 is considered to result in beneficial to neutral significant effects on the visual and townscape resource of the Study Area from the closest proximity areas only. This is largely as a result of the scale of Application 5 in the view, its position in the foreground, and its role in appearing to extend the taller scale of the city centre out towards the Lower Irk Valley. These effects will reduce when Application 5 is considered alongside cumulative schemes, as it will be more in keeping with the emerging pattern of development to the north of the city centre. The high design quality of the buildings and their response to the surrounding townscape context is likely to result in beneficial effects on the visual amenity and character of the Lower Irk Valley.

# In Combination Effects of Applications 4 and 5

## Approach

6.278 This section assesses the in-combination effects of Application 4 and 5 i.e. the townscape and visual effects of the Red Bank Neighbourhood Outline Application (Application 4) and NT02-NT04 Full Application (Application 5), in combination. Application 4 and 5 are collectively referred to as 'the Proposed Development' and it is these effects which are assessed in the following section of the TVIA.

## Assessment of Likely Significant Townscape Effects (Applications 4 and 5)

### Introduction

6.279 Townscape character is the distinct and recognisable pattern of elements that occurs consistently in a particular area of townscape, and the way that this pattern is perceived. Effects on townscape character would occur both within the Site, where the existing townscape and pattern of elements would be directly altered by the addition of the Proposed Development; and contextually, where visibility of the Proposed Development may alter the way in which the townscape would be perceived.

6.280 Representative viewpoints are referred to in this assessment as they give a useful indication of the appearance of the Proposed Development from different townscape character areas. It should be noted however, that levels of magnitude of effect on townscape receptors are generally found to be lower than the magnitude of effect on viewpoints that lie within these townscape character areas. This means that if a viewpoint is assessed to undergo a medium-high magnitude of effect it does not necessarily follow that the townscape character area within which it lies would also undergo a medium-high magnitude of effect, but could undergo a medium magnitude of effect instead, for example. This is because the effects on viewpoints are assessed within the context of a specific outlook of the Proposed Development and are usually specifically selected to gain a direct view towards the application site. The Proposed Development is the principal consideration in the viewpoint assessment, and influences that lie in other areas of the view are considered to a lesser degree. The townscape character of a receptor is not, however, determined so specifically by the outlook over the Proposed Development, and there are many other considerations, both visual and perceptual, that combine to give an area its townscape character. This means that the degree of influence the Proposed Development can be slightly less on townscape character than on a specific view.

### Preliminary Assessment – Townscape Character (Applications 4 and 5)

6.281 In order to ensure that the assessment of the effects of the Proposed Development on townscape character is proportionate, **Table 6.31** presents a preliminary assessment of all of the TCAs within the Study Area. It indicates which TCAs are considered to have potential to undergo a significant effect as a result of the Proposed

Development that require further assessment, and the TCAs that do not require further assessment due to the lack of potential effects. Those with potential for significant effects are assessed further in **Table 6.32 and 6.33**.

***Table 6.31**: Preliminary Assessment of Effects on Townscape Character*

| TCA Receptor | Distance to Proposed Development | Preliminary Assessment |
|---|---|---|
| TCA 1: Lower Irk Valley | 0 km | Yes, due to the position of the Proposed Development within TCA1 Lower Irk Valley and the potential for direct effects to its townscape character during construction and operation, as shown in Viewpoint 8, 9 and 16 (**Figure 6.15, 6.16** and **Figure 6.23**). |
| TCA 2: NOMA | 0.1 km | Yes, due to the proximity of the Proposed Development to TCA 2: NOMA and potential for indirect effects on character during construction and operation, through visibility of the Proposed Development from this TCA, as shown in the ZTV (**Figure 6.6**) and Viewpoint 1 and 7 (**Figure 6.8** and **6.14**). |
| TCA 3: Strangeways | 0.1 km | Yes, due to proximity of the Proposed Development to TCA3: Strangeways and potential for indirect effects on character during construction and operation, through visibility of the Proposed Development from this TCA, as shown in the ZTV (**Figure 6.6**) and Viewpoint 14 and 15 (**Figure 6.21** and **6.22**). |
| TCA 4: Manchester Fort | 0.3 km | No. Although there is visibility of the Proposed Development from this TCA, its retail park character has a low sensitivity to changes associated with the Proposed Development. No potential for significant effects on character of TCA and is not assessed further. |
| TCA 5: Transport & Education | 0.1 km | No. Although there is visibility of the Proposed Development from this TCA, its character defined by transport and education facilities has a low sensitivity to changes associated with the Proposed Development, during construction and operation. No potential for significant effects on character of TCA and is not assessed further. |
| TCA 6: Cheetham Hill | 0.6 km | No, due to distance of the Proposed Development to TCA6: Cheetham Hill and limited potential for indirect effects on character during construction and operation. Although there is visibility of the Proposed Development (**Figure 6.6**) in the skyline backdrop to this TCA in views towards the city centre, such as Viewpoint 10 (**Figure 6.17**), Cheetham Hill is geographically and visually separated from Proposed Development and the character of Cheetham Hill is likely to experience low levels of change during construction and operation. No potential for significant effects on character of TCA and is not assessed further. |
| TCA 7: Collyhurst | 0.3 km | Yes, due to proximity of Application 4 to TCA7: Collyhurst and potential for indirect effects on character during construction and operation, through visibility of the Proposed Development in the backdrop to this TCA in views and extent of visibility as shown in the ZTV (**Figure 6.6**) and Viewpoint 6 (**Figure 6.13**). |
| TCA 8: Miles Platting | 0.4 km | No. Although there is visibility of the Proposed Development from this TCA, its character is likely to experience low levels of change during construction and operation, due to the distance and restricted visibility of the Proposed Development from this TCA, as shown in Viewpoint 12 (**Figure 6.19**). No potential for significant effects on character of TCA and is not assessed further. |
| TCA 9: Ancoats | 0.6 km | No. Although there is visibility of the Proposed Development from the northern edges of this TCA, its character is likely to experience |

| TCA Receptor | Distance to Proposed Development | Preliminary Assessment |
|---|---|---|
| | | low levels of change during construction and operation, due to the distance, presence of intervening tall buildings/development and restricted visibility of the Proposed Development from the majority of this TCA, as shown (as a worst-case) in Viewpoint 5 (**Figure 6.12**). No potential for significant effects on character of TCA and is not assessed further. |
| TCA 10: New Cross | 0 km | Yes, due to proximity of the Proposed Development to TCA10: New Cross and potential for indirect effects on character during construction and operation, through visibility of the Proposed Development in the backdrop to this TCA in views and the extent of visibility as shown in the ZTV (**Figure 6.6**) and Viewpoint 17 (**Figure 6.24**). |
| TCA 11: City Centre | 0.25 km | Yes, due to proximity of the Proposed Development to TCA11: City Centre and potential for indirect effects on character during construction and operation, through visibility of the Proposed Development in the backdrop to this TCA in views and extent of visibility as shown in the ZTV (**Figure 6.6**) and Viewpoint 2, 3 and 4 (**Figure 6.9 – 6.11**). |
| TCA 12: Salford | 0.6 km | No. Although there is theoretical visibility of the Proposed Development from this TCA, its character during construction and operation, is likely to experience low levels of change due to its distance, the presence of tall buildings in the intervening townscape and restricted visibility of the Proposed Development from this TCA (**Figure 6.6**). |

## Demolition and Construction (Applications 4 and 5)

6.282 The effects of the Proposed Development on townscape character during demolition and construction are assessed in **Table 6.32**, focusing on the TCAs identified in the preliminary assessment (**Table 6.31**) as requiring further assessment. A baseline description of each TCA is set out **Table 6.7**.

***Table 6.32****: Assessment of Townscape Character – Demolition and Construction (In-Combination Application 4 and 5)*

| **TCA 1: Lower Irk Valley** | | |
|---|---|---|
| Sensitivity | Medium | The combination of low value and high susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | High | Demolition works within the Site will result in physical changes to parts of the townscape within the Lower Irk Valley (TCA1). Four buildings will be demolished during demolition works - the timber yard and parking/warehouse unit on Dantzic Street; joinery shop warehouse unit on Hargreaves Street; and warehouse unit on Faber Street; as well as demolition of several walls within the Site. Hoardings will be erected around the perimeter of the demolition works to minimise effects.<br>When considered in combination, the construction of the buildings within Application 4 and 5 will result in changes to townscape character over a longer duration (2023 – 2032), with construction works likely to occur consecutively within the Lower Irk Valley (TCA1) and in combination when construction phases overlap between 2025 and 2029. Changes to townscape character will result from the construction works within the Site, |

| | | |
|---|---|---|
| | | including the introduction of the site compound; materials excavation, storage and handling; flight auger piling used for the buildings' foundations across all plots; construction plant particularly taller cranes (telescopic, support, tower and tracked cranes); and smaller plant including dump trucks, concrete mixers, piling rigs, lorries, skip wagons, excavators and rollers. Construction traffic will also be present within the TCA accessing plots NT02-04 and RB16 and RB17 via Collyhurst Road, and accessing plots RB01 – 07, RB10 and RB12 via Red Bank.<br>In combination, a greater amount of construction plant and partially constructed buildings within Application 4 and 5 will result in changes to the townscape character during this period, across a slightly wider extent of the Irk Valley encompassing both sites. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination on the townscape character of TCA 1: Lower Irk Valley is assessed as high. |
| Significance of effect (demolition and construction) | Significant (major / moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the townscape character of TCA 1: Lower Irk Valley is assessed as significant (major / moderate), adverse and medium-term (occurring primarily between 2023 - 2032). |
| **TCA 2: NOMA** | | |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | Medium | Demolition and construction activities for Application 4 and 5 will result in no direct changes to the townscape character of TCA 2: NOMA and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Changes associated with construction of Application 4 and 5 in the adjacent Irk Valley (TCA1) will be similar in character to the re-generation and development activities already taking place with the NOMA TCA. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination on the townscape character of TCA 2: NOMA is assessed as medium and would be of similar magnitude to changes arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| Significance of effect (demolition and construction) | Not significant (moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the townscape character of TCA 2: NOMA is assessed as significant (moderate), adverse and medium-term (occurring primarily between 2023 - 2032), in keeping with the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **TCA 3: Strangeways** | | |
| Sensitivity | Low | The combination of medium value and low susceptibility results in this TCA having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | Medium | Demolition and construction activities for Application 4 and 5 will result in no direct changes to the townscape character of TCA 3: Strangeways and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Changes associated with construction of Application 4 and 5 in the adjacent Irk Valley (TCA1) will occur in the evolving city centre backdrop to the mixed-use low-rise industrial and commercial units of this TCA, with taller plant and upper elements of partially constructed buildings forming prominent features in the backdrop of the closest parts of the TCA during the construction period, reducing with distance from areas of the TCA further west. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination on the townscape character of TCA 3: Strangeways is assessed as medium, from the closest parts of the TCA, dropping to low from |

| | | |
|---|---|---|
| | | the wider TCA, and would be of similar magnitude to changes arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| Significance of effect (demolition and construction) | Not significant (moderate / minor) | During demolition and construction, the effect of Application 4 and 5 in combination on the townscape character of TCA 3: Strangeways is assessed as not significant (moderate/minor), adverse and medium-term (occurring primarily between 2023 - 2032), from the closest parts of the TCA, dropping to not significant (minor) from the wider TCA, in keeping with the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **TCA 7: Collyhurst** | | |
| Sensitivity | Medium | The combination of medium value and medium susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | High | Demolition and construction activities for Application 4 and 5 will result in no direct changes to the townscape character of TCA 7: Collyhurst and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Changes associated with construction of Application 4 and 5 will occur in the evolving city centre backdrop extending towards Collyhurst along the adjacent Irk Valley (TCA1), with taller plant and upper elements of partially constructed buildings forming prominent features in the backdrop of the closest parts of the TCA during the construction period, reducing with distance from areas of the TCA further east and north. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination on the townscape character of TCA 7: Collyhurst is assessed as high, from the closest parts of the TCA, dropping to low from the wider TCA, and would be of similar magnitude to changes arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| Significance of effect (demolition and construction) | Significant (major / moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the townscape character of TCA 7: Collyhurst is assessed as significant (major/moderate), adverse and medium-term (occurring primarily between 2023 - 2032), from the closest parts of the TCA, dropping to not significant (moderate/minor) from the wider TCA, in keeping with the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **TCA 10: New Cross** | | |
| Sensitivity | Medium | The combination of the medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | Medium | Demolition and construction activities for Application 4 and 5 will result in no direct changes to the townscape character of TCA 10: New Cross and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Changes associated with construction of Application 4 and 5 in the adjacent Irk Valley (TCA1) will be similar in character to the re-generation and development activities already taking place with the New Cross TCA. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination on the townscape character of TCA 10: New Cross is assessed as medium and would be of similar magnitude to changes arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| Significance of effect (demolition and construction) | Not significant (moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the townscape character of TCA 10: New Cross is assessed as not significant (moderate), adverse and medium-term (occurring primarily between 2023 - 2032), in keeping with the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |

| **TCA 11: City Centre** | | |
|---|---|---|
| Sensitivity | Medium | The combination of high value and low susceptibility to changes results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (demolition and construction) | Low | Demolition and construction activities for Application 4 and 5 will result in no direct changes to the townscape character of TCA 11: City Centre and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. The character of the northern edges of TCA 11: City Centre are undergoing regeneration and redevelopment, particularly within the NOMA (TCA2) and New Cross (TCA10) areas. Changes associated with construction of Application 4 and 5 occur behind (to the north) of these TCAs and are separated from the city centre by these areas undergoing re-development, with the existing and emerging townscape limiting the changes resulting from the Proposed Development. There will be very limited visibility of the construction of Application 5 in particular. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination on the townscape character of TCA 11: City Centre is assessed as low and would be of similar magnitude to changes arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| Significance of effect (demolition and construction) | Not significant (moderate / minor) | During demolition and construction, the effect of Application 4 and 5 in combination on the townscape character of TCA 11: City Centre is assessed as not significant (moderate/minor), adverse and medium-term (occurring primarily between 2023 - 2032), in keeping with the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |

## The Completed and Operational Development (Applications 4 and 5)

6.283 The effects of the Proposed Development on townscape character for the completed and operational development are assessed in **Table 6.31**, focusing on the TCAs identified in the preliminary assessment (**Table 6.29**) as requiring further assessment. A baseline description of each TCA is set out **Table 6.7**.

***Table 6.33****: Assessment of Townscape Character – Completed and Operational Development (In-Combination Application 4 and 5)*

| **TCA 1: Lower Irk Valley** | | |
|---|---|---|
| Sensitivity | Medium | The combination of low value and high susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | High | The Proposed Development will result in physical changes to the townscape of this TCA across its southern extent. The Proposed Development is likely to alter the character of the area from a generally formerly industrial area, featuring land uses including industrial buildings, vacant plots and areas of informal greenspace, to an area of high-density residential development, featuring areas of green infrastructure. The character of the area will be more in keeping with the adjacent NOMA and New Cross TCAs, where development of this type is currently taking place.<br>The ZTVs indicate that the addition of Applications 4 and 5 to this TCA will be highly visible throughout. Actual visibility is likely to be somewhat reduced across northern parts of the TCA by screening provided by vegetation cover. |

| | | |
|---|---|---|
| | | The Proposed Development will also alter the setting that the TCA provides in views from neighbouring TCAs, appearing to bring the city centre skyline of Manchester into closer proximity to residential areas on the north-eastern edge of the city.<br>Taking this into account the magnitude of change is assessed as high for this TCA.<br>Viewpoints within this TCA comprise Viewpoint 8: Sand Hill Park, Collyhurst, and Viewpoint 9: Dalton Street. Viewpoint 16: Red Bank and Viewpoint 9: Rochdale Road (Railway Bridge) are located on the boundary between this TCA and the neighbouring Strangeways TCA and Collyhurst TCA, respectively. |
| Significance of effect (completed and operational) | Significant (major/ moderate) | The effect on the townscape character of the River Irk Valley (TCA1) that will result from the Proposed Development during the completed and operational phase, is assessed as significant (major/moderate), beneficial and long-term in duration. |
| **TCA 2: NOMA** | | |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | Medium | The addition of the Proposed Development will be highly visible from most areas within this TCA, with the exception of areas around the Co-op building and within the grid of streets to the north of Rochdale Road, where visibility of the Proposed Development will be reduced by existing built form. Buildings within both Application 4 and 5 will be visible from parts of the TCA, which will slightly increase the magnitude of change associated with their operation compared to that assessed in either of the individual assessments.<br>At the moment, the Site and the wider Lower Irk Valley TCA provide a more open setting in views from parts of this TCA. The addition of the Proposed Development to the adjacent Lower Irk Valley TCA will result in views towards a more developed backdrop from this TCA. However, the buildings within the Proposed Development will be similar in nature to buildings currently under construction and recently built within this TCA, and as such would be experienced within an immediate townscape context that is not uncharacteristic. The Proposed Development would introduce further built development that is taller than the immediately surrounding and historic pattern of development, but that is similar in nature to newly completed and under construction tall buildings in this area.<br>Taking this into account the magnitude of change is assessed as medium for this TCA.<br>Viewpoints within this TCA comprise Viewpoint 1: St Michael's Flags and Angel Meadow Park, and Viewpoint 7: Dantzic Street. |
| Significance of effect (completed and operational) | Not significant (moderate) | The effect on the townscape character of NOMA (TCA2) that will result from the Proposed Development during the completed and operational phase is assessed as not significant (moderate), beneficial and long-term in duration. Although there may be a perceived loss of a more open outlook from parts of the TCA, the high design quality of the Proposed Development compared to the existing townscape condition of the Site and the high-level of integration with the existing character of the TCA results in effects that are considered neutral on balance. |
| **TCA 3: Strangeways** | | |

| | | |
|---|---|---|
| Sensitivity | Low | The combination of medium value and low susceptibility results in this TCA having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | Medium | The ZTVs show that theoretical visibility of Applications 4 and 5 will be relatively widespread across this TCA, although visibility is somewhat reduced by the relatively close urban grain of buildings, which would limit outward views from the TCA. Application 4 would generally limit views towards Application 5 from this TCA, given the position of Application 4 to the west of Application 5 and its resulting closer proximity to this TCA, as well as the vertical scale and massing of building plots within Application 4. The magnitude of change would therefore result primarily from the introduction of buildings within Application 4 to the neighbouring TCA, although this will be increased slightly compared to that assessed in the Application 4 assessment by additional limited views towards Application 5.<br>The Proposed Development would be in keeping with other under construction and recently completed high-rise buildings within an area of intensive regeneration across the nearby New Cross and NOMA TCAs and would therefore be in keeping with the immediate townscape context. However, it would bring development of a larger scale into closer proximity to this TCA. The large vertical scale of the Proposed Development will be notable in the backdrop the TCA, partially enclosing the backdrop behind the low trading estates and commercial units, although the longer distance aspect to the city centre will be retained. There will be an impression of the character and scale of development within the city centre extending out towards this TCA. Taking this into account the magnitude of change is assessed as medium. Viewpoints within this TCA comprise Viewpoint 14: North Street, and Viewpoint 15: St Chad's Street. Viewpoint 16: Red Bank is located on the boundary between this TCA and Lower Irk Valley TCA. |
| Significance of effect (completed and operational) | Not significant (moderate/minor) | The effect on the townscape character of Strangeways (TCA3) that will result from the Proposed Development during the completed and operational phase, is assessed as not significant (moderate/minor), beneficial and long-term in duration. The large vertical scale of plots within Application 4 in particular will be notable in the backdrop to the TCA, behind the low trading estates and commercial units. However, changes associated with the Proposed Development occur to the TCA that is of low sensitivity to change, given the relatively poor condition and low value of the townscape, and will relate well to the character and scale of development within the evolving city centre skyline extending into the backdrop of this TCA. Effects are also considered to reduce on the wider TCA to the west with increasing distance from the Site. |
| **TCA 7: Collyhurst** | | |
| Sensitivity | Medium | The combination of medium value and medium susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | High | The ZTVs indicate that visibility of the Proposed Development will be widespread across this TCA, particularly across more open parts to the south and west within closest proximity to the Site. Existing low-rise residential development within parts towards the north and east will limit outward views towards the Proposed Development from these residential areas, and the ZTV shows a |

| | | |
|---|---|---|
| | | more intermittent pattern of visibility. Buildings within both Application 4 and 5 will be visible from parts of the TCA, which will slightly increase the magnitude of change associated with their operation compared to that assessed in either of the individual assessments.<br>Currently, the Site and the wider Lower Irk Valley TCA provide a more open setting in views to the south-west from parts of this TCA, and form a 'green buffer' between high-rise development toward Manchester city centre and low-rise residential development across this TCA. The addition of the Proposed Development to the adjacent Lower Irk Valley TCA will introduce further built development that is taller than the immediately surrounding pattern of development and may appear to extend Manchester city centre towards this TCA in the backdrop. Across southern parts of the TCA, the addition of the Proposed Development will change the surrounding context and introduce tall buildings into close proximity to low-rise, low-density residential development. Parts of the adjacent Lower Irk Valley TCA to the north-west of this TCA will remain unchanged and will continue to provide a more open outlook for the northern parts of the Collyhurst TCA. Taking this into account the magnitude of change to the perceived character of the closest, adjacent parts of the TCA to its south and west is assessed as high, reducing with distance to the north and east. Viewpoints within this TCA include Viewpoint 6: Rochdale Road (Railway Bridge). |
| Significance of effect (completed and operational) | Significant (major/ moderate) | The effect on the townscape character of the closest parts of Collyhurst (TCA7) that will result from the Proposed Development during the completed and operational phase, is assessed as significant (major/moderate), beneficial and long-term in duration. Although the larger vertical scale of plots within Application 4 and buildings within Application 5 may appear to extend Manchester city centre along the Lower Irk Valley towards this TCA in its backdrop, changes associated with the Proposed Development will relate well to the character and scale of development within the evolving city centre skyline and introduce built elements of high design quality compared to the existing townscape condition. Effects are also considered to reduce on the wider TCA to the north and east with increasing distance from the Site. |
| **TCA 10: New Cross** | | |
| Sensitivity | Medium | The combination of the medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | High | The ZTVs indicate that theoretical visibility across this TCA would be relatively widespread, with the exception of areas where existing built form limits views to the north. This is restricted to small pockets of the TCA, including within streets featuring tall buildings and a tight grid pattern to the south of Rochdale Road, and around industrial units further north. Elsewhere, there will be relatively close-proximity views towards the Proposed Development. There will be visibility of building plots within Application 4 and buildings within Application 5, and this visibility of both applications will slightly increase the magnitude of change compared to either of the individual assessments.<br>This TCA currently forms the edge of high-rise development within Manchester city centre, and views to the north from within it are partially open over the neighbouring Lower Irk Valley TCA, although the intervening railway corridor and viaduct provides a visual and |

| | | |
|---|---|---|
| | | physical buffer. The Proposed Development will extend tall buildings to the north of this TCA, and from more open parts across the north of the TCA there will be views to the north and south towards the taller buildings within Plot RB10, RB06, RB07, RB16 and RB17 in Application 4, as well as Towers 2, 3 and 5 within Application 5 in particular. These will however, generally be of a similar scale and massing as development currently under construction or recently completed within this TCA, which moderates the magnitude of change associated with further change in the surrounding context. Taking this into account, the magnitude of change associated with the Proposed Development is assessed as medium. Viewpoints within this TCA include Viewpoint 17: Rochdale Road. |
| Significance of effect (completed and operational) | Significant (major / moderate) | The effect on the townscape character of New Cross (TCA10) that will result from the Proposed Development during the completed and operational phase, is assessed as significant (major / moderate), neutral and long-term in duration. Although there will be an extension in the presence and scale of tall buildings to the north of the TCA within the adjacent Lower Irk Valley (TCA1), the high design quality of the Proposed Development compared to the existing townscape condition of the Site and the high level of integration with the existing and evolving character of New Cross (TCA10) results in effects that are considered neutral on balance. |
| **TCA 11: City Centre** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility to changes results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Magnitude of change (completed and operational) | Low | The ZTV in **Figure 6.7** indicates that theoretical visibility of the buildings within Application 5 will be limited across this area. Therefore, the magnitude of change arising from the Proposed Development will be low, as assessed in the Application 4 individual assessment. Please refer to **Table 6.13**. |
| Magnitude of change (completed and operational) | Not significant (moderate / minor) from majority of the TCA<br><br>Not significant (moderate) from localised area around Victoria to the north of the TCA | The in-combination effect on the townscape character of City Centre (TCA11) resulting from the Proposed Development during completion and operation is assessed as not significant (moderate / minor), neutral and long-term in duration from the majority of the TCA. This increases to not significant (moderate), neutral and long-term from a localised area around Victoria to the north of the TCA. This is in keeping with the Application 4 individual assessment described in **Table 6.13**. |

## Preliminary Assessment – Conservation Areas (In-Combination Application 4 and 5)

6.284 In order to ensure that the assessment of the effects of Application 4 and 5 on the townscape and appearance of CAs is proportionate, **Table 6.34** presents a preliminary assessment of all of the CAs within the Study Area. It indicates which CAs are considered to have potential to undergo a significant effect as a result of Application 4 and 5 that require further assessment, and the CAs that do not require further assessment due to the lack of potential effects. Those with potential for significant effects are assessed further in **Table 6.35** and **6.36.**

***Table 6.34**: Preliminary Assessment of Effects on Character Areas (In Combination Application 4 and 5)*

| CA Receptor | Distance to Proposed Development | Preliminary Assessment (In Combination Application 4 and 5) |
|---|---|---|
| Ancoats CA | 0.6 km | Yes, due to the potential for indirect effects on the townscape and appearance of the Ancoats CA during construction and operation, through visibility of the Proposed Development from this CA, as shown in the ZTV (**Figure 6.6**), and Viewpoint 5: Ancoats (**Figure 6.12**). |
| Cathedral CA | 0.5 km | Yes, due to the potential for indirect effects on the townscape and appearance of the Cathedral CA during construction and operation, through visibility of the Proposed Development from this CA, as shown in the ZTV (**Figure 6.6**), and Viewpoint 3: Manchester Cathedral (**Figure 6.10**). |
| Shudehill CA | 0.4 km | Yes, due to the potential for indirect effects on the townscape and appearance of the Shudehill CA during construction and operation, through visibility of the Proposed Development from this CA, as shown in the ZTV (**Figure 6.6**) and Viewpoint 2: Corporation Street (**Figure 6.9**). |
| Smithfield CA | 0.4 km | Yes, due to the potential for indirect effects on the townscape and appearance of the Smithfield CA during construction and operation, through visibility of the Proposed Development from this CA, as shown in the ZTV (**Figure 6.6**) and Viewpoint 4: Smithfield (**Figure 6.11**). |
| Stevenson Square CA | 0.7 km | No, due to the distance of the Proposed Development to Stevenson Square CA and limited potential for indirect effects on the character and appearance of the CA during construction and operation. Although there is theoretical visibility of the Proposed Development (**Figure 6.6**) in the skyline backdrop to this CA in views to the north, these are limited in nature. Stevenson Square CA is geographically and visually separated from the Proposed Development and the character of the area is likely to experience low levels of change during construction and operation. No potential for significant effects on character of CA and is not assessed further. |
| Upper King Street CA | 0.9 km | No, due to the distance of the Proposed Development to Upper King Street CA and limited potential for indirect effects on the character and appearance of the CA during construction and operation. Although there is theoretical visibility of the Proposed Development (**Figure 6.6)** across this area, these are very limited in nature. Upper King Street CA is geographically and visually separated from the Proposed Development and the character of the area is likely to experience low levels of change during construction and operation. No potential for significant effects on character of CA and is not assessed further. |
| St Ann's Square CA | 0.9 km | No. Although there is visibility of the Proposed Development from the northern edges of this CA, its character is likely to experience low levels of change during construction and operation, due to the distance, presence of intervening tall buildings/development and restricted visibility of the Proposed Development from the majority of this CA. No potential for significant effects on character of CA and is not assessed further. |
| Parsonage Gardens CA | 0.9 km | No. Although there is visibility of the Proposed Development from the northern edges of this CA, its character is likely to experience low levels of change during construction and operation, due to the |

| CA Receptor | Distance to Proposed Development | Preliminary Assessment (In Combination Application 4 and 5) |
|---|---|---|
| | | distance, presence of intervening tall buildings/development and restricted visibility of the Proposed Development from the majority of this CA. No potential for significant effects on character of CA and is not assessed further. |
| Flat Iron CA | 1.0 km | No. Although there is visibility of the Proposed Development from the northern edges of this CA, its character is likely to experience low levels of change during construction and operation, due to the distance, presence of intervening tall buildings/development and restricted visibility of the Proposed Development from the majority of this CA. No potential for significant effects on character of CA and is not assessed further. |

## Demolition and Construction (Applications 4 and 5)

6.285 The in-combination effects of Application 4 and 5 on the townscape and appearance of CAs during demolition and construction are assessed in **Table 6.35**, focusing on CAs identified in the preliminary assessment (**Table 6.34**) as requiring further assessment. A baseline description of each CA is set out **Table 6.8**.

***Table 6.35**: Assessment of CAs – Demolition and Construction (In-Combination Application 4 and 5)*

| **Ancoats CA** | | |
|---|---|---|
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (demolition and construction) | Low | Demolition and construction activities for Application 4 and 5 will result in no direct changes to the townscape and appearance of Ancoats CA and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Demolition and construction activities for Application 4 and 5 will not change the perceived character of the cotton spinning mills and housing which form the defining buildings and townscape character within the CA. The construction of Application 4 may result in changes to the balance of townscape uses, which currently forms a defining feature within the CA, by introducing construction of additional residential development to the north-west beyond the CA. This will be seen in the context of existing tall buildings, including some which are currently under construction. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination on the townscape character of Ancoats CA is assessed as low and would be of similar magnitude to changes arising from the construction of Application 4 alone, as described in **Table 6.15**. |
| Significance of effect (demolition and construction) | Not significant (moderate / minor) | During demolition and construction, the effect of Application 4 and 5 in combination on the townscape character of the Ancoats CA is assessed as not significant (moderate/minor), adverse and medium-term (occurring primarily between 2023 - 2032), in keeping with the effect arising from the construction of Application 4 alone, as described in **Table 6.15**. |
| **Cathedral CA** | | |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change | Low | Demolition and construction activities for Application 4 and 5 will result in no direct changes to the townscape and appearance of Cathedral CA and |

| | | |
|---|---|---|
| (demolition and construction) | | result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Taller plant will be visible in the townscape context of the TCA during the Application 4 and 5 construction period, together with the upper elements of partially constructed buildings, particularly those within the closer and taller plots, including RB10. Construction activities within the Site will not result in effects on the distinctive buildings within the CA, including the Cathedral, Chetham's Hospital school and Victorian-era commercial buildings. Changes may occur to the "confined solemnity of the Cathedral Yard", although these effects will be temporary and seen in the context of existing tall buildings to the north of the CA. Changes associated with construction of Application 4 and are separated from the Cathedral CA by existing tall buildings and areas undergoing re-development, with the existing and emerging townscape limiting the changes resulting from the Proposed Development. There will be very limited visibility of the construction of Application 5. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination on the townscape character of the Cathedral CA is assessed as low and would be of similar magnitude to changes arising from the construction of Application 4 alone, as described in **Table 6.15**. |
| Significance of effect (demolition and construction) | Not significant (moderate / minor) | During demolition and construction, the effect of Application 4 and 5 in combination on the townscape character of the Cathedral CA is assessed as not significant (moderate/minor), adverse and medium-term (occurring primarily between 2023 - 2032), in keeping with the effect arising from the construction of Application 4 alone, as described in **Table 6.15**. |
| **Shudehill CA** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (demolition and construction) | Low | Demolition and construction activities for Application 4 and 5 will result in no direct changes to the townscape and appearance of Shudehill CA, and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Taller plant such may be visible in the townscape context of the CA during the Application 4 and 5 construction period, together with the upper elements of partially constructed buildings, particularly those within the closer and taller plots, including RB10. Demolition and construction activity associated with Application 4 will have no effect on the built form within the CA, including either the large 20th Century buildings situated on the western side of the CA, or the older, smaller-scale properties to the east. The construction of Application 4 will largely be seen in the context of the larger-scale buildings on the western side of the CA, as well as in the context of modern development to the north of the CA, across NOMA and New Cross TCAs. There will be very limited visibility of the to construction of Application 5. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination on the townscape character of Shudehill CA is assessed as low and would be of similar magnitude to changes arising from the construction of Application 4 alone, as described in **Table 6.15**. |
| Significance of effect (demolition and construction) | Not significant (moderate/ minor) | During demolition and construction, the effect of Application 4 and 5 in combination on the townscape character of the Shudehill CA is assessed as not significant (moderate/minor), adverse and medium-term (occurring primarily between 2023 - 2032), in keeping with the effect arising from the construction of Application 4 alone, as described in **Table 6.15**. |
| **Smithfield CA** | | |

| | | |
|---|---|---|
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (demolition and construction) | Negligible | Demolition and construction activities for Application 4 and 5 will result in no direct changes to the townscape and appearance of Smithfield CA, and result only in indirect changes to its perceived character through views of the construction works occurring in its townscape context. Taller plant may be partially visible in the townscape context of the TCA during the Application 4 and 5 construction period, together with the upper elements of partially constructed buildings, however views of both Application 4 and 5 construction works will be very limited due to the screening by existing built form in the foreground of the view. Construction activities for Application 4 and 5 will have no effect on the building typologies which form the key characteristic of this CA, including the former markets, now converted to alternative uses, or the small-scale Georgian houses. It will also have no effect on the contrast between the large-scale buildings focussed towards the south of the CA with the smaller-scale buildings around Turner Street and Back Turner Street. Visibility of construction activities may occur from the northern part of the CA, where there are views of townscape regeneration occurring within the adjacent NOMA and New Cross TCAs. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination on the townscape character of Ancoats CA is assessed as low and would be of similar magnitude to changes arising from the construction of Application 4 alone, as described in **Table 6.15**. |
| Significance of effect (demolition and construction) | Not significant (minor) | During demolition and construction, the effect of Application 4 and 5 in combination on the townscape character of the Smithfield CA is assessed as not significant (minor), adverse and medium-term (occurring primarily between 2023 - 2032), in keeping with the effect arising from the construction of Application 4 alone, as described in **Table 6.15**. |

## The Completed and Operational Development (Applications 4 and 5)

6.286 The in-combination effects of Application 4 and 5 on the townscape and appearance of CAs for the completed and operational development are assessed in **Table 6.36**, focusing on the CAs identified in the preliminary assessment (**Table 6.34**) as requiring further assessment. A baseline description of each CA is set out **Table 6.8**.

***Table 6.36**: Assessment of CAs – Completed and Operational Development (In-Combination Application 4 and 5)*

| **Ancoats CA** | | |
|---|---|---|
| Sensitivity | Medium | The combination of high value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (completed and operational) | Low | The addition of the Proposed Development will be visible from much of this CA, particularly along streets with open views to the north-west. Elsewhere, visibility of Application 4 will be reduced by existing built form. The Proposed Development would be in keeping with other under construction and recently completed high-rise buildings within an area of intensive regeneration across the nearby New Cross and NOMA TCAs and would therefore be in keeping with the immediate townscape context. It would be seen beyond townscape which is of relatively low value.<br>The Proposed Development will not result in any effects on the defining characteristic of the mill buildings and red brick housing across the CA. However, the balance of manufacturing, transport and residential uses |

| | | |
|---|---|---|
| | | which is identified as one of the key characteristics of the area may be altered by the increasing density of residential development beyond the CA. Taking this into account, the magnitude of change is assessed as low. Viewpoints within this CA comprise Viewpoint 5: Ancoats. |
| Significance of effect (completed and operational) | Not significant (moderate / minor) | The effect on the townscape character of the Ancoats CA that will result from the Proposed Development during the completed and operational phase, is assessed as **not significant (moderate / minor),** beneficial and long-term in duration. The large vertical scale of plots within Application 4 and 5 will be notable in the backdrop to the CA, behind commercial units and existing tall residential buildings. However, changes associated with the Proposed Development will relate well to the character and scale of development within the evolving city centre skyline extending into the backdrop of this CA, and will result in a beneficial effect on the relatively low value townscape setting beyond the CA. |
| **Cathedral CA** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (completed and operational) | Low | The ZTV in **Figure 6.7** indicates that visibility of Application 5 will be limited from this CA. The in-combination effects on townscape character arising from Application 4 and 5 will therefore be low, as assessed in the Application 4 individual assessment and described in **Table 6.16**. |
| Significance of effect (completed and operational) | Not significant (moderate / minor) | The in-combination effect on the townscape character of Cathedral CA that will result from Application 4 and 5 during the completed and operational phase, is assessed as **not significant (moderate / minor)**, neutral and long-term in duration, in keeping with the Application 4 individual assessment provided in **Table 6.16**. The effect on the qualities for which the CA has been designated is considered to be minimal. |
| **Shudehill CA** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this CA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (completed and operational) | Low | The ZTV in **Figure 6.7** indicates that visibility of Application 5 will be limited from this CA. The in-combination effects on townscape character arising from Application 4 and 5 will therefore be low, as assessed in the Application 4 individual assessment and described in Table 6.16. |
| Significance of effect (completed and operational) | Not significant (moderate/ minor) | The in-combination effect on the townscape character of Shudehill CA that will result from Application 4 and 5 during the completed and operational phase, is assessed as not significant (moderate / minor), neutral and long-term in duration, in keeping with the Application 4 individual assessment provided in Table 6.16. The effect on the qualities for which the CA has been designated is considered to be minimal. |
| **Smithfield CA** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.8**). |
| Magnitude of change (completed and operational) | Low | The ZTV in **Figure 6.7** indicates that visibility of Application 5 will be limited from this CA. The in-combination effects on townscape character arising from Application 4 and 5 will therefore be low, as assessed in the Application 4 individual assessment and described in **Table 6.16**. |
| Significance of effect (completed and operational) | Not significant (moderate / minor) | The in-combination effect on the townscape character of Smithfield CA that will result from Application 4 and 5 during the completed and operational phase, is assessed as not significant (moderate / minor), neutral and long-term in duration, in keeping with the Application 4 |

| | | |
|---|---|---|
| | | individual assessment provided in **Table 6.16**. The effect on the qualities for which the CA has been designated is considered to be minimal. |

## Assessment of Likely Significant Visual Effects (Applications 4 and 5)

### Demolition and Construction (Applications 4 and 5)

6.287 The visual effects of the Proposed Development on representative viewpoints during demolition and construction are assessed in **Table 6.32**. The baseline conditions and value of each viewpoint has been described previously in **Table 6.10**.

***Table 6.37**: Visual Assessment – Demolition and Construction (In-Combination Application 4 and 5)*

| **Viewpoint 1: St Michael's Flags and Angel Meadow Park (Figure 6.8b & 6.8d)** | | |
|---|---|---|
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction) | High | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a greater amount of construction plant and partially constructed buildings within Application 4 and 5 will be visible during this period, across a slightly wider extent of the previously open view across St Michael's Flags and Angel Meadow Park towards the Irk Valley. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as high. |
| Significance of effect (demolition and construction): | Significant (major / moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as significant (major / moderate), adverse and medium-term (occurring between 2023 - 2032). |
| **Viewpoint 2: Corporation Street (Figure 6.9b & 6.9d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | High | The construction and demolition of Application 5 will not be visible from this viewpoint. The magnitude of change resulting from the Proposed Development will therefore be high, in keeping the magnitude of change considered to arise from the construction of Application 4 alone, as described in **Table 6.17**. |
| Significance of effect (demolition and construction): | Significant (major / moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as significant (major / moderate), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 3: Manchester Cathedral (Figure 6.10b & 6.10d)** | | |

| | | |
|---|---|---|
| Sensitivity: | High | The combination of high value and high susceptibility results in the receptors experiencing this view having a high sensitivity to change associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Low | The construction and demolition of Application 5 will not be visible from this viewpoint. The magnitude of change resulting from the Proposed Development will therefore be low, in keeping the magnitude of change considered to arise from the construction of Application 4 alone, as described in **Table 6.17**. |
| Significance of effect (demolition and construction): | Not significant (moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as not significant (moderate), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 4: Smithfield (Figure 6.11b & 6.11d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Negligible | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a greater amount of construction plant and partially constructed buildings within Application 4 and 5 will be visible during this period, however views of both Application 4 and 5 construction works will be very limited due to the screening by existing built form in the foreground of the view. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as high. |
| Significance of effect (demolition and construction): | Not significant (minor) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as not significant (minor), neutral and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 and 5 alone, as described in **Table 6.17** and **Table 6.27**. |
| **Viewpoint 5: Ancoats (Figure 6.12b & 6.12d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Medium | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a slightly greater amount of construction plant and partially constructed buildings within Application 4 and 5 will be visible during this period, in the view across Rochdale Road (however the change is likely to be similar in magnitude to that assessed for Application 4 alone). During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as medium. |

| | | |
|---|---|---|
| Significance of effect (demolition and construction): | Not significant (moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as not significant (moderate), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 6: Rochdale Road (Railway Bridge) (Figure 6.13b & 6.13d)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | High | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a greater amount of construction plant and partially constructed buildings within Application 4 and 5 will be visible during this period, in the view across the Lower Irk Valley towards the city centre (however the change is likely to be similar in magnitude to that assessed for Application 4 alone). During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as high. |
| Significance of effect (demolition and construction): | Significant (major / moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as significant (major/moderate), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 7: Dantzic Street (Figure 6.14b & 6.14d)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Medium | The construction and demolition of Application 5 will not be visible from this viewpoint. The magnitude of change resulting from the Proposed Development will therefore be medium, in keeping the magnitude of change considered to arise from the construction of Application 4 alone, as described in **Table 6.17**. |
| Significance of effect (demolition and construction): | Not significant (moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as not significant (moderate), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 8: Sand Hills Park, Collyhurst (Figure 6.15b & 6.15d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | High | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a greater amount of |

| | | |
|---|---|---|
| | | construction plant and partially constructed buildings within Application 4 and 5 will be visible during this period, in the view towards the city centre (however the change is likely to be similar in magnitude to that assessed for Application 4 alone). During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as high. |
| Significance of effect (demolition and construction): | Significant (major / moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as significant (major/moderate), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 9: Dalton Street (Figure 6.16b & 6.16d)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | High | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a greater amount of construction plant and partially constructed buildings within Application 4 and 5 will be visible during this period, in the view towards the city centre (however the change is likely to be similar in magnitude to that assessed for Application 5 alone, which is the foreground of the view). During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as high. |
| Significance of effect (demolition and construction): | Significant (major / moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as significant (major/moderate), adverse and medium-term, in keeping the effect arising from the construction of Application 5 alone, as described in **Table 6.27**. |
| **Viewpoint 10: Queen's Road (near Metrolink) (Figure 6.17b & 6.17d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Medium | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a slightly greater amount of construction plant and partially constructed buildings within Application 4 and 5 will be visible during this period, in the view towards the city centre (however the change is likely to be similar in magnitude to that assessed for Application 4 alone). During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as medium. |
| Significance of effect (demolition and construction): | Not significant (moderate / minor) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as not significant |

| | | |
|---|---|---|
| | | (moderate/minor), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 11: Queen's Park (Figure 6.18b & 6.18d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Low | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a slightly greater amount of construction plant and partially constructed buildings within Application 4 and 5 will be visible during this period, in the relatively distant view towards the city centre (however the change is likely to be similar in magnitude to that assessed for Application 4 alone). During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as low. |
| Significance of effect (demolition and construction): | Not significant (moderate / minor) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as not significant (moderate/minor), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 12: Miles Platting (Figure 6.19b & 6.19d)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Low | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a slightly greater amount of construction plant and partially constructed upper parts of buildings within Application 4 and 5 will be partially visible during this period, in the backdrop to this part of Miles Platting (however the change is likely to be similar in magnitude to that assessed for Application 4 alone). During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as low. |
| Significance of effect (demolition and construction): | Not significant (minor) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as not significant (minor), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 13: Manchester Fort (Figure 6.20b & 6.20d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |

| | | |
|---|---|---|
| Magnitude of change (demolition and construction): | Medium | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a slightly greater amount of construction plant and partially constructed upper parts of buildings within Application 4 and 5 will be partially visible during this period, in the backdrop to Manchester Fort (however the change is likely to be similar in magnitude to that assessed for Application 4 alone). During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as medium. |
| Significance of effect (demolition and construction): | Not significant (moderate / minor) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as not significant (moderate/minor), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 14: North Street (Figure 6.21b & 6.21d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | High | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a slightly greater amount of construction plant and partially constructed upper parts of buildings within Application 4 and 5 will be partially visible during this period, in the backdrop to the low-rise commercial areas around North Street and edges of Strangeways (however the change is likely to be similar in magnitude to that assessed for Application 4 alone, which is in the foreground of the view). During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as high. |
| Significance of effect (demolition and construction): | Not significant (moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as not significant (moderate), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 15: St Chad's Street (Figure 6.22b & 6.22d)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | Medium | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a slightly greater amount of construction plant and partially constructed upper parts of buildings within Application 4 and 5 will be partially |

| | | |
|---|---|---|
| | | visible during this period, in the backdrop to the low-rise commercial areas around St Chads Street and edges of Strangeways (however the change is likely to be similar in magnitude to that assessed for Application 4 alone, which is in the foreground of the view). During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as medium. |
| Significance of effect (demolition and construction): | Not significant (moderate / minor) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as not significant (moderate/minor), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 16: Red Bank (Figure 6.23b & 6.23d)** | | |
| Sensitivity: | Medium | The combination of low value and high susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction): | High | The construction and demolition of Application 5 will not be visible from this viewpoint. The magnitude of change resulting from the Proposed Development will therefore be high, in keeping the magnitude of change considered to arise from the construction of Application 4 alone, as described in **Table 6.17**. |
| Significance of effect (demolition and construction): | Significant (major / moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as significant (major/moderate), adverse and medium-term (occurring between 2023 - 2032), in keeping the effect arising from the construction of Application 4 alone, as described in **Table 6.17**. |
| **Viewpoint 17: Rochdale Road (Figure 6.24b & 6.24d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (demolition and construction) | High | When considered in combination, the construction of the buildings within Application 4 and 5 will be visible over a longer duration (2023 – 2032), with construction works likely to be visible in combination when construction phases overlap between 2025 and 2029. In combination, a greater amount of construction plant and partially constructed buildings within Application 4 and 5 will be visible during this period, across a slightly wider extent of the view across Rochdale Road. During demolition and construction, the magnitude of change of Application 4 and 5 in-combination is assessed as high. |
| Significance of effect (demolition and construction): | Significant (moderate) | During demolition and construction, the effect of Application 4 and 5 in combination on the view experienced by receptors at this location is assessed as significant (moderate), adverse and medium-term (occurring between 2023 - 2032). |

## The Completed and Operational Development (Applications 4 and 5)

6.288 The visual effects of the Proposed Development on representative viewpoints during completion and operation are assessed in **Table 6.38**. The baseline conditions and sensitivity of each viewpoint have been described previously in **Table 6.10**.

***Table 6.38**: Visual Assessment – Completed and Operational Development (In-Combination Application 4 and 5)*

| **Viewpoint 1: St Michael's Flags and Angel Meadow Park (Figure 6.8b & 6.8d)** | | |
|---|---|---|
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | The Proposed Development will be located at relatively close proximity and will introduce additional tall buildings into the view from this viewpoint. RB10 within Application 4 will be partially screened behind a building at Meadowside (4) on the north side of St Michael's Flags and Angel Meadow Park. RB10 will rise above this building in terms of vertical scale, but will be in keeping with the tall buildings in the foreground at the centre and side of the view. Several other blocks within the Proposed Development will be located behind buildings within Victoria Riverside (7) which are currently under construction. These will be located at a slightly greater distance from the viewpoint and will therefore appear smaller in scale. However, they will contribute to providing more visual enclosure in the view over St Michael's Flags and Angel Meadow Park, which previously afforded some openness in the view out to the Irk Valley. Along with buildings at Victoria Riverside, the Proposed Development will occupy almost the full extent of a previously undeveloped sector of the view beyond St Michael's Flags and Angel Meadow Park. Buildings within the Proposed Development will be larger in both vertical scale and massing than the buildings within Victoria Riverside which they will be seen beyond. When considered in combination, the buildings within Application 4 and 5 will occupy a slightly larger extent of the previously open view towards the Irk Valley than either of the individual applications. Plots within Application 5 will partially screen views towards plots RB16 and RB17 on the north-eastern edge of Application 4. |
| Significance of effect (completed and operational): | Significant (major / moderate) | The in-combination effect of the Proposed Development on the view experienced by residents and people visiting St Michael's Flags and Angel Meadow Park, is assessed as significant (major / moderate) and neutral. These effects arise from the sensitivity of users of the greenspace and residents, combined with the magnitude of change arising from the vertical scale of RB10 and the introduction of the other plots and buildings into the view. In this direction, the view was previously fairly open towards the Irk Valley, providing a contrast with surrounding built form visible at close proximity in other directions, but has been altered recently by the under-construction Victoria Riverside (7.). The introduction of the Proposed Development will contribute to providing further enclosure of the view over St Michael's Flags and Angel Meadow Park. |
| **Viewpoint 2: Corporation Street (Figure 6.9b & 6.9d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium |

| | | |
|---|---|---|
| | | sensitivity to changes associated with the Proposed Development (as described in Table 6.10). |
| Magnitude of change (completed and operational): | High | Proposed buildings within Application 5 will be screened from view from this viewpoint. The operational magnitude of change resulting from the Proposed Development will therefore be high, in keeping the magnitude of change considered to arise from Application 4, as described in **Table 6.18**. |
| Significance of effect (completed and operational): | Significant (major / moderate) | The in-combination effect of the Proposed Development on the view experienced by pedestrians, motorists and people working in the local area is assessed as significant (major / moderate) and adverse. These effects arise from the introduction of Application 4 into the view, as described in **Table 6.18**. |
| **Viewpoint 3: Manchester Cathedral (Figure 6.10b & 6.10d)** | | |
| Sensitivity: | High | The combination of high value and high susceptibility results in the receptors experiencing this view having a high sensitivity to change associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Low | Proposed buildings within Application 5 will be screened from view from this viewpoint. The operational magnitude of change resulting from the Proposed Development will therefore be low, in keeping the magnitude of change considered to arise from Application 4, as described in **Table 6.18**. |
| Significance of effect (completed and operational): | Not significant (moderate) | The in-combination effect of the Proposed Development on views in this area is assessed as not significant (moderate). These effects arise from the introduction of Application 4 into the view, as described in **Table 6.18**. |
| **Viewpoint 4: Smithfield (Figure 6.11b & 6.11d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Negligible | Visibility of the Proposed Development will be restricted to limited views of the upper elements of two building plots within Application 4, and the upper floors of Tower 3 and Tower 5 within Application 4. These will be seen set beyond the foreground Moda, Angel Gardens building or existing mid-rise residential development along Rochdale Road. All other elements of the Proposed Development will be screened by existing built form. The Proposed Development will be seen in the context of tall buildings in close proximity to the viewpoint. |
| Significance of effect (completed and operational): | Not significant (minor) | The in-combination effect of the Proposed Development on views from this location and on the townscape character of Smithfield Conservation Area is considered to be **not significant (minor).** This is primarily as a result of the fact that only a very small proportion of the Proposed Development will be visible, due to the majority of it being screened behind existing built form along Rochdale Road. |
| **Viewpoint 5: Ancoats (Figure 6.12b & 6.12d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed | Medium | The Proposed Development will be located in somewhat close proximity and will form additional tall buildings seen in the view to the north-west from the northern edge of Ancoats Conservation |

| | | |
|---|---|---|
| and operational): | | Area. RB10 will be screened behind the under-construction Mulbury City building on Bendix Street in the foreground. Other plots such as RB06/RB07 and RB16/RB17 within Application 4, and Tower 2 within Application 5 will be visible across Oldham Road and at receding scale with the increased distance, behind a foreground of mixed-use development with relatively low amenity value. This includes buildings associated with a Chinese supermarket and Manchester Central Community Fire Station. Although the Proposed Development is likely to contribute to providing more visual enclosure across Oldham Road, it is also likely to contribute to improving the visual amenity of the backdrop to Oldham Road and the northern edge of the Ancoats Conservation Area. |
| Significance of effect (completed and operational): | Not significant (moderate) | The Proposed Development is considered to result in in-combination effects which are not significant (moderate), beneficial and long-term in duration on views from the nearest edge of Ancoats on Oldham Road and on townscape character of the wider Ancoats Conservation Area. The existing townscape in the view is of moderate value and of relatively lower visual amenity and condition, with mixed uses. RB10 will not be visible in the view, and the introduction of the visible plots within Application 4 (such as RB06/RB07 and RB16/RB17) and the buildings within Application 5 (including Tower 2 within NT02) is likely to improve the visual context to the north of Oldham Road. |
| **Viewpoint 6: Rochdale Road (Railway Bridge) (Figure 6.13b & 6.13d)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | The Proposed Development will be located in close proximity to the viewpoint and will form a prominent feature in the view from this location. The full width of the Proposed Development will be visible across the view to the west, and it will occupy a relatively large proportion of the available view. Application 5 will be seen in slightly closer proximity than elements of Application 4, and will be contained within the horizontal extent occupied by Application 4. When seen in combination, there will be no views maintained between the building plots of Application 4 or the buildings of Application 5 towards the city centre skyline of Manchester. The vertical scale of some of the taller buildings, including RB10, RB16 and RB17 within Application 4, and Tower 2, 3 and 5 within Application 5, will increase the magnitude of change associated with their operation. The tallest elements of the Proposed Development will be focussed towards the southern, city centre end of the Site, while lower elements will extend northwards through the Lower Irk Valley. As a result, the Proposed Development is likely to change the view of the Manchester skyline approaching the city from Rochdale Road and will likely be read as appearing to extend the taller scale of the city centre out towards the viewpoint along the Lower Irk Valley. |
| Significance of effect (completed and operational): | Significant (major / moderate) | The Proposed Development is considered to result in a significant (major/moderate), beneficial and long-term effect on views from Rochdale Road approaching the city centre. The view from this viewpoint is only of medium sensitivity, and does not include highly valued townscape. However, the view is likely to be subject to a high level of change due to the position of the Proposed Development in the foreground, and its vertical and horizontal spread in the view. |

| | | |
|---|---|---|
| | | The full extent of the Proposed Development will be appreciated in this view. It is likely to alter the view of the city centre skyline and will extend the tall building scale of the city centre out along the Lower Irk Valley towards the viewpoint. |
| **Viewpoint 7: Dantzic Street (Figure 6.14b & 6.14d)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Medium | Proposed buildings within Application 5 will be screened from view from this viewpoint. The operational magnitude of change resulting from the Proposed Development will therefore be medium, in keeping the magnitude of change considered to arise from Application 4, as described in **Table 6.18**. |
| Significance of effect (completed and operational): | Not significant (moderate) | The effect of the Proposed Development is assessed as not significant (moderate / minor). These effects arise from the introduction of Application 4 into the view, as described in **Table 6.18**. |
| **Viewpoint 8: Sand Hills Park, Collyhurst (Figure 6.15b & 6.15d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in Table 6.10). |
| Magnitude of change (completed and operational): | High | The Proposed Development will be located in close proximity to the viewpoint and will form a prominent feature in the view to the west. The full width of the Proposed Development will be visible across the view to the west, with buildings within Application 5 seen to the left of buildings plots within Application 5 in this view. The Proposed Development will occupy a relatively large proportion of the available view, and will be visible in the foreground of the view from this location. The vertical scale of some of the taller buildings, including RB10 and Tower 5, will increase the magnitude of change associated with their operation. The introduction of the Proposed Development into close proximity views from this location will change the view of the Manchester skyline, appearing to 'extend' the taller scale of the city centre out towards the viewpoint along the Lower Irk Valley. |
| Significance of effect (completed and operational): | Significant (major / moderate) | The Proposed Development is considered to result in significant (major/moderate), beneficial and long-term effects on views from this informal greenspace. The existing view is of medium sensitivity, and does not include highly valued townscape, but the view is likely to be subject to a high level of change due to the position of the Proposed Development in the foreground, and its vertical and horizontal spread in the view. The introduction of the Proposed Development into the view will alter the view of the city centre skyline and extend the tall buildings of the city centre out along the Lower Irk Valley towards the viewpoint. |
| **Viewpoint 9: Dalton Street (Figure 6.16b & 6.16d)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change | High | The Proposed Development will be located in close proximity to the viewpoint and will form a prominent feature in the view to the west. |

| | | |
|---|---|---|
| (completed and operational): | | It will result in a high magnitude of change in the view from this viewpoint, primarily due to the vertical scale of Tower 5 within Application 5, which will be seen to the immediate west of Dalton Street. Views towards other elements of the Proposed Development will be available beyond Tower 5, including RB17 within Application 4 and several towers within Application 5. However, views towards these buildings will be limited by the position that Tower 5 occupies in the foreground of the view. The Proposed Development will obscure the incidental view of the Manchester skyline which is currently available from this viewpoint, containing the view in close proximity to the viewpoint. It will appear to 'extend' the taller scale of the city centre out towards the viewpoint along the Lower Irk Valley. |
| Significance of effect (completed and operational): | Significant (major / moderate) | The Proposed Development is considered to result in a **significant (major/moderate)** beneficial effect on views experienced mainly by local residents and road users from Dalton Street. The view is of medium sensitivity, and does not include highly valued townscape. However, it is likely to be subject to a high level of change due to the vertical scale and position of buildings and building plots, primarily the close proximity Tower 5 within Application 5. This will alter the view of the city centre skyline and extend the tall buildings of the city centre out along the Lower Irk Valley towards the viewpoint. |
| **Viewpoint 10: Queen's Road (near Metrolink) (Figure 6.17b & 6.17d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Medium | The Proposed Development will be located at increased distance from this viewpoint, and will form a relatively small proportion of the overall view available from this location. Due to this increased distance, the vertical scale of plots such as RB16 and RB17 within Application 4, and Tower 5 within Application 5 will be reduced. Application 5 will be seen beyond and to the left of Application 4 from this position, and building plots within Application 4 will partially screen views towards Application 5, although buildings including Tower 3 and 5, towards the north-east of the Site, will be visible. The Proposed Development will occupy the mid-ground of the view. RB10 will form the tallest building and focal point in the Manchester skyline. The Proposed Development will change the incidental view of the Manchester skyline from the Metrolink station approach and will appear to 'extend' the taller scale of the city centre out towards the viewpoint along the Lower Irk Valley. |
| Significance of effect (completed and operational): | Not significant (moderate / minor) | Application 4 will result in not significant (moderate / minor), neutral and long-term effects on views from Queens Road near Metrolink, which are of low sensitivity due to the incidental nature of the view and lack of attention/interest of people using Metrolink or travelling on Queen's Road. Views experienced by these receptors will be subject to medium level of change at increasing range, with taller buildings within the Site forming new landmark features in the view of the Manchester city skyline. |
| **Viewpoint 11: Queen's Park (Figure 6.18b & 6.18d)** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |

| | | |
|---|---|---|
| Magnitude of change (completed and operational): | Low | Views towards the Proposed Development will be limited by vegetation within the park. In particular, there will be only limited visibility of the majority of the lower development blocks due to the intervening woodland around Queens Park, which screens views, particularly during summer months when the trees will be in leaf. Only the upper elements of the taller buildings and building plots are likely to be visible, above the tree line. Visible elements of the Proposed Development will include RB10, RB06 and RB17 within Application 4, and Towers 2 and 3 within Application 5. Buildings within Application 5 will be seen beyond and to the left of building plots within Application 4. When considered in combination, the extent of the view occupied by the Proposed Development will be greater than either of the individual applications.<br>The Proposed Development will increase the influence of tall building in the city backdrop to the park, and will bring development of this scale into closer proximity than the existing development upon the Manchester city skyline. |
| Significance of effect (completed and operational): | Not significant (moderate / minor) | The Proposed Development will result in a not significant (moderate / minor), neutral and long-term effect on views from Queens Park due to the limited visibility of most of the development blocks and buildings due to the intervening woodland around Queens Park. The upper elements of the taller development blocks and buildings will increase the influence of tall buildings in the city backdrop to Queens Park, but are not considered to increase the significance of the effect beyond not significant (moderate / minor) due to the contained nature of views from the park and the medium receptor sensitivity. |
| **Viewpoint 12: Miles Platting (Figure 6.19b & 6.19d)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Low | Views towards the Proposed Development will be limited by existing built form within Miles Platting, and there will be limited visibility of just the upper elements of taller building plots and buildings such as RB10, RB16 and RB17 within Application 4, as well as Towers 2, 3 and 5 within Application 5, seen behind intervening residential areas. Buildings within Application 5 will be seen in front of building plots within Application 4, and will partially screen views towards several building plots. Buildings within Application 5 will be contained within the horizontal spread occupied by Application 4. The lower buildings and building plots will be screened from view by the intervening foreground low-rise buildings. Despite the introduction of taller buildings within the context of relatively small-scale residential buildings in the immediate context, the magnitude of change associated with the Proposed Development will be relatively low. Although the upper elements of some of the development plots and several buildings will be visible, this will represent a relatively small amount of development, and will have only a limited influence on existing views from this location. |
| Significance of effect (completed and operational): | Not significant (minor) | Application 4 will result in a not significant (minor), neutral and long-term effect on views experienced from Oldham Road within Miles Platting. Although Application 4 will introduce new taller buildings in the backdrop to the smaller scale residential context, a relatively limited proportion of the development blocks will be visible behind |

| | | |
|---|---|---|
| | | intervening residential areas, where recent changes have also taken place. |
| **Viewpoint 13: Manchester Fort (Figure 6.20b & 6.20d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Medium | The Proposed Development will form a new backdrop to Manchester Fort in the view, primarily due to the influence of building plots within Application 4. There will be limited visibility of the lower plots as they are situated behind the retail units of Manchester Fort, but the upper elements of the taller building plots are likely to form new landmarks in the backdrop to the setting of the Fort and increase the influence of the 'city centre' taller buildings within its backdrop (which are currently a relatively distant part of the skyline). Application 4 will occupy a relatively large extent of the view to the south-east from this viewpoint, which currently represents a more open direction of views. There will also be visibility of two buildings within Application 5, seen beyond lower building plots within Application 4. Buildings within Application 5 will be contained within the horizontal extent occupied by Application 4. |
| Significance of effect (completed and operational): | Not significant (moderate / minor) | Application 4 will result in not significant (moderate / minor), neutral and long-term effects on views from Manchester Fort. Although the upper elements of the taller building plots are likely to form new landmarks in the backdrop to the setting of Manchester Fort, much of the lower plots are situated behind the retail units, and will therefore be largely screened from view. The views towards Application 4 will only be experienced by receptors of medium sensitivity, given their main attention focused on shopping/retail experience (rather than the views to the surrounding townscape) and the relatively low value of the retail townscape that occupies the foreground of the view. |
| **Viewpoint 14: North Street (Figure 6.21b & 6.21d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | The Proposed Development will be located in close proximity to this viewpoint and will occupy a large proportion of the view. The magnitude of change at this viewpoint will arise primarily as a result of the influence of Application 4, with Application 5 located at greater distance and seen beyond Application 4 in the view. The large vertical scale of RB10 will be notable in the view at the southern, city centre end of the site. The scale and massing of RB01-RB05 blocks will read 'as one', with a relatively wide contiguous mass across the view and no aspect through development plots across the Site. The scale and massing encloses the backdrop behind the low trading estates and commercial units in the foreground, although the longer distance aspect along Stanley Street will be retained. This affords views to the city centre, where other tall buildings are notable. There is an impression of the character and scale of development within the city centre extending out towards this inner-city commercial area. Tower 2 within Application 5 will be seen beyond RB01 – RB05, while the remaining buildings within Application 5 will largely be screened from view. |

| | | |
|---|---|---|
| Significance of effect (completed and operational): | Not significant (moderate) | Despite the high magnitude of change to the view resulting primarily from Application 4 in the backdrop behind the trading estates and commercial units, the effect arising from the Proposed Development is assessed as not significant (moderate), beneficial and long-term. Changes associated with the Proposed Development occur to a view that is of low sensitivity to change, given the main activities of the users of the area and low levels of existing visual amenity, as well as the poor condition and low value of the townscape in the view. |
| **Viewpoint 15: St Chad's Street (Figure 6.22b & 6.22d)** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | Medium | Buildings within Application 5 will be almost completely screened from view by building plots within Application 4 from this location. The operational magnitude of change resulting from the Proposed Development will therefore be medium, in keeping with the magnitude of change considered to arise from Application 4, as described in **Table 6.18**. |
| Significance of effect (completed and operational): | Not significant (moderate / minor) | The effect of the Proposed Development on the view experienced at this location is assessed as significant (major / moderate). These effects arise from the introduction of Application 4 into the view, as described in Table 6.18. |
| **Viewpoint 16: Red Bank (Figure 6.23b & 6.23d)** | | |
| Sensitivity: | Medium | The combination of low value and high susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | Proposed buildings within Application 5 will be screened from view from this viewpoint. The operational magnitude of change resulting from the Proposed Development will therefore be high, in keeping with the magnitude of change considered to arise from Application 4, as described in **Table 6.18**. |
| Significance of effect (completed and operational): | Significant (major / moderate) | The effect of the Proposed Development on the view experienced at this location is assessed as significant (major / moderate) and adverse. These effects arise from the introduction of Application 4 into the view, as described in **Table 6.18**. |
| **Viewpoint 17: Rochdale Road (Figure 6.24b & 6.24d)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational): | High | The Proposed Development will be seen in close proximity to the west of this viewpoint, and will occupy a wide horizontal extent of the views in this somewhat open direction. Application 5 will be seen in front of and to the right of building plots within Application 4. Application 5 will generally be contained within the horizontal extent occupied by Application 4, but will appear to extend taller elements to the right of the view from this location. RB10 will form a tall landmark at the southern, city centre end of the Site, with the plots receding in scale as they extend away from the city. Tower 2 within Application 5 will also form a particularly prominent feature, |

| | | |
|---|---|---|
| | | due to its close proximity to the viewpoint as well as its elevation. The Proposed Development will be visible across Rochdale Road, behind a foreground of mixed-use development, trading estates and commercial units (of relatively low amenity value). The Proposed Development will be seen beyond or alongside buildings which are currently under construction within Victoria Riverside. The Proposed Development is likely to contribute to providing more visual enclosure across Rochdale Road, but will also contribute to improving the visual amenity of the backdrop to Rochdale Road at its approach to the city centre. It is likely to extend the emerging character of regeneration currently occurring within New Cross outwards. |
| Significance of effect (completed and operational): | Significant (moderate) | The Proposed Development is considered to result in a significant (moderate), beneficial and long-term effect on views from closest parts of Rochdale Road. The existing townscape in the view is of low value and of relatively lower visual amenity and condition, being dominated by mixed uses, commercial units and trading estates. The Proposed Development is likely to improve the visual context to the north-west of Rochdale Road on approach to the city centre and extend the emerging character of regeneration around New Cross. |

## Assessment of Cumulative Effects and their Significance (Applications 4 and 5)

6.289 This section of the TVIA provides an assessment of the cumulative townscape and visual effects of Application 4 and 5 in conjunction with other committed development ('Cumulative Schemes').

6.290 The Cumulative Effects Assessment (CEA) in this TVIA assesses the contribution of Application 5 to the effect arising with committed schemes, which are either under construction or where construction has not yet started. Cumulative Schemes included in TVIA were agreed in consultation with MCC and are listed in **Table 6.6** and mapped in **Figure 6.5**. These cumulative schemes are considered further within the following CEA. Photos of those under construction are also shown in **Figure 6.5b**.

6.291 AVRs in **Figures 6.8 – 6.24** show Applications 4 and 5 in the context of these cumulative schemes, with a scale verifiable wireline to indicate the location of cumulative schemes within the view. The baseline viewpoint photography also captures partially constructed developments within the 3D context.

6.292 The contribution of the Proposed Development to the cumulative effect upon the baseline character or view is assessed, in conjunction with these cumulative schemes, with the assessment of cumulative effect apportioning the amount of the effect that is attributable to Application 4 and 5.

6.293 The CEA for Application 4 and 5 focuses on the cumulative effects of the completed and operational development and does not consider its cumulative effects during demolition and construction, which cannot be accurately assessed due to the uncertainties of the construction phasing for cumulative schemes that are approved, but where construction is not started, and the uncertainly of overlaps with the construction phase for Application 4 and 5. Cumulative effects during demolition and construction are likely to be similar or less in magnitude than those assessed for the completed and operational development, of medium-term, adverse but temporary during the construction phase for Application 4 and 5.

### In Combination Effects of Application 4 and 5 (Cumulative Townscape Effects with Committed Schemes)

6.294 The cumulative in-combination effects of Application 4 and 5 on townscape character for the completed and operational development are assessed in **Table 6.39**, focusing on the TCAs identified in the preliminary assessment (**Table 6.31**) as requiring further assessment. A baseline description of each TCA is set out **Table 6.7**.

***Table 6.39**: Cumulative Townscape Character Assessment – Completed and Operational Development (In Combination Effects Application 4 and 5)*

| **TCA 1: Lower Irk Valley** | | |
|---|---|---|
| Sensitivity | Medium | The combination of low value and high susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |

| | | |
|---|---|---|
| Cumulative magnitude of change (completed and operational) | High | The cumulative magnitude of change to the character of the Lower Irk Valley (TCA1) resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as high, as illustrated, and described further in Viewpoint 6, 8 and 9 (**Table 6.40**). |
| Significance of cumulative effect (completed and operational) | Significant (major/ moderate) | The contribution of the Proposed Development to the cumulative effect on the character of the Lower Irk Valley (TCA1) is assessed as **significant (major/moderate)**, beneficial and long-term in duration. |
| **TCA 2: NOMA** | | |
| Sensitivity | Medium | The combination of medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | Medium to negligible | The cumulative magnitude of change to the perceived character of NOMA (TCA2) resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as negligible to medium, as illustrated, and described further in Viewpoint 1 and 7 (**Table 6.40)**. |
| Significance of cumulative effect (completed and operational) | Not significant (moderate to minor) | The contribution of the Proposed Development to the cumulative effect on the perceived character of NOMA (TCA2) is assessed as **not significant (moderate to minor)**, beneficial and long-term in duration. |
| **TCA 3: Strangeways** | | |
| Sensitivity | Low | The combination of low value and medium susceptibility results in this TCA having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | Low to negligible | The cumulative magnitude of change to the perceived character of Strangeways (TCA3) resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as low to negligible, as illustrated, and described further in Viewpoint 14 and 15 (**Table 6.40)**. |
| Significance of cumulative effect (completed and operational) | Not significant (minor to negligible) | The contribution of the Proposed Development to the cumulative effect on the perceived character of Strangeways (TCA3) is assessed as **not significant (minor to negligible)**, neutral and long-term in duration. |
| **TCA 7: Collyhurst** | | |
| Sensitivity | Medium | The combination of medium value and medium susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | High | The cumulative magnitude of change to the perceived character of Collyhurst (TCA7) resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as high from the closest areas of Collyhurst, as illustrated, and described further in Viewpoint 6 (**Table 6.40)**, with the magnitude of change reducing with distance to the north and east of the TCA. |
| Significance of cumulative effect (completed and operational) | Significant (major/ moderate) | The contribution of the Proposed Development to the cumulative effect on the perceived character of Collyhurst (TCA7) is assessed as **significant (major/moderate)**, beneficial and long-term in duration from the closest areas of Collyhurst, reducing to not significant with increased distance to the north and east of the TCA. |
| **TCA 10: New Cross** | | |

| | | |
|---|---|---|
| Sensitivity | Medium | The combination of the medium value and low susceptibility results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | Low to negligible | The cumulative magnitude of change to the perceived character of New Cross (TCA10) resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as low to negligible, as illustrated, and described further in Viewpoint 4 and 17 (**Table 6.40)**. |
| Significance of effect (completed and operational) | Not significant (moderate / minor to minor) | The contribution of Application 4 to the cumulative perceived effect on the character of New Cross (TCA10) is assessed as **not significant (moderate/minor to minor)**, beneficial and long-term in duration. |
| **TCA 11: City Centre (including Cathedral, Shudehill and Smithfield CAs)** | | |
| Sensitivity | Medium | The combination of high value and low susceptibility to changes results in this TCA having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.7**). |
| Cumulative magnitude of change (completed and operational) | Negligible to zero | The cumulative magnitude of change to the perceived character of the City Centre (TCA11), including the Cathedral, Shudehill and Smithfield CAs, resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as negligible to zero, as illustrated, and described further in Viewpoint 2, 3 and 4 (**Table 6.40)**. |
| Significance of cumulative effect (completed and operational) | Not significant (minor to zero) | The contribution of Application 4 to the cumulative effect on the perceived character of City Centre (TCA11) is assessed as **not significant (minor to zero)**, beneficial and long-term in duration. |

## In Combination Effects of Application 4 and 5 (Cumulative Visual Effects with Committed Schemes)

6.295 The in-combination cumulative visual effects of Application 4 and 5 on representative viewpoints during completion and operation are assessed against the predicted baseline in **Table 6.40**. The baseline conditions and sensitivity of each viewpoint have been described previously in **Table 6.10**.

***Table 6.40**: Cumulative Visual Assessment – Completed and Operational Development (In Combination Effects Application 4 and 5)*

| | | |
|---|---|---|
| **Viewpoint 1: St Michael's Flags and Angel Meadow Park** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Medium | The cumulative magnitude of change resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as **medium**. This is primarily because some of the Application 4 plots, and the majority of the Application 5 buildings, will be located behind the cumulative schemes, including Meadowside (4) and Victoria Riverside (7). The Gas Works (3) will also be seen in the view across St Michael's Flags and Angel Meadow Park. These cumulative schemes will be visible at closer |

| | | |
|---|---|---|
| | | proximity and larger vertical scale in the view, and will screen views towards parts of the Proposed Development. Buildings within Application 4 and 5 will be viewed in the context of a more developed foreground, in which further tall buildings associated with cumulative schemes 3, 4 and 7 will be introduced at larger scale, and will contribute more to the cumulative effect. The cumulative magnitude of change resulting from the Proposed Development will primarily result from the introduction of Application 4, as described in **Table 6.20**. Application 5 will make a smaller contribution to the in combination cumulative magnitude of change due to limited visibility as a result of screening by cumulative schemes, as described in **Table 6.30**. |
| Significance of cumulative effect: (completed and operational) | Not significant (moderate) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (moderate)**, neutral and long-term in duration. |
| **Viewpoint 2: Corporation Street** | | |
| Sensitivity: | Medium | The combination of high value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Negligible | Application 5 will not be visible from this viewpoint. The cumulative in combination magnitude of change resulting from the Proposed Development will therefore be **negligible**, in keeping with the cumulative magnitude of change considered to arise from Application 4 alone, as described in **Table 6.20**. |
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (minor)**, neutral and long-term in duration. |
| **Viewpoint 3: Manchester Cathedral** | | |
| Sensitivity: | High | The combination of high value and high susceptibility results in the receptors experiencing this view having a high sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Zero | Application 5 will not be visible from this viewpoint. The cumulative in combination magnitude of change resulting from the Proposed Development will therefore be **zero**, in keeping with the cumulative magnitude of change considered to arise from Application 4 alone, as described in **Table 6.20**. |
| Significance of cumulative effect: (completed and operational) | Not significant (no cumulative effect) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (no effect)**, neutral and long-term in duration. |
| **Viewpoint 4: Smithfield** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Negligible | A number of cumulative schemes will be visible in the view, including The Gas Works (3), Meadowside (4), 25 Rochdale Road (5) and Swan House (10), which will increase the developed townscape context ling the streetscape north of Rochdale Road. Application 4 will be almost entirely not visible due to it being almost completely screened behind the foreground Moda, Angel Gardens building on |

| | | |
|---|---|---|
| | | Rochdale Road. Buildings within Application 5 will be completely screened by cumulative schemes The Gas Works (3) and Rochdale Road (5). The cumulative magnitude of change will therefore be **negligible**, in keeping with the cumulative magnitude of change considered to arise from Application 4 alone, as described in **Table 6.20**. |
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (minor)**, neutral and long-term in duration. |
| **Viewpoint 5: Ancoats** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Negligible | The Gas Works (3), Meadowside (4) and 87 Rochdale Road (8) will occupy the foreground of the view across Rochdale Road and are likely to completely screen all of Application 4 development plots, which are situated behind these cumulative schemes, as well as the majority of buildings within Application 5. The cumulative magnitude of change resulting from the Proposed Development will therefore primarily result from the introduction of Application 5 , as described in **Table 6.30**. The cumulative magnitude of change resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as **negligible**, in keeping with the Application 5 cumulative assessment. |
| Significance of effect: (completed and operational) | Not significant (minor) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (minor)**, neutral and long-term in duration. |
| **Viewpoint 6: Rochdale Road (Railway Bridge)** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | High | The Gas Works (3), Meadowside (4), Victoria Riverside (7), Cortland at Collier's Yard (24) and Waterloo Place (26) will all be visible in the view of the Manchester city centre skyline and will extend the tall building scale of the city towards the viewpoint. The Proposed Development represents a continuation of this effect that will be established by approved schemes and is likely be read as appearing to extend the taller scale of the city centre along the Lower Irk Valley. This effect is observed in the in combination assessment (**Table 6.18**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of plots and buildings within Application 4 and 5 can be noted as comparable in height/scale to the committed schemes nearby at the Gas Works (3) and Meadowside (4). The gradual reduction in building scale reflected through the roofline will be evident as the development plots extend north along the Irk Valley away from the city centre. The cumulative magnitude of change resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as **high**, due to its position to the fore of the |

| | | |
|---|---|---|
| | | cumulative schemes and the extended scale of tall buildings along part of the Lower Irk Valley. |
| Significance of cumulative effect: (completed and operational) | Significant (major / moderate) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **significant (major/moderate)**, beneficial and long-term in duration. The view is only of medium sensitivity and does not include highly valued townscape but is likely to be subject to a high level of cumulative change due to the position of the Proposed Development in the foreground, and its vertical and horizontal spread in the view in addition to the cumulative schemes. In the context of cumulative schemes, it will appear visually more cohesive and connected with the taller building scale of the emerging city centre. |
| **Viewpoint 7: Dantzic Street** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Negligible | Application 5 will not be visible from this viewpoint. The cumulative in combination magnitude of change resulting from the Proposed Development will therefore be negligible, in keeping with the cumulative magnitude of change considered to arise from Application 4 alone, as described in **Table 6.20**. |
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (minor)**, neutral and long-term in duration. |
| **Viewpoint 8: Sand Hills Park, Collyhurst** | | |
| Sensitivity: | Medium | The combination of medium value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | High | The Gas Works (3), Victoria Riverside (7), Cortland at Collier's Yard (24), Embankment Exchange (25) and Waterloo Place (26) will all be visible in the view of the Manchester city centre skyline, as well as very limited views of Meadowside (4). These cumulative schemes will extend and increase the tall building scale of the city in the view. The Proposed Development represents a continuation of this effect that will be established by approved schemes and is likely be read as appearing to further extend and increase the taller scale of the city centre along the Lower Irk Valley. This effect is observed in the in-combination assessment (**Table 6.38**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. Buildings and building plots within Applications 4 and 5, including Tower 5 and RB10, can be noted as being taller in height/scale than the committed schemes nearby, and the Proposed Development will screen views towards the tallest elements of the committed schemes, including the Gas Works (3), and Meadowside (4). The cumulative magnitude of change resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as **high**, due to its position to the fore of the cumulative schemes and the extended scale of tall buildings into the foreground along part of the Lower Irk Valley. |

| | | |
|---|---|---|
| Significance of cumulative effect: (completed and operational) | Significant (major / moderate) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **significant (major/moderate)**, beneficial and long-term in duration. The view is only of medium sensitivity and does not include highly valued townscape but is likely to be subject to a high level of cumulative change due to the position of the Proposed Development in the foreground, and its vertical and horizontal spread in the view in addition to the cumulative schemes. In the context of cumulative schemes, it will appear visually more cohesive and connected with the taller building scale of the emerging city centre. |
| **Viewpoint 9: Dalton Street** | | |
| Sensitivity: | Medium | The combination of low value and medium susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | High | The Gas Works (3), Meadowside (4), Meribel Street (15) and Cortland at Collier's Yard (24) may all be partially visible and will extend and increase the tall building scale of the city in the view, however there is considerable intervening screening including vegetation and boundary walls. The Proposed Development will be located in close proximity to the viewpoint and will form a prominent feature in the view to the fore and will effectively block views of most of the other cumulative schemes. As described in the in-combination effects assessment in **Table 6.38**, views towards Application 4 will be limited by the position that Tower 5 within Application 5 occupies in the foreground of this view, and the in-combination cumulative magnitude of change will therefore largely result from the contribution that Application 5 makes to this view. The cumulative magnitude of change resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as **high**, due to its position to the fore of the cumulative schemes and the increasing scale of tall buildings into the foreground, particularly Tower 5 within Application 5. |
| Significance of cumulative effect: (completed and operational) | Significant (major / moderate) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **significant (major/moderate)**, beneficial and long-term in duration. The view is only of medium sensitivity and does not include highly valued townscape but is likely to be subject to a high level of cumulative change due to the position of the Proposed Development in the foreground, and its vertical and horizontal spread in the view in addition to the cumulative schemes. |
| **Viewpoint 10: Queen's Road (near Metrolink)** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Medium | The Gas Works (3), Meadowside (4), Victoria Riverside (7), 87 Rochdale Road (8), Peeler's Yard (13), Cortland at Collier's Yard (24) and Waterloo Place (26) will all be partially visible in the view of the Manchester city centre skyline and will extend and increase the tall building scale of the distant city skyline in the view. The Proposed Development represents a continuation of this effect that will be established by approved schemes and is likely be read as appearing to further extend and increase the taller scale of the distant city centre skyline. This effect is observed in the in- |

| | | |
|---|---|---|
| | | combination assessment (**Table 6.38**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. Due to its closer proximity, and greater horizontal and vertical spread, Application 4 will contribute more to the cumulative magnitude of change than buildings within Application 5, some of which will be screened by Application 4. Given the greater distance of the Proposed Development, its diminished scale in the view and cohesion with the taller building scale of the emerging city centre, the cumulative magnitude of change resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as **medium**. |
| Significance of cumulative effect: (completed and operational) | Not significant (moderate / minor) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (moderate/minor)**, beneficial and long-term in duration. The view is only of low sensitivity and does not include highly valued townscape but is likely to be subject to a medium level of cumulative change due to the position of the Proposed Development to the fore of the cumulative schemes, and its vertical scale in the view. In the context of cumulative schemes, it will appear visually more cohesive and connected with the taller building scale of the emerging city centre. |
| **Viewpoint 11: Queen's Park** | | |
| Sensitivity: | Medium | The combination of medium value and low susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | The Gas Works (3), Victoria Riverside (7), Swan House (10), Cortland at Collier's Yard (24), Embankment Exchange (25), and Waterloo Place (26) will all be partially visible in the distant view of the Manchester city centre skyline, through and above the tree line of Queens Park, and will extend and increase the tall building scale of the distant city skyline in the view. The Proposed Development represents a continuation of this effect that will be established by approved schemes and will likely be read as appearing to further extend and increase the taller scale of the distant city centre skyline. This effect is observed in the in-combination effects assessment (**Table 6.18**), however in the context of the cumulative schemes, it will appear visually more cohesive and connected with the taller building scale of the emerging city centre. The cumulative effects of the Proposed Development will also be limited by vegetation within the park, with only limited visibility of the majority of the lower development blocks due to the intervening woodland around Queens Park. Given these factors, the cumulative in-combination magnitude of change resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as **low**. |
| Significance of cumulative effect: (completed and operational) | Not significant (moderate / minor) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (moderate/minor)**, beneficial and long-term in duration. The view is only of medium sensitivity and does not include highly valued townscape but is likely to be subject to a low level of cumulative change due to its distance and intervening woodland, such that it is primarily the upper elements of the higher plots and buildings that add to view. In the context of cumulative schemes, these will |

| | | |
|---|---|---|
| | | appear visually more cohesive and connected with the taller building scale of the emerging city centre. |
| **Viewpoint 12: Miles Platting** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | The upper storeys of the Gas Works (3), Meadowside (4), Victoria Riverside (7), Cortland at Collier's Yard (24) and Waterloo Place (26) may be visible in the view in the backdrop to the low-rise residential streets of Miles Platting. These cumulative schemes will introduce a taller building scale of the city skyline in the backdrop to the view. The Proposed Development represents a continuation of this effect that will be established by approved schemes and is likely to be read as appearing to further extend the taller scale of the city centre in the backdrop. This effect is observed in the in-combination effects assessment (**Table 6.38**), however in the context of the cumulative schemes, it appears visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of Plot RB10 and Towers 2 and 3 in particular can be noted as similar in height/scale to the committed schemes nearby at the Gas Works (3) and Victoria Riverside (7). The cumulative magnitude of change resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as **low**, due to the relatively small amount of the Proposed Development visible, which is largely screened by the foreground townscape, and its integration with the cumulative schemes as part of the backdrop. |
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (minor)**, beneficial and long-term in duration. The view is only of low sensitivity and does not include highly valued townscape. It is likely to be subject to a low level of cumulative change due to the position of the Proposed Development in the backdrop and its integration with the cumulative schemes that will establish a taller building scale of the emerging city centre. |
| **Viewpoint 13: Manchester Fort** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | The upper storeys of Victoria Riverside (7) will be visible in the view in the backdrop to the low-rise retail park of Manchester Fort. The upper elements of the taller building plots of Application 4 and taller buildings within Application 5 are likely to form new landmarks in the backdrop to the setting of the Fort in combination with Victoria Riverside (7), and increase the influence of the 'city centre' taller buildings within its backdrop (which are currently a relatively distant part of the skyline). When Application 4 and 5 are viewed in combination, there will be more limited views of cumulative schemes in the surrounding townscape than either of the project alone cumulative assessments. Therefore, the cumulative effect of the Proposed Development in combination will be slightly reduced compared to either of the project alone cumulative assessments (**Table 6.20** and **Table 6.30**). The |

| | | |
|---|---|---|
| | | cumulative magnitude of change resulting from the contribution of the Proposed Development to the cumulative schemes is assessed as **low**, due to the limited potential for cumulative interactions. |
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (minor)**, beneficial and long-term in duration. |
| **Viewpoint 14: North Street** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Negligible | The very upper storeys only of Victoria Riverside (7) will be visible in the view, due to its position behind the Application 4 development plots. There will also be theoretical visibility of The Gas Works (3) beyond buildings within Application 5, although actual visibility of this is likely to be very limited. The cumulative magnitude of change resulting from the contribution of the Proposed Development to the cumulative schemes is therefore assessed as negligible. The effect arising from the Proposed Development will essentially be as assessed in the in-combination effects assessment (**Table 6.38**), with a negligible additional change when considered cumulatively, due to the limited potential for cumulative interactions. |
| Significance of cumulative effect: (completed and operational) | Not significant (negligible) | The contribution of Application 4 to the cumulative effect on the view is assessed as **not significant (negligible)**, neutral and long-term in duration. |
| **Viewpoint 15: St Chad's Street** | | |
| Sensitivity: | Low | The combination of low value and medium susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | Only the upper storeys of Meadowside (4) and 1 Lord Street (21) will be visible, as they are situated largely behind the development plots of Application 4 or existing intervening buildings. The cumulative magnitude of change associated with the Proposed Development will result primarily from the cumulative influence of Application 4, due to limited visibility of Application 5 seen beyond the Application 4 plots from this viewpoint. The cumulative magnitude of change is therefore assessed as **low**, in keeping with that assessed as part of the Application 4 cumulative assessment (**Table 6.20**). |
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (minor)**, neutral and long-term in duration. |
| **Viewpoint 16: Red Bank** | | |
| Sensitivity: | Medium | The combination of low value and high susceptibility results in the receptors experiencing this view having a medium sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Zero | Application 5 will not be visible from this viewpoint. The cumulative in combination magnitude of change resulting from the Proposed Development will therefore be **zero**, in keeping with the cumulative |

| | | |
|---|---|---|
| | | magnitude of change considered to arise from Application 4 alone, as described in Table **6.20**. |
| Significance of cumulative effect: (completed and operational) | Not significant (no cumulative effect) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (no effect)**, neutral and long-term in duration. |
| **Viewpoint 17: Rochdale Road** | | |
| Sensitivity: | Low | The combination of low value and low susceptibility results in the receptors experiencing this view having a low sensitivity to changes associated with the Proposed Development (as described in **Table 6.10**). |
| Magnitude of change (completed and operational) | Low | 87 Rochdale Road (8) will be viewed at close proximity in the foreground of the view across Rochdale Road, such that almost all of the Application 4 plots will be located behind this cumulative scheme and will not be visible in the view (with the exception of parts of the lower plots RB05A-C). The cumulative magnitude of change associated with the Proposed Development will therefore result primarily from the cumulative influence of Application 5. There will also be limited visibility of the Gas Works (3), seen in front of Tower 4 within Application 5. The cumulative magnitude of change is assessed as low, in keeping with that assessed to arise from Application 5 alone (**Table 6.30**). 87 Rochdale Road (8) will contribute most to the cumulative effect on the view from this location. |
| Significance of cumulative effect: (completed and operational) | Not significant (minor) | The contribution of the Proposed Development to the cumulative effect on the view is assessed as **not significant (minor)**, neutral and long-term in duration. |

## Conclusions (Applications 4 and 5)

6.296 In combination effects arising from Application 4 and 5 will be similar in nature and extent to those described within each of the project alone assessments. Significant effects on the visual and townscape resource of the Study Area will be experienced from the closest proximity areas only. This is largely as a result of the scale of the Proposed Development in the view, its position in the foreground, and its role in appearing to extend the taller scale of the city centre out towards the Lower Irk Valley. These effects will reduce when the Proposed Development is considered alongside cumulative schemes, as it will be more in keeping with the emerging pattern of development to the north of the city centre. The high design quality of the buildings and their response to the surrounding townscape context is likely to result in beneficial effects on the visual amenity and character of the Lower Irk Valley.

6.297 Significant effects are predicted to occur within TCA1: Lower Irk Valley and TCA7: Collyhurst, in keeping with both the Application 4 and Application 5 project alone assessments. These effects are considered to be beneficial in nature. There will be no significant effects on Conservation Areas across the Study Area.

6.298 When Application 4 and 5 are considered in combination, Application 5 is not considered to result in any additional significant effects at viewpoints which will not already experience significant effects as a result of Application 4.

Application 4 will result in significant effects which do not arise as a result of Application 5, due to screening of buildings within Application 5 by existing built form. The viewpoints which will experience significant effects as a result of the Proposed Development will therefore be the same as that assessed for Application 4. These significant visual effects will be beneficial in nature from two viewpoints, neutral in nature from two viewpoints, and adverse in nature from two viewpoints. From several close proximity viewpoints, including for example VP15: St Chad's Street and VP9: Dalton Street, Application 4 and Application 5 respectively will limit views towards other parts of the Proposed Development. From longer-distance views, for example VP10: Queen's Road (near Metrolink), the full horizontal extent of the Proposed Development will be appreciated. However, where the full extent is visible, this is not considered to result in additional effects which will not be experienced as a result of either project when considered alone.

6.299 When the Proposed Development is assessed alongside cumulative developments, cumulative effects tend to be further 'mitigated', because the Proposed Development represents a continuation of the effect that will be established by approved schemes, which appear to extend the city centre skyline northwards towards the Lower Irk Valley. In the context of the cumulative schemes, Application 5 will appear visually more cohesive and connected with the taller building scale of the emerging city centre. The scale of tallest buildings building plots within the Proposed Development can be noted as being comparable in height and scale to committed schemes nearby at the Gas Works (3) and Meadowside (4).

6.300 The high design quality of the buildings within the Proposed Development, and their response to the surrounding townscape context within this area to the north of Manchester city centre is considered to result in beneficial effects on the visual amenity and character of the Lower Irk Valley.

## In Combination Effects of Applications 4 and 5 and SRF

### Approach

6.301 This section assesses the in-combination effects of Application 4 and 5 (the Proposed Development) and the Victoria North SRF in combination. It considers and assesses the potential totality of effect arising as a result of Application 4, Application 5 and the SRF in combination.

6.302 Due to the nature of the Victoria North SRF (which only identifies 'up to' heights with suggested scale, density and form), only a qualitative assessment of the effects in-combination with the Victoria North SRF is possible and no additional modelling or accurate visual representations (AVRs) have been produced to consider the in-combination effects with Victoria North SRF.

6.303 An 'illustrative' Spatial Framework is presented for each proposed neighbourhood in the Victoria North SRF, defining the scale, density and form encouraged across the neighbourhoods. This varies, with building height parameters defined in some areas, whereas development density and typology precedents are provided for others. The various plans presented for the neighbourhoods in the SRF are illustrative representations of the SRF-wide neighbourhood design and development principles, therefore only a high-level interpretation-based, descriptive (qualitive) assessment of the effects of Application 4 in-combination with the Victoria North SRF is possible as part of this TVIA.

6.304 The in-combination effects of Application 4 and 5 (the Proposed Development) have also been assessed in the preceding section of this TVIA (without the SRF). Likewise, an **Assessment of Cumulative effects and their Significance (Application 4 + SRF with Committed Schemes)** and an **Assessment of Cumulative effects and their Significance (Application 5 + SRF with Committed Schemes)** has been undertaken within the earlier assessments of Application 4 and 5 within this TVIA.

6.305 The Victoria North SRF (Manchester City Council (MCC), Far East Consortium (FEC) and partners, 2019) is used as the basis of the assessment when considering the SRF. The Vision for Victoria North is – *'to deliver a series of vibrant, sustainable and integrated residential neighbourhoods within the extended city centre of Manchester. These neighbourhoods will provide a range of housing options in a high-quality, well managed environment, with high levels of connectivity that link the growth of the city centre with surrounding Manchester communities. This will include the delivery of a range of affordable housing products to meet the needs of residents on a range of incomes'.*

### Likely Cumulative Townscape Effects and their Significance (Application 4 and 5 + SRF with Committed Schemes)

6.306 Currently, the townscape character of Victoria North transitions from an urban and industrial grain on the fringes of the city centre, to a more suburban form towards Collyhurst and the north of the area. Similarly, the Irk Valley itself transitions along the valley from a hard-edged character at the south of the study area to a more natural

setting upstream towards Queens Park. Three distinct neighbourhoods define the baseline character within the Victoria North SRF area, characterised by different uses, built forms and physical features – Lower Irk Valley (TCA 1), Collyhurst (TCA 7) and New Cross (TCA 10) (**Figure 6.3**) that are reflective of the way the townscape character of the SRF area is experienced.

## Demolition and Construction

6.307 Demolition and construction works within the Site will result in physical changes to parts of the townscape within the Lower Irk Valley (TCA1) and similar works within the wider Victoria North SRF area will result in physical changes to parts of the townscape within Collyhurst (TCA 7) and New Cross (TCA 10). Construction activities of the Proposed Development and the SRF will result in direct changes to the townscape character within the Site and indirect changes to the perceived character of the wider townscape. In-combination effects on townscape character will occur as a result of the demolition and construction works occurring through the phased build out duration of the Proposed Development and the SRF, particularly between 2025 – 2032 (for Application 4 and 5) and over a 15-20 year period for the SRF, with an early focus on development activity in the southern parts of the SRF area. Over this period, effects on townscape character are likely to result from the construction works within the Site and wider SRF area, including the introduction of site compounds; materials excavation, storage and handling; piling used for the buildings' foundations; construction plant particularly taller cranes (telescopic, support, tower and tracked cranes); and smaller plant including dump trucks, concrete mixers, piling rigs, lorries, skip wagons, excavators and rollers. Construction traffic will also be present at increased concentrations on the local road network.

6.308 During demolition and construction, the in-combination effect of the Proposed Development and the SRF on the character of the Lower Irk Valley (TCA 1), Collyhurst (TCA 7) and New Cross (TCA 10) is assessed as likely to be significant (major to major/moderate), adverse and medium to long-term in duration, with effects reducing to not significant on the perceived character of the wider townscape outside the Victoria North SRF. Adverse effects on townscape character are likely to arise during construction due to the introduction of construction plant and partially constructed buildings, with the adversity of effects reducing during the construction period, as the balance of construction works reduces in favour of completed development materialising through the phased build out of Application 4 and the SRF, and other committed schemes being completed in the surrounding townscape.

## The Completed and Operational Development

6.309 During completion and operation, Application 4 will form the new Red Bank neighbourhood and Application 5 will form part of the New Town neighbourhood (defined in the Victoria North SRF). New development within the wider Victoria North SRF area outside these neighbourhoods, is also likely to change the character of the Lower Irk Valley, Collyhurst and New Cross TCAs, reinforcing the existing communities and establishing a series of integrated neighbourhoods within these areas, that extend Manchester's city centre. In addition to the Red Bank and New Town neighbourhoods, a further five interconnected neighbourhoods are likely to emerge, each with their own individual character: Collyhurst Village; South Collyhurst; New Cross; Vauxhall Gardens; and Eggington Street and

Smedley Dip (as shown in Figure 16 of the SRF). The in-combination effect of the Proposed Development and the SRF on the character of the Lower Irk Valley (TCA 1), Collyhurst (TCA 7) and New Cross (TCA 10) townscape character areas is assessed as likely to be significant (major to major/moderate), beneficial and long-term in duration. Significant effects on townscape character of the SRF area are likely to occur due to the nature of the transformational, residential-led regeneration scheme, comprising approximately 15,000 new homes. These significant effects are likely to arise due to the widespread change in character expected through the implementation of the distinct neighbourhoods within the Victoria North SRF that will emerge as distinct TCAs, with effects considered as beneficial due to changes from the relatively degraded baseline character within parts of the Irk Valley and the 'good design' of high quality buildings and places, green infrastructure, retail, social, community, health and education facilities and access improvements that will be delivered as part of the SRF.

6.310 The implementation of each of the SRF neighbourhoods will contribute, together with Application 4 and 5, to these significant effects on the character of Victoria North, with each providing locally distinctive changes in character. **Collyhurst Village** will continue to be a residential-led neighbourhood, delivering a range of new and affordable housing with comparatively lower building heights and densities, linking large green spaces to the City River Park. **South Collyhurst** will be a medium-high density residential-led neighbourhood providing a variety of house types, predominantly low-rise, with higher-density buildings in key locations providing a transition between the higher density of New Cross and New Town neighbourhoods. **New Cross** will be a medium to high density residential-led neighbourhood that marks the transition from the city centre, contributing to the urbanisation of Rochdale Road, with a mix of commercial and residential use and distinctive landmark buildings with a focus on architectural treatment. **New Town** will be a residential-led neighbourhood with higher-density housing types at the interface with the city centre, NOMA, Angel Meadow and the Northern Quarter, with high density and taller/landmark buildings concentrated closer to the city centre and railway. Buildings of (up to) 8 to 12 storeys are expected to provide a level of general development, punctuated by taller structures to provide form and variety. **Vauxhall Gardens** is expected to become a medium-high density residential-led neighbourhood, integrating with existing residential accommodation, with a denser urban core and proposed integrated transport hub. **Eggington Street and Smedley Dip** will remain as a residential-led neighbourhood, offering family-oriented homes, with enhanced green space as part of the City River Park, integrating the existing social and community infrastructure provision.

6.311 Although the in-combination effect of the Proposed Development and the SRF is likely to be significant on areas within the SRF where character change is expected to occur (TCA 1, 7 and 10), the effect on perceived character of the wider townscape of the TVIA study area is likely to be not significant, where only indirect changes may occur to the backdrop and setting of the wider townscape, including on TCA 2, 3, 4, 5, 6, 8, 9, 11 and 12, and the associated Conservation Areas (CAs) that cover parts of this wider townscape.

## Likely Cumulative Visual Effects and their Significance (Application 4 and 5 + SRF with Committed Schemes)

### Demolition and Construction

6.312 Demolition and construction works within the Site will result in changes to views within the Lower Irk Valley (TCA1) and similar works within the wider Victoria North SRF area will result in changes to views of the townscape from nearby areas. Construction activities associated with the Proposed Development and the SRF will result in direct changes to views, as a result of the demolition and construction works occurring through the phased build out duration of the Proposed Development and the SRF, particularly between 2023 – 2032 (for the Proposed Development) and over a 15-20 year period for the SRF. Over this period, effects on views are likely to result from the construction works within the Site and wider SRF area, including views of site compounds; materials excavation, storage and handling; piling used for the buildings' foundations; construction plant particularly taller cranes (telescopic, support, tower and tracked cranes); and smaller plant including dump trucks, concrete mixers, piling rigs, lorries, skip wagons, excavators and rollers. Construction traffic will also be present in views on the local road network.

6.313 During demolition and construction, the in-combination effects of the Proposed Development and the SRF to the on the views in the locality of the Application 4 site and within the Victoria North SRF area, is assessed as likely to be significant (major to major/moderate), adverse and medium to long-term in duration, with effects reducing to not significant on views from the wider townscape outside the Victoria North SRF. Adverse visual effects are likely to arise during construction due to the introduction of construction plant and partially constructed buildings, with the adversity of visual effects reducing during the construction period, as the balance of construction works reduces in favour of completed development materialising through the phased build out of Application 4 and the SRF, and other committed schemes being completed in the surrounding townscape.

### The Completed and Operational Development

6.314 During completion and operation, visual effects will arise as a result of the combination of the Proposed Development and the SRF, with effects on visual receptors/views occurring particularly within the new Red Bank and New Town neighbourhoods and within the wider Victoria North SRF area. The completion of new neighbourhoods within the wider SRF area will have a significant and transformative effect on views at the local level, as well as having less significant, yet notable effects extending Manchester's city centre skyline in the backdrop to views from the wider study area outside the North Victoria SRF.

6.315 The in-combination effect of the Proposed Development and the SRF is likely to be significant on views within the Victoria North SRF area, where transformative change is expected to occur to existing views, such as in views from St Michael's Flags and Angel Meadow Park (Viewpoint 1), limited parts of the northern edges of the city centre (Viewpoint 2), Rochdale Road (Viewpoint 6 and 17) and the closest parts of Collyhurst (Viewpoint 8 and 9). The additional effect of the SRF is likely to contribute to significant effects from other viewpoints on the edge of the SRF

area, including from the closest parts of Ancoats (Viewpoint 5), Miles Platting (Viewpoint 12) and potentially Cheetham Hill (Viewpoint 10) depending on the scale, form and density of building plots that may occupy the foreground of these views. The in-combination effect of the Proposed Development and the SRF on views locally from these areas are likely to be significant due to the extension of the city centre scale of tall buildings within the SRF area, in combination with committed schemes, resulting in significant change to the Manchester city centre skyline to the north of the city.

6.316 The in-combination effect of the Proposed Development and the SRF on views from the wider townscape of the TVIA study area is likely to be notable, however effects are assessed not significant where less direct changes may occur to the backdrop of views of the wider townscape and skyline, including on views from the Cathedral, Smithfield and Shudehill areas of the city centre (Viewpoint 3 and 4) where changes to views will be limited by the intervening townscape, from the Strangeways area to the west (Viewpoint 14 and 15) which is more distant from the Victoria North SRF area and is of relatively lower sensitivity to change, and from more enclosed views such as from Queens Park to the north (Viewpoint 11).

## Phasing Effects

6.317 Along with the preceding assessments of the finished or end state of the Proposed Development, a high-level assessment of the indicative phased delivery of the Proposed Development is also considered within this section of the TVIA. This is an assessment of the latter stages of the Proposed Development on the earlier stages, based on the following indicative phasing (shown in **Volume 2a: Main Text Figures, Figure 5.13**) for the purpose of this assessment:

- **Phase 1 NT02 - NT04**: Q4 2023 to Q4 2029. It is assumed that the HIF Works would be substantially complete by the time that works on the NT02-04 site begin in Q4 2023. Individual plots will then be brought forward within the estimated build out duration between Q4 2023 to Q4 2029. It is assumed that build out of Phase 1 will be complete by Q4 2029.
- **Phase 2 RB01-05 and RB12b**: Q1 2025 to Q4 2029. It is assumed that the HIF Works would be complete by the time that works on the Application 4 site begin in Q1 2025. Individual plots will be brought forward for detailed design and construction within the estimated build out duration between Q1 2025 to Q4 2029. It is assumed that build out of Phase 2 will be complete by Q4 2029.
- **Phase 3 RB16, RB17, RB06, RB07 and RB10**: Q3 2027 to Q4 2032. Individual plots will be brought forward for detailed design and construction within the estimated build out duration Q3 2027 to Q4 2032. It is assumed that build out of Phase 3 will be complete by Q4 2032.

6.318 The following assessment considers the delivery of these phases where the preceding phase(s) becomes a receptor to subsequent phases. These phasing effects are primarily a visual matter, due to the introduction of resident receptors to the completed buildings within earlier phase(s) within the Site, who may experience views of the demolition, construction and completion of the ongoing build out of the Proposed Development within the vicinity.

Given that the phasing is indicative, and that the construction phases are broadly overlapping, these visual effects can only be assessed qualitatively and at a high-level. The following phasing effects may occur as a result of the phased delivery of the Proposed Development:

- Receptors (mainly residents) of NT02 – NT04 may experience significant and adverse effects on views resulting from the demolition and construction of Phase 2 (RB01-05 and RB12b) between Q1 2025 to Q4 2029 in views north across the Lower Irk Valley.
- Receptors (mainly residents) of NT02 – NT04 may experience significant and adverse effects on views resulting from the demolition and construction of Phase 3 between Q3 2027 to Q4 2032, with the construction of the taller buildings within plots RB16 and RB17 viewed at close range to the north; and RB06, RB07 at close range to the west, with RB10 tower beyond.
- Receptors (mainly residents) of buildings within plots RB01-05 and RB12b may experience significant and adverse effects on views of the demolition and construction of Phase 3, between Q1 2025 to Q4 2029, with the taller buildings of RB06, RB07, RB16 and RB17 at close range to the south; with RB10 tower beyond.
- Receptors (mainly residents) of buildings within plots RB16, RB17, RB06, RB07 and RB10 may experience significant and adverse effects on views of the demolition and construction of Phase 1 and 2 between Q3 2027 and Q4 2029.

6.319 Adverse effects of phasing of the Proposed Development on views experienced by residents of the completed buildings within earlier phase(s) are likely to arise primarily during construction, and over the medium-term, due to the presence of construction plant and partially constructed buildings at relatively close range. The adversity of these phasing effects on views/visual receptors is likely to reduce during the phased build out, as the balance of construction works reduces in favour of completed development materialising through the phased build out of the Proposed Development, and beneficial effects on views and character occurring over the longer-term, as a result the high-quality, integrated residential neighbourhoods delivered across the Site, forming an extended city centre of Manchester that link with surrounding Manchester communities.

## References

Landscape Institute and Institute for Environmental Management and Assessment (2013). Guidelines for Landscape and Visual Impact Assessment, 3rd Edition. Routledge, Abingdon.

Landscape Institute (2018). Townscape Character Assessment: Technical Information Note 05/2017. [Online]. Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2018/04/tin-05-2017-townscape.pdf. (Accessed 10/02/2023).

Landscape Institute (2019). Visual Representation of Development Proposals: Technical Guidance Note 06/19. [Online]. Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/09/LI_TGN-06-19_Visual_Representation.pdf. (Accessed 10/02/2023).

Manchester City Council (2012). Manchester's Local Development Framework: Core Strategy Development Plan Document. [Online]. Available at: https://www.manchester.gov.uk/downloads/download/5672/core_strategy. (Accessed 10/02/2023).

Manchester City Council (MCC), Far East Consortium (FEC) and partners (2019). Strategic Regeneration Framework for the Manchester Northern Gateway ('the SRF'). [Online]. Available at: http://northerngatewaymanchester.co.uk/framework/. (Accessed 10/02/2023).

Manchester City Council (2023a). Ancoats Conservation Area. [Online] Available at: https://www.manchester.gov.uk/info/511/conservation_areas/1216/ancoats_conservation_area. (Accessed 08/02/2023).

Manchester City Council (2023b). Cathedral Conservation Area. [Online]. Available at: https://www.manchester.gov.uk/info/511/conservation_areas/964/cathedral_conservation_area. (Accessed 08/02/2023).

Manchester City Council (2023c). Shudehill Conservation Area. [Online]. Available at: https://www.manchester.gov.uk/info/511/conservation_areas/1110/shudehill_conservation_area. (Accessed 08/02/2023).

Manchester City Council (2023d), Smithfield Conservation Area. [Online]. Available at: https://www.manchester.gov.uk/info/511/conservation_areas/1156/smithfield_conservation_area. (Accessed 08/02/2023).

Manchester City Council (2023e). Stevenson Square Conservation Area. [Online]. Available at: https://www.manchester.gov.uk/info/511/conservation_areas/1208/stevenson_square_conservation_area. (Accessed 08/02/2023).

Manchester City Council (2023f). Upper King Street Conservation Area. [Online]. Available at: https://www.manchester.gov.uk/info/511/conservation_areas/916/upper_king_street_conservation_area. (Accessed 08/02/2023).

Manchester City Council (2023g). St Ann's Square Conservation Area. [Online]. Available at: https://www.manchester.gov.uk/info/511/conservation_areas/144/st_anns_square_conservation_area. (Accessed 08/02/2023).

Manchester City Council (2023h). Parsonage Gardens Conservation Area. [Online]. Available at: https://www.manchester.gov.uk/info/511/conservation_areas/1100/parsonage_gardens_conservation_area. (Accessed 08/02/2023).

Natural England (2014). An Approach to Landscape Character Assessment). [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/691184/landscape-character-assessment.pdf. (Accessed 10/02/2023).

Salford City Council (2023). Flat Iron Conservation Area. [Online]. Available at: https://www.salford.gov.uk/planning-building-and-regeneration/conservation-and-listed-buildings/salfords-heritage-assets/conservation-areas/flat-iron/. (Accessed 08/02/2023).

# 7. Ecology and Nature Conservation

## Introduction

7.1 This ES assesses the Development Project, which is the regeneration of the area in accordance with the SRF. Due to the HIF funding and programme requirements, it is necessary to approach the delivery of the Development Project by a number of separate planning applications. The first three of which have been permitted. These applications are identified below:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). This application was permitted by MCC in December 2021.
- HIF Infrastructure Works (referred to hereafter as 'Application 2'). This application was permitted by MCC in July 2022.
- Utility works application (referred to hereafter as 'Application 3'). This application was permitted by MCC in December 2022.
- Red Bank Neighbourhood Plots RB01-07, RB12B, RB10, RB16 and RB17 Outline Planning Application (referred to hereafter as 'Application 4').
- Plots NT02-NT04 Full Planning Application (referred to hereafter as 'Application 5')

7.2 This chapter will cover both Applications 4 and 5, hereafter referred to as 'the Proposed Development'.

7.3 The Proposed Development site is located within Cheetham Hill, Manchester. The Site is located in an urban setting and the wider landscape comprises mainly of commercial/industrial development. The Site is located between Red Bank to the north and a railway line to the south. The River Irk flows through the Site from north-east to south-west.

7.4 This chapter assesses the effects of the Proposed Development (Applications 4 and 5) on ecological considerations. In particular it considers effects that may arise due to the Proposed Development on ecological factors.

7.5 The chapter describes the methods used to assess the likely significant effects, the baseline conditions assumed at the sites and surroundings following completion of enabling works consented under Applications 1-3, the potential direct and indirect effects of the development arising in terms of ecology considerations, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It has been written by The Environment Partnership (TEP).

7.6 This chapter is supported by **Figures 7.1** and **7.2** which are located in **Volume 2a: Main Text Figures** and the following appendices which are located in **Volume 3: Appendices** of this ES:

- **Appendix 7.1**: Ecology Desk Study;
- **Appendix 7.2**: Phase 1 Habitat Survey;
- **Appendix 7.3**: Bat Surveys;
- **Appendix 7.4**: Arboricultural Impact Assessment (AIA) for Application 4; and
- **Appendix 7.5**: Arboricultural Impact Assessment (AIA) for Application 5.

# Assessment Methodology and Significance Criteria

## Planning Policy Context

7.7 This section identifies the planning policies and legislation of relevance to the ecological impact assessment of the Proposed Development.

### International Legislation and Agreements

7.8 The key international legislation and agreements of relevance to nature conservation are summarised as follows:

- The Convention on Wetlands of International Importance especially as Waterfowl Habitat ('Ramsar Convention'[1] or 'Wetlands Convention') - provides the only international mechanism for protecting sites of global importance;
- The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention[2]) - imposes legal obligations on contracting parties, protecting over 500 wild plant species and more than 1,000 wild animal species;
- The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention[3] or CMS) - provides strict protection for endangered migratory species. The UK has currently ratified four legally binding Agreements under the convention relating to bats (EUROBATS), African-Eurasian migratory birds (AEWA), small cetaceans in the Baltic, Irish and North Seas (ASCOBANS) and albatrosses and petrels (ACAP) in addition to five Memorandum of Understanding (MoU) and is non-party range state to a further Agreement and a further MoU;
- The Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO World Heritage Convention) - seeks to protect both cultural and natural heritage;

[1] Convention on Wetlands of International Importance especially as Waterfowl Habitat, Ramsar, 2.2.1971 https://www.ramsar.org/
[2] Convention on the Conservation of European Wildlife and Natural Habitats. Bern, 1979 https://www.coe.int/
[3] Convention on the Conservation of Migratory Species of Wild Animals, Bonn, June 1979 https://www.cms.int/

- The Convention on Biological Diversity (Biodiversity Convention[4] or CBD) - provides a legal framework for biodiversity conservation. Within the UK, delivery of the CBD and the Strategic Plan for Biodiversity 2011-2020[5] is guided by the UK Post-2010 Biodiversity Framework[6].

## National Legislation

7.9 The principal national statutes relating to ecology and development are summarised as follows:

- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[7] conveys protection to certain habitats and species;
- The Wildlife & Countryside Act 1981 (as amended)[8] conveys protection to certain native animals and plants and controls the release of certain non-native species;
- The Countryside & Rights of Way Act 2000[9] extends the protection of certain species in the Wildlife & Countryside Act to include reckless acts (i.e., not just intentional acts). Part III requires that government departments have regard for the conservation of biodiversity, something that is extended by the NERC Act 2006;
- The Natural Environment and Rural Communities (NERC) Act 2006[10] requires planning authorities to consider impacts on "species of principal importance for the conservation of biodiversity" when determining planning applications. Section 41 (S41) provides for the establishment of a list of habitats and species considered to be of "principal importance for the purposes of conserving biodiversity" and for which biodiversity conservation should be prioritised, irrespective of whether they are covered by other legislation;
- The Hedgerows Regulations 1997[11] provides protection to 'important' hedgerows from being uprooted or destroyed. Importance is determined based on criteria covering adjacent land use, age, historic value and ecological value;
- The Protection of Badgers Act 1992[12] provides protection of badgers from killing, injury and certain acts of cruelty and protection of setts from damage, obstruction or destruction;
- The Environment Act 2021[13] requires biodiversity net gains to be demonstrated by calculations using the most current biodiversity metric. Statutory long-term (15+ years) targets to be set (and monitored, reported

[4] Convention on Biological Diversity, Rio de Janeiro, June 1992https://www.cbd.int/
[5] In October 2010, at the 10th Conference of the Parties to the CBD in Nagoya, Japan, the Parties adopted a new 'Strategic Plan for Biodiversity 2011–2020' along with its 20 'Aichi targets'. https://www.cbd.int/sp/
[6] The framework is overseen by the Environment Departments of the four UK governments working through the Four Countries' Biodiversity Group. It demonstrates how the UK, through each of the four countries, contributes to achieving the 'Aichi targets', and identifies the activities required to complement the individual country biodiversity strategies https://jncc.gov.uk/our-work/uk-post-2010-biodiversity-framework/
[7] Conservation of Habitats and Species Regulations 2019 (SI 2019/579) https://www.legislation.gov.uk/uksi/2019/579/
[8] Wildlife and Countryside Act 1981 c. 69 https://www.legislation.gov.uk/ukpga/1981/69/
[9] Countryside and Rights of Way Act 2000 c. 37 https://www.legislation.gov.uk/ukpga/2000/37/
[10] Natural Environment and Rural Communities Act 2006 c. 16 https://www.legislation.gov.uk/ukpga/2006/16/
[11] The Hedgerow Regulations 1997 (SI 1997/1167) https://www.legislation.gov.uk/uksi/1997/1160/
[12] Protection of Badgers Act 1992 c. 51 https://www.legislation.gov.uk/ukpga/1992/51/
[13] Environment Act 2001 c.30 https://www.legislation.gov.uk/ukpga/2021/30/

and reviewed) in the four priority areas of waste reduction, air quality, water resources and biodiversity as well as additional targets relating to species abundance and fine particulates by 2030.

## National Planning Policy Framework

7.10 A revised National Planning Policy Framework (NPPF)[14] was published in July 2021. The NPPF is relevant in terms of shaping the topics for environmental assessments.

7.11 The NPPF Chapter 15: Conserving and Enhancing the Natural Environment (paragraphs 174 – 182) identifies the importance the Government places on development enhancing the natural environment by protecting and enhancing valued landscapes, geological conservation interests and soils. It recognises the wider benefits of ecosystems beyond their inherent value to wildlife. The NPPF emphasises the protection and enhancement of valued landscapes, sites of biodiversity or geological value. It also emphasises the principle that new development should minimise impacts and provide net gains for biodiversity, particularly by establishing coherent ecological networks that are more resilient to current and future pressures.

7.12 Other national policy which supports the NPPF include:

- Circular 06/2005: Biodiversity and Geological Conservation[15];
- Making Space for Nature[16];
- The Natural Environment White Paper (HM Government, 2011)[17]; and
- Biodiversity 2020: A strategy for England's wildlife and ecosystem services[18].

## Local Planning Policy

7.13 Local planning policy of relevance to nature conservation generally seeks to avoid effects on designated sites and protected habitats and species, whilst also seeking to ensure maintenance and creation of wildlife networks and no net loss of biodiversity. Within Manchester's Local Development Framework Core Strategy Development Plan (adopted 11th July 2012) there are two core local policies of relevance to the Proposed Development site:

- Policy EN9 Green Infrastructure – maintaining and enhancing existing green infrastructure in terms of its quantity, quality and multiple functions.
- Policy EN15 Biodiversity and Geological Conservation – maintaining and enhancing sites of biodiversity and geological value throughout the City. Particular consideration within the policy is given to sites with international or national designations, local designations (SBIs or LNRs), protected and priority species, site of geological importance and existing tree/woodland cover.

[14] National Planning Policy Framework (2021) Ministry of Housing, Communities and Local Government www.gov.uk/government/publications
[15] Office of the Deputy Prime Minister (Circular 06/2005): Biodiversity and Geological Conservation – Statutory Obligations and their Impacts. London: The Stationery Office.
[16] Lawton, J. (2010). Making Space for Nature: A review of England's wildlife sites and ecological network. DEFRA, London.
[17] HM Government (2011) The Natural Choice: Securing the Value of Nature. London: The Stationery Office.
[18] DEFRA (2011). Biodiversity 2020: A strategy for England's wildlife and ecosystem services. London: The Stationery Office.

### GMCA Biodiversity Net Gain (BNG) Guidance for Greater Manchester (February 2021)

7.14 This guidance has been prepared to enable developers and potential offset providers to run biodiversity assessments in a consistent way across Greater Manchester.

7.15 For Greater Manchester, the minimum level of BNG is considered to be achieved when the biodiversity units for the habitats impacted by the development is increased by 10% or more after the development. The means delivering 10% net gain for area base habitats and 10% net gain for hedges and 10% for rivers if any of these habitats are present on site. If changes decrease the gain for biodiversity below 10% additional compensation will be required.

### Other Relevant Policy, Standards and Guidance

7.16 The Greater Manchester Biodiversity Action Plan[19] (GMBAP) is currently managed by Greater Manchester Ecology Unit (GMEU). This aim of the GMBAP is to conserve, protect and enhance biological diversity in Greater Manchester. The habitat and species action plans of key relevance to this proposal are:

- Native woodlands;
- Urban managed greenspace; and
- Bats.

7.17 The Birds of Conservation Concern 5 (BoCC) report (RSPB, 2021) splits UK birds into three categories of conservation importance – Red, Amber and Green. Red is the highest conservation priority, and includes species that are globally threatened, or have experienced historical UK population decline, a rapid decline in UK breeding population, or a severe contraction of UK breeding range. Amber is the next most critical group, followed by Green, which includes birds whose populations are at least risk.

## Method of Evaluation of Ecological Features

7.18 The assessment scenarios in respect of the EIA for the Proposed Development are set out in **Volume 2: Main Text, Chapter 2: Approach.**

7.19 The assessment within this chapter has been carried out with due consideration of the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines (2018) for Ecological Impact Assessment (EcIA). The guidelines provide a robust framework for EcIA, which is informed by the interpretation of contextual information and professional judgement. A narrative description of each ecological feature and the predicted effects of the Proposed Development are provided to allow the decision-maker to reach a more fully informed decision.

[19] https://www.gmwildlife.org.uk/projects/gm_bap/

7.20 The approach to the ecological assessment within the main ES Chapter follows the 'Guidelines for Baseline Ecological Assessment' (Institute of Environmental Assessment, 1995).

7.21 However, the detailed methods for evaluation of significance of effect followed CIEEM 'Guidelines for Ecological Impact Assessment' (2016), which was revised in 2018[20]. The revised evaluation criteria are used in this Environmental Statement. Much of the original guidance is still applicable, but there are three areas of difference:

- The Guidelines for Ecological Impact Assessment in the UK and Ireland (2018) combines the Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition (2016) and the Guidelines for Ecological Impact Assessment in Britain and Ireland: Marine and Coastal (2010).
- The terminology used to evaluate the importance of each receptor has changed slightly at lower levels of importance. New guidance advises that ecological receptors considered to be widespread and resilient and not vulnerable to the project can be scoped out, whereas earlier guidance advised that a term "immediate zone of influence" could be used for receptors of less than local importance. As many of the receptors on this site are in this category, for the sake of comparison, the term 'Site' is used for receptors of less than local importance.
- New guidance includes additional defined geographical context by which an ecological feature should be considered. The additional terms for consideration include 'River Basin District' and 'Estuarine system/Coastal cell'. These geographical contexts are applicable to coastal developments, and as such are not included in this evaluation due to the inland nature of this scheme.

7.22 For the avoidance of confusion, full details of the evaluation are provided below.

## Sensitivity, Value or Importance

7.23 The CIEEM 2018 guidance confirms that detailed assessment of ecological features that are 'widespread, unthreatened and resilient to project impacts' is not necessary. It is therefore necessary to determine which ecological features are sufficiently important (and potentially affected by the Scheme). Decisions on relative importance will be outlined in the assessment and consider quality, extent, rarity (including local rarity) and threats or declines of a feature. Relevant statutory and non-statutory designations, legislation and policies will be taken account of, although not all populations of legally protected species show the same rarity, so contextual information is vital. Importance could also relate to the supportive function of the feature (i.e. providing a buffer, connections or opportunities for expansion / climate change resilience of a neighbouring feature).

7.24 The importance of a feature is identified within a defined geographical context. The geographical scales relevant to the Proposed Development and its ecological features are presented in **Table 7.1.** These criteria provide a

[20] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

starting point for the assessment but specific site conditions together with information on the local and wider context may result in different criteria being applied.

***Table 7.1*** *Geographical Context of Important Ecological Features*

| Assessment | Scenario |
|---|---|
| International and European | Designated or proposed/candidate Special Areas for Conservation (SAC), Special Protection Areas (SPA) and Ramsar Sites and their qualifying features, some of which may depend on land outside the designation boundaries. Candidate or proposed designations are treated as of equal value to fully designated sites.<br>Under the NPPF, land that is set aside as compensation for adverse effects of development on European Sites should also be regarded as of European value.<br><br>Species populations or habitat areas (such as those listed in Annex I, II or IV of the Habitats Directive or Annex I of the Birds Directive) of international importance due to relative size, rarity or quality of the feature. |
| National | Designated or proposed Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Marine Nature Reserves (MNR) and their qualifying features, some of which may depend on land outside the designation boundaries.<br>A viable area of ancient woodland.<br><br>Species populations or habitat areas (including legally protected or NERC Act S41 species or habitats) of national importance due to relative size, rarity or quality of the feature. |
| County | Designated or proposed Site of Biological Importance (SBI), Local Wildlife Sites (LWS), Sites of Nature Conservation Importance (SNCI) and their qualifying features where they occur within the designation boundaries.<br>'Important' hedgerows (as described under the Hedgerows Regulations 1997) where these occur as an extensive network.<br><br>Species populations or habitat areas (including legally protected or NERC Act S41) or Nationally Scarce species or habitats of district or county importance due to relative size, rarity or quality of the feature. Sites should comfortably exceed Site of Nature Conservation Importance (SNCI) criteria if these exist, but not meet SSSI selection criteria. |
| Local | Local Nature Reserves (LNR) unless also designated at a higher level, and other nature conservation designations (under local planning policies).<br>Green infrastructure designations where these contribute to local landscape connectivity and/or buffer other ecological features valued at least this geographic scale.<br>Species populations or habitat areas (including legally protected or NERC Act S41 species or habitats) of local importance due to relative size or quality.<br><br>Features that appreciably enrich the local ecological resource, although these may themselves be common and widespread, such as long-established hedgerows, woodlands and ponds. |
| Site | Populations of common and widespread species or habitats without protection or conservation designation. |

| Assessment | Scenario |
|---|---|
| | Isolated and small fragments of NERC Act S41 habitats or species (only where better representative examples of such habitats or species are common nearby). |

## Characterisation of Impact

7.25 Although not necessary, it is good practice to describe potential impacts without and with mitigation. The proposals may result in multiple potential impacts on an important ecological feature, the CIEEM approach requires that only those that are likely to occur and have significant impacts need be assessed, although a precautionary approach to scoping potential impacts is recommended. The following characteristics are used to describe impacts (not all may be relevant in all cases):

- Positive or negative.
- Extent.
- Magnitude.
- Duration.
- Timing.
- Frequency.
- Reversibility.
- Significance of Effect
- Likelihood of Effect

7.26 The following four-point scale has been used to express the degree of confidence in the prediction of impact significance, for residual impacts this scale will also indicate the reliability of mitigation proposals.

- Certain/near certain
- Probable
- Possible
- Extremely unlikely

## Significance Criteria

7.27 Once an impact has been described it is necessary to determine if the effect is 'significant'. In the context of CIEEM EcIA guidance a significant effect is one that either supports or undermines biodiversity conservation objectives for 'important ecological features'. This can include impacts on the structure and function of sites and habitats or the conservation status of habitats and species (i.e., whether or not the impact alters the extent,

distribution or abundance of the feature). The decision on significance is made irrespective of the geographical scale of importance of the feature; if an effect is found not to be significant at the level at which the receptor has been valued, it may be significant at a more local level. A significant negative effect is not necessarily one that would make the proposals unacceptable.

## Conversion Matrix

7.28 CIEEM guidelines for EcIA moves away from the traditional matrix assessment of significant effects. In these matrices, the significance of an adverse impact (or beneficial result) is calculated as the product of the magnitude of the impact and the value or sensitivity of the nature conservation resources affected. CIEEM guidelines propose an alternative approach which accommodates factors such as the size or conservation status of a species population, habitat quality or the natural geographical range of a species/habitat, for example.

7.29 Although the significance of impacts on ecological features has been determined in accordance with CIEEM Guidelines, in order to allow consistent comparison of the significance of ecological effects with other Chapters, it is proposed to transpose any significant residual effects, derived after following CIEEM guidelines, into the more traditional levels of significance used in EIA based on the character of the remaining effects. **Table 7.2** provides a framework for transposing the significance of residual ecological effects.

***Table 7.2*** *Conversion matrix*

| Characterisation of effects using CIEEM scale of significance | Classification of Impact: CIEEM | Classification of Impact: Traditional |
|---|---|---|
| Loss of, permanent damage to or adverse impact on any part of a site of international or national importance;<br><br>Loss of a substantial part or key feature of a site of regional importance;<br><br>Loss of favourable conservation status (FCS) of a legally protected species;<br><br>Loss of or moderate damage to a population of nationally rare or scarce species. | | Major Adverse |
| Temporary disturbance to a site of international or national importance, but no permanent damage;<br><br>Loss of or permanent damage to any part of a site of regional importance;<br><br>Loss of a key feature of local importance;<br><br>A substantial reduction in the numbers of legally protected | | Moderate Adverse |

| Characterisation of effects using CIEEM scale of significance | Classification of Impact: CIEEM | Classification of Impact: Traditional |
|---|---|---|
| species such that there is no loss of FCS but the population is significantly more vulnerable;<br><br>Reduction in the amount of habitat available for a nationally rare or scarce species, or species that are notable at a regional or regional level. | Negative Significant Effect | |
| Temporary disturbance to a site of regional value, but no permanent damage;<br><br>Loss of, or permanent damage to, a feature with some ecological value in a local context but that has no nature conservation designation;<br><br>A minor impact on legally protected species but no significant habitat loss or reduction in FCS;<br><br>A minor impact on populations of nationally rare or scarce species or species that are notable at a regional or regional level. | | Minor Adverse |
| No impacts on sites of international, national or regional importance;<br><br>Temporary disturbance or damage to a small part of a feature of local importance;<br><br>Loss of or damage to land of negligible nature conservation value;<br><br>No reduction in the population of legally protected, nationally rare, nationally scarce or notable (regional level) species on the Site or its immediate vicinity. | No Significant Effect | Negligible |
| Beneficial and adverse impacts balance such that resulting impact has no overall affect upon receptor. | | Neutral |
| A small but clear and measurable gain in general wildlife interest, e.g. small-scale new habitats of wildlife value created where none existed before or where the new habitats exceeds in area that habitats lost. | Positive Significant Effect | Minor Beneficial |
| Larger new scale habitats (e.g. net gains over 1 ha in area) created leading to significant measurable gains in relation to the objectives of biodiversity action plans. | | Moderate Beneficial |
| Major gains in new habitats (net gains of at least 10 ha) of | | Major Beneficial |

| Characterisation of effects using CIEEM scale of significance | Classification of Impact: CIEEM | Classification of Impact: Traditional |
|---|---|---|
| high significance for biodiversity being those habitats, or habitats supporting viable species populations, of national or international importance cited in Annexes I and II of the habitats Directive or Annex I of the Birds Directive. | | |

## Assumptions/Limitations

### Establishing the Baseline

7.30 The assessment is made on the best available data, based on the information that has been gathered from stakeholders, other data sources and the surveys undertaken in 2021, 2022 and 2023. Most of the Site was surveyed in 2021 prior to the enabling works, except for the plateau and Travis Island which were not surveyed until 2022 and 2023, respectively, due to access issues.

7.31 The baseline is taken to be the conditions present at the Site, prior to the Proposed Development but following the enabling works consented under Applications 1-3 and taking into consideration mitigation implemented under Applications 1-3. For completeness, the baseline sections include a description of the habitats that were present at the time of survey but with a description of how the future baseline has, or will, change prior to the Proposed Development. It is this future baseline, where relevant, that has been taken forward in the assessment.

7.32 All surveys were completed within appropriate seasons over appropriate periods in accordance with industry standards for the specific survey. Nevertheless, the surveys will only identify habitats present at the Site at the time of surveys. Additionally, where the species investigated are mobile they can move into and out of areas over time. For these reasons a precautionary approach has been taken in the prediction of impacts. Where there is any doubt, except where specifically noted, a species is assumed present and an impact is given the higher level of significance. Any limitations to the surveys undertaken are identified within the relevant sections within the Baseline Conditions.

7.33 It is assumed for the purposes of this EcIA that the current land uses adjacent to the Site will remain as they are at the time of the ES submission, except in cases where planning permission has already been granted for development. For consented developments, it is assumed that the developments will take place. These have been considered in the cumulative assessment. The potential for changes of land use on adjacent land arising from plan allocations and pending planning applications has also been considered in the cumulative assessment.

### Climate Change

7.34 European guidance requires that EcIA considers the effects of projects on climate change and on biodiversity. The European Commission (EC) guidance indicates that impacts which are only likely to be experienced in the

next 20 years should be based on current weather patterns or near-future projections if available and relevant. Beyond 20 years, identified potential impacts (associated with operation of the Proposed Development) may need to consider the projected climate. This has been taken into account in the assessment of operational effects. Effects of climate change are also assessed in **Chapter 18: Climate Change**.

## Consultation

7.35 **Table 7.3** outlines the pre-application consultation undertaken with the relevant stakeholders for the Proposed Development.

***Table 7.3:*** *Consultation*

| Consultee | Date and Time | Comments | Actions |
|---|---|---|---|
| **Greater Manchester Ecology Unit (GMEU) – Derek Richardson** | 16/08/21 Initial email sent 12:34.<br><br>GMEU response 20:56. | Bat Activity - *"We would accept that records of bat activity collected during nocturnal roost surveys of buildings could be used when assessing the Site for commuting and foraging bat activity, but we would also give bats the benefit of the doubt and recommend that landscape plans for the Site take bats fully into account (e.g. linear planting, sensitive lighting, planting of value to bats etc)"* | GMEU agreed with approach that bat activity surveys unnecessary in light of the health and safety concerns on this site. |
| | | Bat Roosting - *"Yes we would accept that works to the bridges could be undertaken under Reasonable Avoidance Measures, supervised by a licenced ecologist during any proposed works"* | GMEU agreed with approach that nocturnal roost surveys of existing bridge structures were unnecessary in light of the health and safety concerns on this site. |
| | | Other Protected Species Surveys – *"We would accept that surveys for water voles, otters, amphibians and reptiles could be scoped out. We hold no records of these species/groups being recorded on or near the Site. However, if there are plans to improve the watercourse for wildlife these plans should make provision for future colonisation by these species, in line with the aspirations of the Local Nature Recovery Strategy"* | GMEU agreed with approach that water vole, otter, amphibians and reptile surveys could be scoped out. |
| **Greater Manchester Ecology Unit- Derek Richardson** | 02/11/21 In person meeting. | In person meeting to discuss the Biodiversity Net Gain (BNG) approach for each associated planning application. It was agreed that the assessment should take into consideration all four applications (1-4) to avoid a piecemeal approach to biodiversity impact and ensure a measurable gain can be achieved. A worst-case scenario assessment would be undertaken for Application 1 as limited details for subsequent applications were available at the time of the assessment. Each subsequent application should reflect | GMEU agreed with the combined BNG approach for all four applications.<br><br>BNG metric and report form standalone document of relevance to this Chapter. |

| Consultee | Date and Time | Comments | Actions |
|---|---|---|---|
| | | any design changes in the updated BNG calculations. | |
| **Greater Manchester Ecology Unit- Derek Richardson** | 13/03/23 Email sent 08.18. 28/03/23 Teams Meeting 29/03/2023 Follow up email. 09.18 | Consultation requested by TEP to GMEU on updated BNG approach, followed by Teams meeting and confirmation email to agree approach.<br>Updated Strategy:<br>- Use of metric 3.1 to undertake updated BNG assessment of whole site and Application 5 area is isolation.<br>- Discussion over current BNG scores being achieved with the use of 1ha of off-site woodland.<br>- Discussion over use of off-site woodland in local vicinity outside of the SRF boundary to deliver >10% net gain.<br>Mechanisms & timings of enhancement:<br>- Delivery discussed to include overarching Landscape Strategy for Application 4 and detailed 30 year LEMPS for each detailed application, secured by way of condition.<br>- Condition to be imposed on Application 4 for the delivery of 1ha of off-site woodland enhancement, details to be conditioned to be implemented prior to first occupation of built residential led development under Application 4. | Strategy agreed with GMEU in Teams meeting followed up by confirmation email from TEP to GMEU.<br><br>BNG metric and report form standalone document of relevance to this Chapter. |
| **MCC Scoping Response Appendix: Natural England** | 16/02/23 | ES Scoping response from Natural England. They set out with regard to ecology:<br>-A series of general principles which should be adhered to;<br>-That the ES should fully consider implications of the whole development proposal including in combination with other projects locally<br>- A series of Biodiversity and Geodiversity General Principles<br>-That the proposal is unlikely to adversely impact any international or national nature conservation designations<br>-That the ES should consider impacts on local wildlife sites and mitigation and opportunities for enhancement as required.<br>-That the ES should assess the impact on protected / priority species and habitats, including ancient woodland, ancient or veteran trees and mitigation as required; and<br>- BNG should be undertaken using an appropriate biodiversity metric | It is considered that all of the points listed are covered within this chapter, its technical appendices and BNG assessment. |
| **MCC Scoping Response Appendix: MCC** | 01/03/23 | The use of BNG, specifically the use of Metric 3.1 rather than 3.0 is advocated for to achieve full accordance with the latest good practice guidance. Highlight the opportunity | Metric 3.1 has been used in the latest BNG assessments. Update landscaping plans are to |

| Consultee | Date and Time | Comments | Actions |
|---|---|---|---|
| **Environment Agency Commentary** | | to create localised high quality, integrated green and blue infrastructure networks | be submitted illustrating new habitat creation with new woodland corridors and river corridor creation. |
| **MCC Scoping Response Appendix: GMEU – Derek Richardson** | 21/02/23 | GMEU are broadly in agreement with the content of the Scoping Report with regards to Ecology. Additional comments:<br>-BNG should provide details on the options available for off-site BNG enhancement to achieve minimum 10% net gain<br>- Green infrastructure strategy to be prepared as part of future planning applications.<br>-Method Statement should be prepared to prevent the spread of invasive non-native plant species. | BNG metrics and accompanying report have been prepared demonstrating how in excess of 10% net gain will be achieved.<br>An Invasive Species Method Statement (ISMS) is proposed within this chapter, which would provide details on the protocols for controlling and eradicating invasive non-native species, in advance of, and during, construction works |

# Red Bank Neighbourhood Outline Application Methodology (Application 4)

## Desktop Study

7.36 A desk-based assessment was originally undertaken in March 2021 which comprised the gathering of records of protected species, habitats and protected sites from the local biological record centre; GMEU. Existing records/information was also gathered from free online resources and updated in January 2022. This included obtaining information on any international wildlife designation within 10km, national wildlife sites within 5km and any local designations within 2km of the Application 4 Site, along with records of protected or notable species within 2km. Species records can provide a useful indication of the species present within the search area, although the absence of a given species from the dataset cannot be taken to represent actual absence. An ecology technical report for the wider Northern Gateway site produced by Paul Chester & Associates (PCA) in 2019 (Report Ref: PCAJ168) was also reviewed; survey results specifically for the breeding bird and bat activity surveys was reviewed and used as part of this assessment.

## Extended Phase 1 Habitat Survey

7.37 An extended Phase 1 habitat survey of land within the Application 4 Site and the immediate surrounds was undertaken in accordance with the standard method set out in the Handbook for Phase 1 habitat survey JNCC

(2010)[21] and the CIEEM Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017)[22]. The survey included habitat assessments for protected and S41 priority species. The Phase 1 habitat survey was initially undertaken on the 22nd and 29th March 2021 and updated on 25th May 2022. A site visit on 16th February 2023 confirmed the limited habitats present on Travis Island. The survey was undertaken by TEP ecologists Stephanie Davies and Damian Young, both qualified as Level 4 under the Field Identification Skills Certificate scheme (FISC).

7.38 Where habitats are known to have been cleared, or will be cleared, prior to the proposed Application 4 Development, the anticipated future baseline is described in Baseline Conditions.

## UKHab Condition Assessment

7.39 Alongside the Phase 1 habitat Survey a UKHab Condition Assessment of the pre-development habitats was also undertaken by TEP ecologist Damian Young. The habitat condition assessment was originally undertaken using the guidance presented in Biodiversity Metric 2.0 - Technical Supplement[23]. Since the survey work was undertaken several new versions of the metric have been released. As such, a desk-based exercise using existing field notes and photographic evidence, was undertaken to update the condition assessment in line with Metric 3.1 based on the updated criteria presented in the Biodiversity Metric 3.1 - Technical Supplement[24]. Due to the relatively simple nature of the habitats within the Site, there are not considered to be any limitations with this translation to the Biodiversity Metric 3.1 condition assessment.

## Tree Survey

7.40 An arboricultural survey was initially undertaken by TEP Arborist Angus Blankenstein on 29th March 2021 in accordance with British Standard BS 5837:2012 and updated on 16th February 2023. Trees in Relation to Design, Demolition and Construction - Recommendations. A schedule of all trees and tree groups including data on species, condition, age, management recommendations and BS 5837:2012 quality categories were compiled during the survey. A summary of the quality criteria for each category is provided in **Table 7.4,** further details can be found in the Arboricultural Impact Assessment (AIA)'s provided as **Appendix 7.4.**

***Table 7.4:*** *Summary of BS5837:2021 Tree Quality Categorisation Criteria*

| Tree Category | Description |
|---|---|
| Category A | Trees of high value including those that are particularly good examples of their species and/or those that have visual importance or significant conservation or other value. |
| Category B | Trees of moderate value including those that do not qualify as Category A due to |

[21] JNCC (2010). Handbook for Phase 1 habitat survey – a technique for environmental audit. Peterborough, JNCC.
[22] CIEEM (2017) Guidelines for Preliminary Ecological Appraisal. Chartered Institute of Ecology and Environmental Management
[23] Ian Crosher, Susannah Gold , Max Heaver , Matt Heydon , Lauren Moore , Stephen Panks , Sarah Scott, Dave Stone & Nick White. 2019. The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value: technical supplement (Beta version, July 2019). Natural England
[24] Stephen Panks A, Nick White A, Amanda Newsome A, Jack Potter A, Matt Heydon A, Edward Mayhew A, Maria Alvarez A, Trudy Russell A, Clare Cashon A, Finn Goddard A, Sarah J. Scott B, Max Heaver C, Sarah H. Scott C, Jo Treweek D, Bill Butcher E and Dave Stone A 2022. Biodiversity metric 3.1: Auditing and accounting for biodiversity – Technical Supplement. Natural England.

| Tree Category | Description |
|---|---|
| | impaired condition and/or those that collectively have higher value than they would as individuals; also trees with material conservation or other value. |
| Category C | Trees of low value including those with very limited merit or impaired condition; trees offering transient or temporary landscape benefits. |
| Category U | Trees with irremediable defects and anticipated early loss due to collapse; dead trees or those in immediate decline and those with infectious pathogens that threaten other trees. |

7.41 In addition, there are three subcategories which have been applied identifying the form taken by the value of each tree:

- Mainly arboricultural values.
- Mainly landscape values.
- Mainly cultural values, including conservation.

## Bat Survey

### Ground-based Tree Assessment

7.42 A daytime ground-based assessment of trees to identify any features of potential value for roosting bats was undertaken on 22nd and 29th March 2021, by licensed bat surveyor Stephanie Davies (2020-44415-CLS-CLS). An updated arboricultural assessment was undertaken on 16th February 2023. This included a high-level assessment of tree suitability for roosting bats. This involved searching trees with close focusing binoculars to look for any evidence of use by bats, such as droppings, staining or scratch marks. Potential roost features, such as holes, cracks, crevices or loose bark were also identified and noted. Trees were categorised following the ground-based assessment according to the Bat Conservation Trust (BCT) Guidelines 2016.

### Daytime Building Inspection for Bats

7.43 A daytime external bat inspection of sixteen buildings within the Application 4 Site boundary (B1-B15 and B17), one bridge structure (Packaging Products Bridge) and Lowry Footbridge, was also undertaken by licensed bat surveyor Stephanie Davies on 22nd and 29th March 2021. The daytime assessment was carried out in accordance with the BCT Guidelines 2016. However, a precautionary approach to assessment was taken, as the buildings were not accessed internally due to health and safety concerns surrounding COVID-19 and the bridge structures could only be viewed from the roadside due to access restrictions.

### Nocturnal Roost Surveys of Buildings for Bats

7.44 Buildings B12 (low suitability), B17 (low suitability) and B14 (high suitability) were identified during the daytime inspection to have suitability for roosting bats. These buildings were therefore subject to further nocturnal surveys on 5th July, 2nd August and 19th August 2021 in accordance with their evaluation (low and high suitability

receiving one and three nocturnal surveys, respectively). The nocturnal roost surveys were carried out in accordance with the BCT Guidelines 2016 and were led by licensed bat surveyor Stephanie Davies.

### Badger Survey

7.45 A badger *Meles meles* survey of the Application 4 Site was undertaken on the 22nd and 29th March 2021 by TEP ecologist Damian Young and updated on 25th May 2022 by Stephanie Davies. The Site was surveyed for evidence of badger setts or other badger activity such as paths, latrines or signs of foraging. Methodologies used and any setts recorded were classified according to published criteria (Harris, Cresswell & Jefferies, 1988)[25]. Where possible and accessible to do so, a 30m buffer zone around the Application 4 Site boundary was also surveyed.

### Fish

#### Fish Habitat Survey

7.46 A fish habitat survey was undertaken by Arup in May 2021. The habitat assessment method comprised the mapping of fish habitats in the River Irk between Scotland Weir and Collyhurst Weir. The fish habitat assessment captured the River Irk within the Application 4 Site boundary extending upstream to Collyhurst Weir, an area of high functional connectivity for fish present. Further to in-stream habitat, additional features of the watercourse were recorded and mapped to provide a broader understanding of the watercourse and any pressures which may alter the suitability of the river for aquatic communities (fish, macrophytes, diatoms and macroinvertebrates).

#### Detailed Fish Survey

7.47 A detailed fish survey was undertaken by RSK in September 2021 to establish baseline fish population along the River Irk. Surveys were undertaken at two locations (Smedley Dip Estate and St. Catherine's Wood). At each site a fully quantitative, catch depletion, electric-fishing survey was performed using Electrafish bankside equipment. The survey reaches sampled at least 100m$^2$ of river habitat, ensuring that all aquatic mesohabitats were represented within the reach. Prior to surveys commencing at each site, fish populations were isolated using stop nets at the downstream and upstream survey extents. A minimum of three survey runs were then undertaken between the netted reach.

## NT02 – 04 Full Application Methodology (Application 5)

### Desktop Study

7.48 The assessment methodology for the desktop study is the same as that reported above under the Application 4 methodology but instead using the Application 5 Site boundary.

[25] Harris S., Creswell P., & Jefferies, D J. (1988). Surveying Badgers. The Mammal Society.

## Extended Phase 1 Habitat Survey

7.49 An extended Phase 1 habitat survey of land within the Application 5 Site and the immediate surrounds was undertaken in accordance with the methodology reported for Application 4 above but with an additional visit on 7th September 2022 to include NT03 Plot which was previously inaccessible.

## UKHab Condition Assessment

7.50 The UKHab condition assessment methodology is the same as reported for Application 4 above.

## Tree Survey

7.51 The arboricultural survey methodology is the same as reported for Application 4 above. Further details can be found in the Application 5 AIA provided as **Appendix 7.5.**

## Bat Survey

### Ground-based Tree Assessment

7.52 The ground-based tree assessment methodology is the same as reported above for Application 4.

### Daytime Building Inspection for Bats

7.53 A daytime external bat inspection of nine buildings within the Application 5 Site boundary (B11-B19) was undertaken by licensed bat surveyor Stephanie Davies on 22nd and 29th March 2021. The daytime assessment was carried out in accordance with the BCT Guidelines 2016. However, a precautionary approach to assessment was taken, as the buildings were not accessed internally due to health and safety concerns surrounding COVID-19.

### Nocturnal Roost Surveys of Buildings for Bats

7.54 The methodology for nocturnal surveys of Buildings B12 (low suitability), B17 (low suitability) and B14 (high suitability) is the same as reported for Application 4 above.

## Badger Survey

7.55 A badger survey of the Application 5 Site was undertaken in accordance with the methodology reported above for Application 4.

## Fish

### Fish Habitat Survey

7.56 The methodology for fish habitat survey is the same as reported for Application 4 above.

### Detailed Fish Survey

7.57 The methodology for the detailed fish survey is the same as reported for Application 4 above.

# Red Bank (Outline Application 4)

## Baseline Conditions (Application 4)

7.58 This section identifies the baseline environment (i.e. ecological conditions) of each ecological feature, based on the most recent survey data augmented by desk study information and taking into account enabling works that will have taken place under consented Applications 1-3 prior to the Proposed Development taking place. This assumed future baseline is taken forward as the baseline throughout the remainder of the ES chapter.

### Designated Sites

7.59 Full details of the desk-based assessment and specifically the international, national and local designations are presented in **Appendix 7.1**.

#### Internationally Designated Sites

7.60 A data search for internationally designated sites was undertaken within 10km of the Application 4 Site. One SAC was found within the search radius; Rochdale Canal SAC. The Rochdale Canal SAC, designated for its significant population of Annex II species: floating water-plantain *Luronium natans*, is located 4.3km north-east of the Application 4 Site. Due to the distance and significant inner-city barriers between the Application 4 Site and the SAC, it is not considered that there are any potential direct or indirect pathways of likely significant effect. Rochdale Canal SAC has therefore been scoped out of further assessment.

#### Nationally Designated Sites

7.61 A data search for nationally designated sites was undertaken within 5km of the Application 4 Site. One SSSI was found within the search radius; Rochdale Canal SSSI. The Rochdale Canal SSSI, designated for its diverse assemblage of aquatic flora indicating high water quality, is located 4.3km north-east of the Application 4 Site. Due to the distance and significant inner-city barriers between the Application 4 Site and the SSSI, it is not considered that there are any potential direct or indirect pathways of likely significant effect.

7.62 Although the Site falls within the SSSI Impact Risk Zone (IRZ) for Rochdale Canal SSSI, the parameters of the Proposed Development do not meet the risk IRZ threshold. Rochdale Canal SSSI has therefore been scoped out of further assessment.

#### Locally Designated Sites

7.63 A data search for statutory locally designated sites was undertaken within 2km of the Application 4 Site. No locally statutory designated sites were identified within the search radius.

7.64 There are four locally non-statutory SBIs within the 2km search radius, as detailed within **Table 7.5**.

***Table 7.5**: Locally designated sites within 2km of Application 4*

| Name of Designation | Distance from Site | Designation Reason |
|---|---|---|
| Rochdale Canal: Scott's Lane to Ducie Street Basin SBI | 0.9km south | The SBI is a canal and therefore classifies as Greater Manchester LBAP habitat. The canal is known to support floating water-plantain. |
| Ashton Canal (West) SBI | 1.2km south | The SBI is a canal and therefore classifies as Greater Manchester LBAP habitat. |
| Reservoirs at Harpurhey SBI | 1.8km north-east | The SBI supports reedbed, swamp, fen and pond habitat (LBAP habitat). |
| River Irwell SBI | 1.8km south-west | The SBI is a canal and therefore classifies as Greater Manchester LBAP habitat. Also notable presence of otter. |

7.65 All four SBIs are separated from the Application 4 Site by significant inner city residential, commercial, and industrial development and infrastructure. There are also no hydrological links between any of the listed SBIs and the Application 4 Site. Due to the distance and significant barriers between the Application 4 Site and the SBIs, it is not considered that there are any potential direct or indirect pathways of likely significant effect. All four SBIs have therefore been scoped out of further assessment.

## Habitats and Flora

7.66 The full extended Phase 1 habitat survey is presented in **Appendix 7.2** and detailed on the Phase 1 habitat survey plan (**Figure 7.1**). The habitats within and adjacent to the Application 4 Site are summarised below.

### Semi-Natural Woodland

7.67 At the time of the 2021 survey, the Red Bank Terrace was dominated by semi-natural broadleaved woodland. The woodland was predominantly self-seeded silver birch *Betula pendula* regeneration. The age and height structure of the woodland was homogenous and, based on the diameter of the tree trunks, most of the tree stock was *c*.20 years old. Goat willow *Salix caprea* and butterfly-bush *Buddleja davidii* were occasionally noted through the woodland. This young woodland had limited understorey, with areas of bare ground or large stands of Himalayan balsam *Impatiens glandulifera* present. Although classified as semi-natural woodland in terms of habitat code, it did not meet the necessary criteria to be classified as a S41 NERC habitat of principal importance. However, the woodland did meet the 'Lowland Broadleaved Woodland Greater Manchester BAP' with the semi-natural secondary woods criteria, where woodland has grown up after the land has been used for industry.

7.68 The complete findings of the arboricultural surveys, assessment and recommendations are presented in the AIA report (**Appendix 7.4**). All trees within the areas of semi-natural woodland were assessed as either Category B or Category C in accordance with BS5837:2012. None of the trees within the Application 4 Site were considered to be veteran.

7.69 It should be noted that since the Phase 1 habitat surveys were undertaken, there has been significant vegetation clearance within the Application 4 Site associated with Applications 1 (132252/VO/2021) and 2 (133143/VO/2022), which have both already obtained planning consent. For this assessment the baseline reflects the condition of the Site immediately prior to the proposed Application 4 development commencing. As such, it is taken to be mostly bare earth with *c.*0.16ha of retained semi-natural broadleaved woodland.

7.70 The removal of this woodland was assessed under consented Application 2 and is not duplicated in this assessment. However, there may still be impacts on retained woodland. Semi-natural woodland has been taken forward in this assessment as an important ecological feature at the Regional level.

### Plantation Broad-leaved Woodland

7.71 St Catherine's Wood is more mature woodland with a more diverse species assemblage, age and height structure than the self-set silver birch woodland present on the Red Bank Terrace. The woodland has evidence of planting including non-native species, planting in rows and remnants of tree guards. The understorey is limited and contains both Himalayan balsam and Japanese knotweed *Reynoutria japonica*. Tree species include sycamore *Acer pseudoplatanus*, wild cherry *Prunus avium*, ash *Fraxinus excelsior* and Norway spruce *Picea abies*. Extensive fly tipping and vandalism is present throughout the woodland. The woodland does not meet the necessary criteria to be classified as a S41 NERC habitat of principal importance. However, the woodland does meet the 'Lowland Broadleaved Woodland Greater Manchester BAP' with the plantation woodland criteria. Most of St. Catherine's Wood lies outside of, but adjacent to, the Application 4 Site.

7.72 The complete findings of the arboricultural surveys, assessment and recommendations are presented in the AIA report (**Appendix 7.4**). All the tree groups within the areas of plantation woodland have been assessed as either Category B or Category C in accordance with BS5837:2012. None of the trees within the Application 4 Site are considered to be veteran.

7.73 The future baseline of this woodland is not expected to change as it is largely outside of the development boundary and although enhancement measures were consented under Application 2 it is likely these will only be implemented once all development works are complete (i.e. after completion of Applications 4 and 5). Plantation woodland has therefore been taken forward in this assessment as an important ecological feature at the Regional level.

### Dense Scrub

7.74 A small area of bramble *Rubus fruticosus agg.* dominated scrub is present on the northern bank of the River Irk up towards the Red Bank Plateau. Another area of bramble dominated scrub is present in the south of the Application 4 Site, adjacent to the Network Rail railway line. Himalayan balsam is present throughout the scrub in the south.

7.75 The future baseline of this habitat is not expected to change as habitat clearance is proposed in Application 5 and will not have been undertaken during the enabling works of Applications 1-3. Dense scrub is taken forward in this assessment as an important ecological feature at the Local level due to the presence of Himalayan balsam, an Invasive Alien Species.

### Scattered Scrub

7.76 There are small stands of scrub scattered across the Application 4 Site, which is predominantly butterfly-bush which is associated with areas of hardstanding. Scattered scrub is scoped out of further assessment due to the low quality value for biodiversity, in line with CIEEM guidance.

### Scattered Trees

7.77 Small, scattered broadleaved trees, separate from areas of woodland, are present along the Red Bank Viaduct and adjacent to the Network Rail railway line. Species include balsam poplar *Populus balsamifera*, silver birch and goat willow. A single scattered coniferous tree Leyland cypress *Cupressus* × *leylandii* is present in the south of the Application 4 Site. All the scattered trees have been assessed as either Category B or Category C in accordance with BS5837:2012.

7.78 Some scattered trees will have been removed under consented Applications 1-3 prior to Application 4 commencement but some will be retained in the future baseline. Scattered trees have therefore been taken forward in this assessment as an important ecological feature at the Local level.

### Running Water (River Irk)

7.79 The River Irk runs throughout the Application 4 Site, flowing east to west. The southern bank is reinforced with vertical brick walls and other stonework. The northern bank is reinforced for the majority but does have some sections which are soft and sandy. Adjacent to the Application 4 Site, in the north, is a raised weir, which undoubtedly limits the passage of fauna. The watercourse is subject to fly tipping with little to no submergent aquatic vegetation. Scattered scrub, namely butterfly-bush, is present throughout the entirety of the riverbanks.

7.80 The River Irk, while an undoubtedly important landscape feature, does not meet the necessary criteria to qualify as a S41 habitat of principal importance. The section of the River Irk which falls within the Application 4 Site boundary is more than 2.5km from its source and has been significantly modified virtually throughout, with aquatic and marginal species typically rare and predominantly associated with localised areas where silt or mud

has accumulated alongside the river. The water quality appears to be generally poor with nothing to suggest a significant species diversity. Although the inherent value of the River Irk is considered to be poor, based on its bankside habitat and water quality, its importance in the form of a river corridor is still of significant value to a range of species.

7.81 The future baseline of the river is not expected to change considerably despite utility network expansions being undertaken cross the river under consented Application 2 due to the implementation of mitigation. Although some enhancement measures to the river were consented under the same application it is assumed these will not be implemented until all development works are complete (i.e. after completion of Applications 4 and 5). The River Irk Corridor has therefore been taken forward in this assessment as an important ecological feature at the Local level.

### Other Habitats

7.82 The remainder of the Application 4 Site is either hardstanding, hardstanding/bare ground with ephemeral vegetation growth on previously developed land, introduced shrub or buildings. Stands of butterfly-bush are scattered throughout the areas of hardstanding. The future baseline is expected to contain additional areas of bare earth and some early ephemeral colonisation following vegetation clearance undertaken during enabling works of Applications 1-3. Detailed building descriptions and photographs are provided within **Appendix 7.3**. Hardstanding, hardstanding/bare ground with ephemeral vegetation, introduced shrub and buildings are all scoped out of further assessment due to the low-quality value for biodiversity of both potential features, in line with CIEEM guidance.

### Invasive Plant Species

7.83 Himalayan balsam is an invasive plant species that is listed under the Invasive Alien Species (Enforcement and Permitting) Order 2019. Himalayan balsam dominates the understorey of the semi-natural woodland and was also found along the banks of the River Irk and in dense bramble scrub in the south of the Application 4 Site.

7.84 Cotoneaster *Cotoneaster* sp. species listed under Schedule 9 of the Wildlife and Countryside Act 1981 was recorded in the south of the Application 4 Site in a small area of introduced shrub.

7.85 Although not within the Application 4 Site boundary, the Invasive Alien Species giant hogweed *Heracleum mantegazzianum* and Schedule 9 species Japanese knotweed are present in various areas along the banks of the River Irk Corridor.

7.86 The future baseline is considered to remain unchanged from the initial baseline. As invasive plant species, Himalayan balsam, Japanese knotweed, giant hogweed and cotoneaster species are not classified as important ecological features, but mitigation measures in relation to these species will be detailed later in this assessment.

7.87 The ES chapters for the already consented Applications 1-3 included implementation of an invasive species method statement (ISMS) as additional mitigation. However, it is unknown whether this has or will involve the eradication of all invasive species across Application 4, if it will only include spot treatment in the works areas under these applications or if only measures to prevent the spread will be employed rather than eradication. As such, a worst-case scenario future baseline has been taken forward in this assessment assuming that some invasive species will remain on site by the commencement of Application 4.

### Protected Plant Species

7.88 No protected plant species (Schedule 8 of the Wildlife and Countryside Act 1981 as amended) were identified within the Application 4 Site or immediately adjacent.

## Fauna

### Bats

7.89 Full details of the bat assessment can be found within **Appendix 7.3**.

7.90 Some trees will be present in the future baseline but the ground-based tree assessment found that none of the trees within the Application 4 Site have suitability for roosting bats.All trees were assessed as having negligible potential for roosting bats as they were found to be lacking in suitable features, such as cracks, crevices or dense ivy growth, necessary to support roosting bats. Trees did not appear to have changed considerably during the high-level arboricultural assessment undertaken in February 2023 but this was not a detailed ecological assessment.

7.91 Within the Application 4 site there were sixteen buildings. B1-B6 comprised an area previously known as Creamline Dairies but have been demolished under Application 1 and therefore do not form part of the future baseline. The effects of demolition of B1-B6 can be found in the ES for Application 1 (planning ref. 132252/VO/2021). B7- B15 and B17 comprise various warehouses and outbuildings located off Roger Street, Faber Street and Dantzic Street and will form part of the future baseline for Application 4. The location of these buildings in context of the wider site is shown on **Figure 7.1**. Buildings B1-B11, B13, B15, B17 were assessed as offering negligible potential with no suitable features for roosting bats observed. Buildings B12 and B17 were assessed as having low suitability for roosting bats and B14 was assessed as having high suitability for roosting bats.

7.92 Nocturnal roost surveys of buildings B12 and B17 identified no roosting bats. However, nocturnal roost surveys of B14 identified two common pipistrelle *Pipistrellus pipistrellus* day roosts. Common pipistrelle is not included as a UK Priority Species and has a common status. National Bat Monitoring Programme (NBMP) Data (BCT, 2021)[26] shows a statistically significant upward trend in the field survey data (1999 to 2021; +76.8%). The species is present in the local area. Given the presence of small numbers of common roosting species and the low

[26] BCT (2021) The National Bat Monitoring Programme: Annual Report 2021. BCT, London.

conservation status of these roosts, roosting bats have been taken forward in this assessment as an important ecological feature at the Local level.

7.93 One bridge crossing the River Irk is present within the Application 4 Site boundary; Packaging Products (P&P) bridge. This structure was only viewed at a distance, as there was no safe access into the River and limited views from the road side. This structure was assessed as having low potential for roosting bats due to the fluctuating water levels of the River Irk making any potential roost features liable to flooding and less suitable for roosting bats in the long-term.

7.94 The Lowry Footbridge, in the north-east of the Application 4 Site, was assessed as having negligible potential for roosting bats, due to the lack of suitable potential roost features in the structure.

7.95 Although no specific bat activity surveys were undertaken across the Application 4 Site in 2021, a review of the habitat quality and connective importance was made. A review of historic bat activity survey results for the wider Northern Gateway area, which were undertaken by PCA in 2018 and 2019, was also made. The Red Bank area, which includes the Application 4 Site, was subject to extensive bat surveys on a monthly basis over a six-month period. Surveys confirmed several bat species to be present in the area including common pipistrelle (equated to >95% of records), soprano pipistrelle *Pipistrellus pygmaeus* (common), noctule *Nyctalus noctula* (rare) and leisler's bat *Nyctalus leisleri* (rarer).

7.96 Nocturnal roost surveys of buildings along Dantzic Street (including outside the Application 4 Site boundary) were undertaken by TEP in 2021. These surveys identified the presence of foraging and/or commuting common pipistrelle and noctule bats. General foraging and commuting activity was noted along the River Irk Corridor and within St. Catherine's Wood. These results are akin to the findings of PCA. For the purpose of this assessment bat foraging and commuting have been combined and taken forward in this assessment as an important ecological feature at the Local level.

### Badger

7.97 No evidence of badger using the Application 4 Site was identified during the survey. No badger setts of any classification were found within the woodland or surrounding habitat. Nor were any field signs of badger foraging/commuting activities, such as tracks, snuffle holes, latrines or feeding remains found across the Application 4 Site. Given that Travis Island appears to be dominated by hardstanding, no suitable habitats for sett creation of foraging or commuting badgers are expected to be present in this area. The enabling works under Applications 1-3 will involve the removal of most on-site woodland, leaving the Application 4 site largely unsuitable for badgers. Therefore, badgers have been scoped out of further assessment.

### Breeding Birds

7.98 Although no breeding bird surveys were undertaken by TEP in 2021 or 2022 due to overriding health and safety reasons, the Application 4 site was part of a wider breeding bird survey of the Northern Gateway area,

undertaken by PCA in 2018. The PCA report identified a range of bird species including blackbird *Turdus merula*, blackcap *Sylvia atricapilla*, blue tit *Cyanistes caeruleus*, bullfinch *Pyrrhula pyrrhula*, carrion crow *Corvus corone*, chaffinch *Fringilla coelebs*, coal tit *Periparus ater*, dunnock *Prunella modularis*, goldfinch *Carduelis carduelis*, long-tailed tit *Aegithalos caudatus*, robin *Erithacus rubecula*, song thrush *Turdus philomelos*, treecreeper *Certhia familiaris*, woodpigeon *Columba palumbus* and wren *Troglodytes troglodytes* using the Red Bank area, which includes the Application 4 site. Of these species bullfinch and song thrush both classify as S41 priority species. The woodland habitat within the Site has an open structure which limits the nesting opportunities for birds and the majority will have been removed under the consented Applications 1-3. High levels of disturbance from the surrounding area are likely to have a negative effect on successful breeding within the Application 4 Site. The buildings also offer some nesting potential for breeding birds.

7.99 All the bird species recorded are typical of the habitats present and are mostly common or widespread in the vicinity of the Application 4 Site. Following a review of the Manchester LWS criteria, the Application 4 Site would not qualify as a LWS under any of the qualifying criteria relating to breeding birds and therefore is not considered important at a regional level. Breeding birds are taken forward in this assessment as an important ecological feature at the Local level.

### Water Vole and Otter

7.100 The River Irk is located within the Application 4 Site. No records of either otter *Lutra lutra* or water vole *Arvicola amphibius* have been noted in the Irk catchment for many years. The River Irk is considered sub-optimal for both otter and water vole due to the highly engineered banks, limited sources of food for both species, and high disturbance levels. No detailed riparian mammal surveys were therefore undertaken. Water vole and otter have both been scoped out of further assessment.

### Herptiles

7.101 No potential amphibian breeding habitat was identified within 500m of the Application 4 Site boundary and therefore no detailed amphibian surveys were undertaken. Amphibians have been scoped out of further assessment.

7.102 No records of reptiles were obtained from the desk-based searches and reptiles are not known to be present in the local area. Detailed reptile surveys were deemed unnecessary for the Application 4 Site, which was agreed in advance with GMEU. Reptiles have been scoped out of further assessment.

### Invertebrates

7.103 Whilst no detailed invertebrate surveys were undertaken, the homogenous nature of the terrestrial habitat present, along with a general lack of high floristic diversity, is indicative of habitat which is unlikely to be of particular value to this species group. The River Irk, which likely supports a number of aquatic invertebrates, has very poor water quality and is heavily polluted, suggesting it is unlikely to support significant assemblages of

invertebrates. The Environment Agency (EA) conducts regulatory monitoring of invertebrates, macrophytes and fish Biological Quality Elements (BQE) for compliance and monitoring purposes. A review of Water Framework Directive (WFD) status in River Irk Upper (GB112069061161) and River Irk Lower (GB112069061131)[27] showed the invertebrates BQE was classified as poor status suggesting a significantly impaired invertebrate population with low diversity and abundance of species. Terrestrial and aquatic invertebrates have therefore been scoped out of further assessment.

## Fish

### Fish Habitat Survey

7.104 The River Irk within the survey area can be classified as a grayling zone river, which exhibits the flow characteristics which may support rheophilic species such as brown trout *Salmo trutta* or chubb *Squalius cephalus*. Brown trout are known to be present in the upper catchment of the River Irk. The fish habitat assessment identified suitable habitat for parr and adult life stages of trout based on flow and substrate criteria. However, water quality and numerous barriers to fish movement including the Scotland and Collyhurst weir are expected to impair the health of any fish population present. It is highly unlikely that migratory fish including anadromous salmonids utilise the River Irk, due to known water quality pressures and barriers within the river, as well as similar pressures on the downstream River Irwell.

### Detailed Fish Survey

7.105 The range of aquatic habitats present within the survey area should ordinarily be capable of supporting a variety of fish species as described above. Despite this, only two species of fish (3-spined stickleback *Gasterosteus aculaeatus* and minnow *Phoxinus phoxinus*) were captured during the September 2021 surveys. It is suspected that the fish species assemblage observed is likely to reflect poor abiotic and biotic conditions resulting in the apparent absence of other less tolerant species, such as brown trout and bullhead *Cottus gobio*, which would ordinally be expected to occupy the habitats present within the survey extents. The survey results indicate that within the study area the River Irk supports a fish community with a low species diversity.

7.106 A fish rescue/relocation will have taken place under consented Application 2 prior to temporary dewatering of a section of the river. However, as this dewatering is only a temporary measure it is likely that fish will have recolonised this section of the river by the commencement of Application 4 works and the baseline is considered to remain unchanged. Fish are taken forward in this assessment as an important ecological feature at the Local level.

## Identification of Ecological Features

7.107 This section summarises the potential ecological features that could be impacted by the Application 4 Development and outlines the ecological value assigned to each feature.

[27] The Site is contained within the River Irk Lower waterbody.

7.108 Features which are not present, are extremely unlikely to be present, or are afforded an ecological value of less than Local have not been taken forward for assessment. However, some of these features which have been scoped out of the impact assessment will still require mitigation as part of the Application 4 Development on the basis of their legal requirements, their implications on nature conservation policies and plans, or for animal welfare reasons.

7.109 **Table 7.6** provides a summary of the preceding paragraphs.

***Table 7.6:*** *Valuation of ecological features*

| Feature | Ecological Value | Scoped in/out of assessment |
|---|---|---|
| **Nature Conservation Designations** | | |
| Rochdale Canal SAC | International | Scoped Out |
| Rochdale Canal SSSI | National | Scoped Out |
| Reservoirs at Harpurhey SBI | Regional | Scoped Out |
| Rochdale Canal: Scott's Lane to Ducie Street Basin SBI | Regional | Scoped Out |
| Ashton Canal (West) SBI | Regional | Scoped Out |
| River Irwell SBI | Regional | Scoped Out |
| **Habitats and Flora** | | |
| Semi-natural Woodland | Regional | **Scoped In** |
| Plantation Woodland | Regional | **Scoped In** |
| Dense scrub | Local | **Scoped In** |
| Scattered scrub | Local | Scoped Out |
| Scattered trees | Local | **Scoped In** |
| River Irk Corridor | Local | **Scoped In** |
| Other Habitats: Hardstanding, | Less than Local | Scoped Out |

| Feature | Ecological Value | Scoped in/out of assessment |
|---|---|---|
| Hardstanding/Bare Ground and Ephemeral, Introduced Shrub and Buildings | | |
| Invasive Species: Himalayan balsam, Japanese knotweed, giant hogweed and cotoneaster species | N/A | *Requirements relating to control of invasive species considered under semi-natural woodland, dense scrub and River Irk Corridor* |
| **Fauna** | | |
| Bats: Roosting | Local | **Scoped In** |
| Bats: Foraging and Commuting | Local | **Scoped In** |
| Badger | N/A | Scoped Out |
| Breeding Birds | Local | **Scoped In** |
| Water vole | N/A | Scoped Out |
| Otter | N/A | Scoped Out |
| Amphibians | N/A | Scoped Out |
| Reptiles | N/A | Scoped Out |
| Invertebrates (terrestrial and aquatic) | N/A | Scoped Out |
| Fish assemblage | Local | **Scoped In** |

## Embedded Mitigation (Application 4)

7.110 There is no embedded mitigation specific to Application 4. This is because it is only at outline stage and the majority of design choices and embedded mitigation were included in Application 2 which included the majority of pre-construction impacts including site clearance works. This mitigation has been assessed as part of the baseline, where relevant.

7.111 A high-level lighting strategy has been included within the design and access statement (DAS) for the outline planning application. Although it contains proposed locations for wildlife-friendly lighting and dark zones, it does not contain sufficient detail to ensure no significant effects to nocturnal animals (primarily commuting and

foraging bats) and it does not contain any detail on construction lighting. A more detailed lighting strategy has been included as additional mitigation rather than embedded as it is likely this will be produced and submitted at detailed stage.

## Assessment of Likely Significant Effects (Application 4)

### Demolition and Construction

#### Semi-natural Broadleaved Woodland

7.112 There will be no additional loss of semi-natural broadleaved woodland beyond that lost under and already assessed for Applications 1 and 2. Effects on semi-natural broadleaved woodland associated with habitat loss, is considered to have a negligible effect due to these works and considered **not significant**.

7.113 Direct impacts on adjacent retained woodland areas during construction are possible, with the accidental encroachment into tree protection areas causing further damage to the woodland. In the absence of mitigation direct impacts on retained woodland are considered a **negative significant effect** at the Regional level.

7.114 Indirect impacts on the retained adjacent woodland during construction are also possible, with effects due to accidental pollution events and the introduction of construction dust. In the absence of mitigation indirect impacts on the retained woodland are considered a **negative significant effect** at the Regional level.

7.115 The Invasive Alien Species Himalayan balsam is present in various areas throughout the woodland. Although Application 4 involves no further removal of this habitat, other works may occur in, and around, the woodland which have the potential to cause the spread of Himalayan balsam within the Application 4 Site. Construction activities also introduce the risk of spread of Himalayan balsam off-site and into woodland in the wider area, through wind and movement of construction vehicles. Spread of invasive species is contrary to national legislation and therefore in the absence of mitigation is a **negative significant effect** at the Local level.

#### Plantation Woodland

7.116 Direct impacts on adjacent woodland during construction are possible, with the accidental encroachment into tree protection areas causing further damage to the woodland. In the absence of mitigation direct impacts on retained woodland are considered a **negative significant effect** at the Regional level.

7.117 Indirect impacts on the retained adjacent woodland during construction are also possible, with effects due to accidental pollution events and the introduction of construction dust. In the absence of mitigation indirect impacts on the retained woodland are considered a **negative significant effect** at the Regional level.

7.118 The invasive species Himalayan balsam and Japanese knotweed are present in the woodland. Although Application 4 involves no further removal of this habitat, other works may occur in, and around, the woodland which have the potential to cause the spread of these species within the Application 4 Site. Construction activities

also introduce the risk of spreading them off site and into woodland in the wider area, through wind and movement of construction vehicles. Spread of invasive species is contrary to national legislation and therefore in the absence of mitigation is a **negative significant effect** at the Local level.

7.119 St Catherine's Wood is largely outside of the Application 4 boundary and will be retained within the Application 4 Development with no further habitat loss beyond that already assessed for Applications 1 and 2. The enhancement of this woodland has been consented under Application 2 and assessed in the relevant ES. Effects on plantation woodland associated with habitat loss is considered to have a negligible effect due to these works and considered **not significant**.

### Dense Scrub

7.120 The Invasive Alien Species Himalayan balsam is present in dense bramble scrub in the south of the Application 4 Site. Although no vegetation clearance is proposed in the Application 4 Development, works still have the potential to cause the spread of Himalayan balsam, within and off site, through wind and movement of construction vehicles. Spread of invasive species is contrary to national legislation and therefore in the absence of mitigation is a **negative significant effect** at the Local level**.**

### Scattered Trees

7.121 There will be no additional loss of scattered trees beyond that already assessed for Applications 1 and 2. Effects on scattered trees associated with habitat loss, is considered to have a negligible effect due to these works and considered **not significant**.

7.122 Direct impacts on retained trees during construction are possible, with the accidental encroachment into tree protection areas. In the absence of mitigation direct impacts on retained trees are considered a **negative significant** effect at the Local level.

7.123 Indirect impacts on the retained trees during construction are also possible, with effects due to accidental pollution events and the introduction of construction dust. In the absence of mitigation indirect impacts on retained trees are considered a **negative significant effect** at the Local level.

### River Irk Corridor

7.124 Retaining wall demolition is proposed along *c*.400m of the southern bank of the River Irk. This is in addition to the three locations assessed in Application 2: Union Plaza and two locations near St. Catherine's Wood. Wall demolition and reprofiling would result in a temporary direct loss of bankside habitat in the short-term, albeit the majority of this is already hard engineering. Direct loss of bankside habitat is considered a **negative significant effect** at the Local level.

7.125 Indirect impacts on the River Irk Corridor during construction are also possible due to accidental pollution events and the introduction of construction dust. In the absence of mitigation indirect impacts on the River Irk Corridor is considered a **negative significant effect** at the Local level.

7.126 The Invasive Alien Species Himalayan balsam and giant hogweed and Schedule 9 species Japanese knotweed are present in various areas along the banks of the River Irk Corridor. Demolition and reprofiling works have the potential to cause the spread of these species on-site. Construction activities also introduce the risk of spreading these species off-site and into the wider area, through wind, movement of seeds downstream and movement of construction vehicles. Spread of invasive species is contrary to national legislation and therefore in the absence of mitigation is a **negative significant effect at the Local level**.

### Roosting Bats

7.127 There are no trees with bat roost suitability within the Application 4 site boundary, however five off-site trees within St. Catherine's Wood were assessed as having bat roost suitability and will be retained within the development proposals. Direct impacts on retained woodland areas, including trees with roost suitability, during construction are possible, with the accidental encroachment into tree protection areas causing damage/destruction to potential bat roosts in the woodland. In the absence of mitigation direct impacts on potential roosting bats is considered a **negative significant effect** at the Local level.

7.128 Buildings B12 and B17 were assessed as having low suitability for roosting bats and B14 was assessed as having high suitability for roosting bats. Building B12 and B17 will be demolished under the full application (Application 5) and effects on roosting bats in these buildings are assessed in the relevant section of this chapter. Building B14 will be demolished under the outline application (Application 4). Nocturnal roost surveys identified two common pipistrelle day roosts in building B14. Demolition of building B14 will result in the loss of two roosts of low conservation concern of a common bat species. It is on this basis that in the absence of mitigation the impact on roosting bats and buildings is a **negative significant effect** at a Local level.

7.129 No direct impacts on P&P bridge are proposed within the design. Direct impacts on roosting bats associated with bridge structures is considered to have a negligible effect due to these works and considered **not significant.**

7.130 Indirect disturbance impacts on potential roosting bats in bridge structures during construction is possible, through noise and vibration from construction traffic. In the absence of mitigation, impacts on roosting bats and bridge structures is considered a **negative significant effect** at the Local level.

7.131 Any proposed construction lighting could have detrimental impacts on roosting bats in the absence of mitigation both within and adjacent to the Application 4 Site. Artificial construction lighting has the potential to light up bridge structures or trees and therefore potential bat roosting features themselves. The potential impact of lighting on bat roosting is considered a **negative significant effect** at the Local level.

### Bat Foraging and Commuting

7.132 There will be no additional loss of semi-natural and plantation woodland beyond that already assessed in previous Applications 1 and 2. Impacts on commuting and foraging bats associated with habitat loss is therefore considered to have a negligible effect due to these works and considered **not significant**.

7.133 Any proposed construction lighting could have detrimental impact on bat foraging and commuting bats in the absence of mitigation both within and adjacent to the Application 4 Site. Artificial lighting has the potential to light up key commuting routes as well as foraging hotspots, thereby disrupting normal behaviours and increasing energetic costs for bats. The potential impact of lighting on bat foraging/commuting is considered a **negative significant effect** at the Local level.

### Breeding Birds

7.134 There will be no additional loss of suitable nesting habitat for a range of common and local bird species beyond that already been assessed in previous Applications 1 and 2. Effects on breeding birds associated with habitat loss, displacement/disturbance, killing/injury breeding birds is considered to have a negligible effect due to these works and considered **not significant**.

### Fish

7.135 Works associated with river wall demolition and reprofiling could result in large quantities of loose sediment entering the river channel. Indirect impacts on fish during construction are possible due to accidental pollution events and the introduction of construction dust resulting in degradation of the water quality. In the absence of mitigation indirect impacts on fish is considered a **negative significant effect** at the Local level.

## The Completed and Operational Development

### Semi-Natural and Plantation Woodland

7.136 St. Catherine's Wood (largely off-site) and areas of semi-natural woodland (on-site) are already used recreationally by visitors from the local area. During the operational phase, there will be a significant increase in public pressure within the retained sections of woodland habitats. The Application 4 Development will introduce more local residents and visitors to the area. The most significant associated effect is likely to be reduced floral diversity through trampling or increased nutrient enrichment (e.g., by dog-fouling) and the introduction of non-native invasive or undesirable species as set out in the Technical Supplement-Biodiversity Metric 3.1[28]. An increase in the number of residential and non-residential uses will undoubtedly result in increased public pressure. An increase in public pressure on retained woodland habitats is considered a **negative significant effect** at the Regional level.

[28] Stephen Panks A, Nick White A, Amanda Newsome A, Jack Potter A, Matt Heydon A, Edward Mayhew A, Maria Alvarez A, Trudy Russell A, Clare Cashon A, Finn Goddard A, Sarah J. Scott B, Max Heaver C, Sarah H. Scott C, Jo Treweek D, Bill Butcher E and Dave Stone A 2022. Biodiversity metric 3.1: Auditing and accounting for biodiversity – Technical Supplement. Natural England.

### River Irk

7.137 An increase in members of the public accessing the River Irk introduces the potential for both dogs and people to introduce and spread aquatic invasive species. The consequence of spreading invasive species along the River Irk corridor is considered a **negative significant effect** at the Local level.

### Roosting Bats

7.138 Proposals include the construction of new buildings along with additional tree planting. In the medium- to long-term this will significantly increase the availability of bat roosting opportunities for a variety of species, including common pipistrelle and soprano pipistrelle both of which are present in the local area. The provision of potential new roosting habitat is a **positive significant effect** at the Local level.

7.139 During operation, artificial light sources include external street lighting on roads and within public realms and from buildings. As set out for construction impacts, adverse artificial lighting has the potential to light up bridge crossings and therefore potential bat roosting features themselves. Prior to mitigation measures during the operational phase, the potential impact of lighting on bat roosting is considered a **negative significant effect** at the Local level.

### Bat Foraging and Commuting

7.140 During operation, artificial light sources include external street lighting on roads and within public realms and from buildings. As set out for construction impacts, adverse artificial lighting may reduce the area of suitable unlit habitat for bats to forage and disperse. Prior to mitigation measures during the operational phase, the potential impact of lighting on bat foraging/commuting is considered a **negative significant effect** at the Local level.

### Breeding Birds

7.141 Vehicular and pedestrian movements around the Application 4 Site during the operational phase will result in increased visual and noise disturbance and could therefore disrupt birds nesting in the retained and newly planted habitats suitable for nesting birds. However, the species present would be expected to habituate to any disturbance impacts. Disturbance to nesting birds within and adjacent to the Application 4 Site from operational activities is therefore unlikely to significantly affect medium- to long-term breeding capabilities. The increased disturbance effects on nesting birds is considered **not significant.**

7.142 The availability of new buildings will create nesting opportunities for birds in the operational phase. Increased botanical and invertebrate abundance and diversity as a consequence of new habitat creation and enhancement will also benefit a range of foraging/nesting birds. A **positive significant effect** is predicted for some bird species at the Local level.

7.143 The new residential areas will invariably include some households with domestic cats, which will result in predation and thus mortality or injury to birds using the retained and newly created habitats. Predation by cats is difficult to assess and quantify. Research undertaken in the UK (Woods et. al., 2003[29]) would indicate that the wild bird species most frequently taken by domestic cats are those that are often found closely associated with human habitat. However, net gains to their population (abundance and range) as a consequence of the new habitat creation and enhancement are likely to result in a trade off, reducing the impact of mortality losses from predation. The increased risk of cat predation on nesting birds is **not significant.**

### Other Fauna

7.144 No operational impacts on other important ecological features are predicted, beyond those assessed for construction effects.

## Additional Mitigation / Enhancement Measures (Application 4)

7.145 Mitigation or compensation is required for each ecological feature which experiences negative significant effects, to reduce or offset the specific impacts of the Application 4 Development on that feature. This section sets out the ecological mitigation measures that would be delivered as part of the planning application. They are additional to the embedded mitigation measures and any mitigation required by other disciplines.

7.146 In considering the effectiveness of different mitigation measures, the time required for the mitigation to become effective is an important factor; works such as planting, for example, require an establishment period and a maturation period before they have the potential to replace mature and structured habitats that might be damaged or lost during the construction phase. In some instances though, mitigation measures would have an immediate effect. Time periods are considered as follows:

- Immediate – effective immediately;
- Short-term - effective within 2 years;
- Medium-term – effective within 2 – 5 years;
- Long-term – effective within 5 – 10 years.

7.147 For legally protected species within the Application 4 Development, any specific legal requirements for works affecting them would be met in addition to the proposed mitigation measures for the reduction of effects.

7.148 The mitigation hierarchy requires that adverse impacts are first avoided then where this is not possible, mitigated and as a last resort compensated (off-set). Mitigation measures are discussed with respect to construction and operation below.

[29] Woods, M., R.A. McDonald & Harris, S. (2003) Predation of wildlife by domestic cats Felis catus in Great Britain. Mammal Review 33: 174-188

## Demolition and Construction

### Semi-Natural, Plantation Woodland and Scattered Trees

7.149 Retained woodland and trees on and adjacent to Application 4 Site should be protected during construction works. Tree protection measures would include the use of Heras fencing to ensure no accidental encroachment and to avoid any resulting damage to tree protection zones. The tree protection measures would be detailed within an Arboricultural Method Statement (AMS).

7.150 A Construction Environmental Management Plan (CEMP) will be produced for the Application 4 Site which will include standard construction working practices. The CEMP will include an Emergency Spill Response Plan and Dust Management Plan. Implementation of the CEMP will ensure no accidental direct or indirect effects on the retained/adjacent woodland and trees are encountered due to the Application 4 Development. An ISMS would be produced which would provide details on the protocols for controlling and eradicating Himalayan balsam from the ground flora within the on-site and off-site woodland, in advance of, and during, construction works.

7.151 A Landscape Environmental Management Plan (LEMP) will be produced which will set out the long-term management and monitoring objectives for both the retained and newly created habitats. The LEMP will include ecological requirements as well as other disciplines requirements. These ecological requirements will include the following:

- Management objectives;
- Key management prescriptions;
- Acceptable thresholds and/or targets, if relevant;
- Work schedules with timetables for management operations;
- Management roles and responsibilities; and, ideally
- Financial budgets.

7.152 Measures to be implemented during construction activities, including landscaping, to avoid impact on the retained pockets of semi-natural and plantation woodland within and adjacent to the Application 4 Site will be detailed in the CEMP. Retained woodland blocks will be managed to maximise biodiversity value, details of which will be provided within the LEMP.

### Dense Scrub

7.153 An ISMS would be produced which would provide details on the protocols for controlling and eradicating Himalayan balsam from the ground flora within the dense scrub, in advance of and during construction works.

## River Irk Corridor

7.154 The CEMP will include an Emergency Spill Response Plan and Dust Management Plan. Implementation of the CEMP will ensure no accidental direct or indirect effects on the River Irk Corridor are encountered due to the Application 4 Development.

7.155 The ISMS will provide details on the protocols for controlling and eradicating Himalayan balsam, giant hogweed and Japanese knotweed from the ground flora along the banks of the River Irk in advance of and during construction works.

7.156 Where the wall is proposed to be removed, the riverbank will be reprofiled, to create connection with the river and in the long-term to improve aquatic habitat. Elevated deck structures have been proposed to maintain circulation through the park and provide further connectivity to the river in line with the established strategies. The LEMP will provide long-term management and monitoring objectives for the reprofiled areas and newly created habitats along the River Irk.

## Roosting Bats

7.157 A Natural England European Protected Species (EPS) licence application will be required for the demolition of Building B14, with regard to the loss of two common pipistrelle day roosts. As part of the EPS licence application, a method statement will be required to detail the mitigation measures to be implemented to ensure the FCS of the bat species population is maintained. The EPS method statement will include the following mitigation strategy:

Mitigation Measures - Demolition Works

7.158 Demolition works are recommended (but not limited) to be undertaken between September and April inclusive when bats are likely to be absent from summer roost sites to avoid any adverse effects to any roosting bats in B14 via roost destruction or disturbance by noise and vibration.

7.159 Prior to demolition of B14, a general-purpose bat box (for example a 1FD or similar) must be placed on a suitable mature retained tree within the Application 4 Site distanced from building works to minimise disturbance. The box must be sited *c*.4m above ground and will provide roosting provision for bats for the duration of development works. The bat box will be used as a release site for any bats captured during supervision of demolition works.

7.160 Pre-demolition measures will be undertaken and supervised by a licensed bat ecologist and will include:

- Inspection of the wooden boxed soffits, barge boards, areas of lifted and slipped roof slates, ridge tiles, lifted lead flashing and any other potential roost features with aid of an endoscope;

- A destructive search by soft demolition of the building including removal of barge boards and/or roof tiles by hand from a MEWP or scaffolding;
- Soft demolition will occur in areas where roosting has been identified and any areas identified with other potential roost features;
- Destructive searches will be undertaken during the daytime when the night time temperatures have reached at least 8˚C;
- Any bats encountered will be captured by the licensed bat ecologist, with thin gloved hands or a hand net and placed in a suitably secure holder/container for transportation;
- Captured bats will be released into a receptor bat box; and
- Once potential roosting features are removed, full mechanical demolition of the building will proceed.

Mitigation Measures - Roost Loss Compensation

7.161 Common pipistrelle are crevice roosting bats and therefore provisions of roost replacement for crevice dwelling species must be incorporated within the scheme, for example the use of bat boxes. Mitigation measures must include:

- A minimum of two bat boxes (one to compensate each bat roost entry point identified during nocturnal surveys) built within the new development.

7.162 The indirect impacts on roosting habitat will be mitigated through the provision of alternative roosting habitat (bat boxes). A suitable bat box, for the potential roosting features at P&P bridge impacted, will be installed on a retained tree within the Application 4 Site and with a focus on a retained tree away from construction activities and any proposed construction or operation lighting.

7.163 The use/need of construction lighting would be minimal and there would be a curfew of 23:00 beyond which most lighting would be switched off. Any necessary lighting would be directed away from retained trees and bridge structures with roost potential to avoid the possibility of deterring the use of potential roost sites. Temporary construction lighting methods would be bat sensitive and set out within a lighting strategy.

## Bat Foraging and Commuting

7.164 The use/need of construction lighting would be minimal and there would be a curfew of 23:00 beyond which most lighting would be switched off. Any necessary lighting would be directed away from retained trees, woodland blocks and River Irk Corridor to avoid the possibility of deterring bat activity. Temporary construction lighting methods would be bat sensitive and set out within a lighting strategy.

7.165 Existing bat foraging/commuting habitats will be protected through implementation of the AMS and CEMP. Enhancements to bat foraging and commuting habitats will be provided through the LEMP.

### Breeding Birds

7.166 Existing breeding bird habitats will be protected through implementation of the AMS and CEMP. Enhancements to breeding bird habitats will be provided through the LEMP.

7.167 A range of bird boxes shall be installed onto retained trees within undisturbed areas within the wider Red Bank site. This will include a variety of nest boxes of mixed specification to suit species that occur locally such as blackbird, blackcap, blue tit, bullfinch, chaffinch, coal tit, dunnock, goldfinch, long-tailed tit, robin, song thrush and treecreeper.

### Fish

7.168 River works including wall demolition would be timed to avoid disturbance of spawning fish. For the species encountered during detailed fish surveys this period is April- July.

7.169 The CEMP will include an Emergency Spill Response Plan, Dust Management Plan and Silt Management Plan. Implementation of the CEMP will ensure no accidental indirect effects on fish are encountered due to the Proposed Development.

## The Completed and Operational Development

### Semi-natural and Plantation Woodland

7.170 A series of footpaths/boardwalks will be installed through the woodland to direct public pressure and reduce impacts on surrounding ground flora.

### Foraging/Commuting Bats

7.171 A Sensitive Lighting Strategy will set out the lighting proposals during both construction and operation to ensure potential adverse effects on bats are avoided. The Strategy will address four design principles and would be effective immediately:

- Use of unnecessary lighting will be avoided. This applies to both existing and proposed habitat features of value to bats.
- Spatial spread of lighting – the horizontal and vertical spread of artificial light will be minimised and take into account both primary and reflected light sources. Directional lighting can be achieved by angle and orientation of beam, use of a cowl, louvre or other light shield, or a combination of these.
- Timing and duration of lighting – timers and bespoke dimming regimes may be used to ensure that luminaires are reduced at times of predicted low use. These can be set to change with the seasons and therefore reflect the shifting time of dusk and dawn throughout the year. Motion sensors provide further control to ensure that areas are illuminated only when required.

- Intensity and colour of lighting – light intensity will be designed to be as low as possible whilst meeting the objectives of the intended function. The colour of lighting will need to consider the sensitivity of the ecological features on-site. Light sources selected should emit zero ultra-violet light wherever possible. BCT (2018) guidance[30] recommends that white and blue spectrum light should be avoided or where white lights are required these should be of warm/neutral colour and have a peak wavelength above 550 nanometers. Narrow spectrum light sources will be used to lower the range of species affected by lighting.

## Likely Residual Effects of the Development and their Significance (Application 4)

7.172 This section summarises the significance of the anticipated residual effects on ecology features, which are those that remain after all proposed additional mitigation measures are implemented during the construction and demolition phase and the operational phase (see **Table 7.7).**

***Table 7.7**: Residual Effects Summary (Application 4)*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| ***Construction and Demolition*** | | | | |
| **Semi-natural Woodland**<br><br>**(Regional Value)** | Possible direct impact on adjacent retained woodland is considered a **negative significant effect** at Regional level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on adjacent retained woodland (pollution/ construction dust) is considered a **negative significant effect** at Regional level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of Himalayan balsam during works across site and wider area is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| | Retention and enhancement of 0.16ha of semi-natural broadleaved woodland is considered a **positive** | Management and enhancement of retained semi-natural woodland habitat in | **Positive significant effect.** | **Minor beneficial.** |

[30] BCT (2018) Guidance Note 08/18 Bats and artificial lighting in the UK: Bats and the Built Environment series. BCT, London.

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | **significant effect** at Local level. | the LEMP. | | |
| **Plantation Woodland**<br><br>**(Regional Value)** | Possible direct impact on adjacent retained woodland is considered a **negative significant effect** at Regional level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on adjacent retained woodland (pollution/ construction dust) is considered a **negative significant effect** at Regional level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of Himalayan balsam and Japanese knotweed during works across site and wider area is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| | Retention and enhancement of the majority of St Catherine's Wood is considered a **positive significant effect** at Local level. | Management and enhancement of retained plantation woodland habitat in the LEMP. | **Positive significant effect.** | **Minor beneficial.** |
| **Dense Scrub**<br><br>**(Local Value)** | Likely spread of Himalayan balsam during construction works across site and wider area is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| **Scattered Broadleaved Trees**<br><br>**(Local Value)** | Possible direct impact on adjacent retained trees is considered a **negative significant effect** at Local level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on adjacent retained trees is considered a **negative significant effect** at Local | Implementation of CEMP. | **No significant effect.** | **Negligible.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | level. | | | |
| **River Irk Corridor**<br><br>**(Local Value)** | De-engineering along *c.*400m of the River Irk corridor and reprofiling riverbanks leading to certain loss of bankside habitat is considered a **negative significant effect** at Local level. | Enhancement of reprofiled sections of River Irk through aquatic marginal planting in the LEMP. | **Negative significant effect** in the immediate term at Local level, changing to **positive significant** effect in the medium- to long-term. | **Minor adverse** in the immediate term, changing to **Minor beneficial** in the medium- to long-term. |
| | Possible indirect impact on River Irk (pollution/ construction dust) is considered a **negative significant effect** at Local level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of Himalayan balsam, giant knotweed and Japanese knotweed during construction works across site and wider area is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| **Roosting Bats**<br><br>**(Local Value)** | Direct loss of two common pipistrelle day roosts with potential killing or injury to roosting bats is a **negative significant effect** at Local level. | Implementation of Natural England EPS Licence including Precautionary Working Methods and soft demolition.<br><br>Provision of alternative roosting habitat to mitigate for the loss of available roosting habitat e.g. bat boxes. | **No significant effect.** | **Neutral.** |
| | Possible direct impact on retained woodland and trees with roost suitability is considered a **negative significant effect** at Local level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | Possible indirect impact on roosting bats through disturbance during construction (noise, vibration, light) is considered a **negative significant effect** at Local level. | Implementation of lighting strategy which would include bat sensitive measures.<br><br>Implementation of CEMP.<br><br>Bat box strategy. | **No significant effect.** | **Neutral.** |
| **Bat Foraging and Commuting**<br><br>**(Local Value)** | No additional loss of suitable commuting/ foraging bat habitat is considered to have **no significant effect.** | Management and enhancement of retained woodland habitat and River Irk corridor in the LEMP. | **No significant effect** in the short- to medium-term changing to **positive significant effect** in the long-term. | **Negligible** in the short- to medium-term, changing to **minor beneficial** in the long-term. |
| | Construction lighting impact on offsite retained commuting corridors and foraging habitat is considered a **negative significant effect** at Local level. | Implementation of lighting strategy which would include bat sensitive measures. | **No significant effect.** | **Negligible.** |
| **Breeding Birds**<br><br>**(Local Value)** | No additional loss of suitable breeding bird habitat is considered to have **no significant effect.** | Management and enhancement of retained woodland habitat and creation of new habitats in the LEMP. | **No significant effect** in the immediate term, changing to **positive significant effect** in the long-term. | **Negligible** in the short to medium-term, changing to **minor beneficial** in the long-term. |
| **Fish**<br><br>**(Local Value)** | Potential for disturbing spawning fish and fish dispersion during wall demolition is considered a **negative significant effect** at Local level. | Restrictions on river works during spawning season (April -July for species encountered during surveys) and pollution measures outlined within CEMP. | **No significant effect.** | **Negligible.** |
| ***Completed and Operational Development*** | | | | |
| **Semi-Natural Woodland**<br><br>**(Regional Value)** | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives is considered a **negative** | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ | **No significant effect.** | **Neutral.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | **significant effect** at Regional level. | boardwalks throughout the woodland designed to direct public pressure and reduce impact on surrounding ground flora. | | |
| **Plantation Woodland**<br><br>**(Regional Value)** | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives is considered a **negative significant effect** at Regional level. | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure and reduce impact on surrounding ground flora. | **No significant effect.** | **Neutral.** |
| **River Irk**<br><br>**(Local Value)** | Potential increase in public pressure leading to likely introduction or spread of invasive species is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **No significant effect.** | **Negligible.** |
| **Roosting Bats**<br><br>**(Local Value)** | New buildings, additional tree planting and bat boxes could significantly increase the availability of bat roosting opportunities in the medium to long-term. Provisions of new roosting habitat is a **positive significant effect** at Local level | Implementation of LEMP.<br><br>Bat box strategy. | **No significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Negligible** in the immediate term, changing to **minor beneficial** in the medium- to long-term. |
| | Potential lighting impact on potential roosting habitat is considered a **negative significant effect** at Local level. | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| **Bat Foraging and Commuting**<br><br>**(Local Value)** | Potential lighting impact on foraging/commuting routes is considered a **negative significant effect** at Local level. | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible.** |
| **Breeding Birds**<br><br>**(Local Value)** | New buildings, habitat creation and enhancement and bird boxes could significantly increase the nesting opportunities in the medium- to long-term. Provisions of new nesting habitat is a **positive significant effect** at Local level. | Implementation of LEMP.<br><br>Bird box strategy. | **No significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Negligible** in the immediate term, changing to **minor beneficial** in the medium- to long-term. |

## Consideration of Climate Change on Biodiversity (Application 4)

7.173 EU guidance (2013) requires that EcIA considers the effects of projects on climate change and on biodiversity. Although the guidance document treats the two topics as separate issues, it notes that there are interactions between climate change and biodiversity, and advises that assessment of permanent effects of a project, and the mitigation thereof, should take account of climate change projections applicable to the nature and scale of development.

7.174 The EU guidance indicates that effects which are only likely to be experienced in the next 20 years should be based on current weather patterns or near-future projections if available and relevant. In relation to biodiversity, all significant effects of the Application 4 Development are experienced in this timeframe. The assessment of residual effects finds that affected habitats and species are adequately mitigated. However, there are three material considerations pertinent to climate change and biodiversity that the assessment of longer-term effects must take into account.

7.175 Firstly, how projects might be assessed in terms of their effects on the 'manageability' of the Natura 2000 network (2013). SACs and SPAs in the UK no longer form part of the EU's Natura 2000 ecological network. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 have created a National Site Network on land and at sea, including both the inshore and offshore marine areas in the UK. With respect to the

Application 4 site, there is one National Site Network site located within 10km, this is Rochdale Canal SAC. Rochdale Canal SAC has been scoped out of further assessment and therefore development of the Application 4 site is very unlikely to contribute to existing pressures on National Site Network sites, affect the ability for site managers to maintain dialogue with a range of stakeholders, constrain the possibility of adaptive management plans for the sites themselves, or constrain future monitoring of climate change effects on biodiversity within the sites.

7.176 Secondly, the EIA Guidance requires developers to ensure that their designs and mitigation measures are resilient to projected climate change. For the Application 4 Development, the incorporation of green and brown roofs, creation of SuDS, public open space and other landscape enhancement through woodland, tree and shrub planting, and woodland and river corridor enhancements will maintain network connectivity and increase opportunities for biodiversity to thrive. The woodland and tree planting, hedgerows and other new landscapes will be planted in accordance with guidance set out by Forestry Commission's UK Forestry Standard concerning Forests and Climate Change (2011).

7.177 Thirdly, the EU guidance about assessing the impact of development on the manageability of National Site Network sites is transferable to a consideration of the impact on general manageability of biodiversity in the area of the Site. This can be assessed in terms of management of the network of designated sites, bearing in mind Government commitments to maintain SSSIs in favourable condition and for the majority of LWSs to be actively managed. With regards to the Application 4 site, there is one SSSI and four SBIs within 5km and 2km, respectively. All of these sites have been scoped out of further assessment and therefore development of the Application 4 site is very unlikely to contribute to existing pressures on these sites. No constraints to information-sharing and the ability for site managers to maintain dialogue with a range of stakeholders will occur.

7.178 Climate change may cause changes in distribution of fauna with certain species moving north as temperatures warm, as is being seen with certain species such as the Cetti's warbler *Cettia cetti*. Provision of a green network within, and adjacent to, the proposed development site, will ensure migration corridors are available along which fauna can move.

## Conclusions (Application 4)

7.179 The assessment identified two regionally important ecological features: semi-natural and plantation woodland. A further seven locally important ecological features were also identified, these were scattered broadleaved trees, River Irk corridor, dense scrub, roosting bats, bat foraging/commuting, breeding birds and fish.

7.180 There is no habitat loss anticipated in Application 4 as site clearance is included in consented Application 2 and was assessed in the accompanying ES.

7.181 The potential for disturbance effects and unintended habitat loss or damage resulting from demolition and construction activities were identified through the assessment. The majority of these can be avoided through

mitigation measures including the production of a CEMP, LEMP, ISMS, lighting strategy and tree protection measures.

7.182 The potential for further disturbance effects and unintended habitat loss or damage resulting from increased public pressure during the operational phase was identified through the assessment. This can be avoided through mitigation measures including the LEMP and through embedded mitigation of introducing formalised foot and cycleways (included as embedded mitigation in Application 2).

7.183 No residual effects during the demolition and construction or operational phases have been identified for the Application 4 Site.

7.184 A standalone BNG assessment has been undertaken for the entire site using a pre-works baseline and Op-en's proposed Landscape Masterplan which shows FEC's illustrative landscape proposals for the residential led mixed use development at Red Bank Neighbourhood (proposed under Application 4) and their detailed landscape proposals for the New Town neighbourhood plots to the south of Dantzic Street (proposed under Application 5). The Landscape Masterplan also identifies MCC's intentions for Red Bank and shows the HIF enabling and infrastructure works and new park at St Catherine's Wood which have been granted full planning permission under Applications 1 and 2. This delivers net gain in excess of 10% (16.27%) such that the use of off-site woodland is not required. This standalone document is submitted in support of the planning applications.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 4)

### Approach

7.185 The cumulative assessment seeks to determine whether any non-significant effects on ecology arising from this application could become significant, or whether the significance of any effects arising from this application would increase when considered alongside similar effects from other plans or proposals. With reference to the ecology baseline of this application site, the review of other plans and proposals includes the consideration of loss of habitat, reduction in foraging, sheltering or breeding habitat for species, fragmentation of habitats and disturbance effects. When determining the potential for effects to accumulate, it considers the geographical and as far as can be determined, temporal nature of any effects and associated mitigation proposals.

7.186 In line with the approach to cumulative assessment in EIA, the following section can only consider existing and available information relating to baseline conditions and mitigation proposals when identifying the potential for cumulative effects to arise. Wherever possible, definitive and fixed information relating to each permission, application or allocation, has been used to ensure that the assessment is as robust as is reasonably possible.

7.187 **Table 7.8** presents consideration of whether a cumulative site identified in the search undertaken by Avision Young on Manchester City Council and Salford City Council planning portals has been scoped in or out of the cumulative impact assessment and presents justification for this decision.

***Table 7.8:*** *Cumulative Sites (Application 4)*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | **Collyhurst Village**<br>City Council Development for the erection of 168, three and four storey dwellinghouses (Use Class C3a) and two, five and six storey apartment buildings to form 76 residential apartments (Use Class C3a) with associated ground floor flexible commercial unit (162 sqm) (Use Class E); and the creation of a new public park; all with associated car and parking, refuse storage, landscaping, public realm and other associated works and infrastructure following demolition of 29 existing residential dwellinghouses, the Collyhurst Village Store and associated car parking | 650m northeast | Approved June 2021<br><br>Groundworks started | Scoped out | The assessment concluded that there will be no adverse effects on any designated sites within range of the Site, including Rochdale Canal SAC/SSSI and Rochdale Canal Stott's Lane– Ducie Street Basin SBI.<br><br>Loss of low-quality grassland and dense scrub, along with the loss of 0.57ha of higher quality semi-natural woodland would result from development of the Site. Timescales of loss are likely to overlap and mitigation may not occur immediately, but this additional loss of woodland in the wider area would not be large enough to change the significance of effect for this feature.<br><br>No invasive plant species were identified during the surveys.<br><br>One building and seven trees with low bat roost potential will be lost due to the development. No bat roosts were identified during the nocturnal roost survey. Mitigation for the loss of available roosting habitat will be implemented through bat box scheme.<br><br>Loss of low-level breeding bird and bat foraging and commuting habitat.<br><br>RAMS measures proposed for bats, birds and hedgehog during felling/demolition and vegetation clearance.<br><br>Biodiversity enhancement measures detailed including bat and bird boxes.<br><br>BNG strategy to deliver 10% net gain in conjunction with Collyhurst South application.<br><br>No residual significant effects on any receptors were identified in the |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | assessment.<br><br>Assuming that the mitigation measures are implemented, it is not anticipated that these proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **2** | 127971/FO/2020 | **Osborne Yard**<br>Erection of a 6 storey building to form 90 residential apartments (Use Class C3a) following demolition of existing structures with associated access, car parking, amenity space, landscaping and other associated works | 950m east | Approved May 2021<br><br>Construction not yet started | Scoped out | The assessment concluded that there will be no adverse effects on any designated sites within range of the Site, including Rochdale Canal SAC/SSSI. Low quality habitats impacted but compensated for with hard landscaping.<br><br>One building with low bat roost potential will be lost due to the development. No bat roosts were identified during the nocturnal roost survey. Mitigation for the loss of available roosting habitat will be implemented through bat box scheme.<br><br>Loss of low-level breeding bird habitat. Mitigation for the loss of available nesting habitat will be implemented through bird box scheme. RAMS measures proposed for birds during vegetation clearance.<br><br>No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming that the mitigation measures are implemented, it is not anticipated that these proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **3** | 128248/FO/2020 | **The Gasworks**<br>Erection of 9 buildings ranging from 8 to 34 storeys in height to form 1202 residential apartments (Use Class C3a) and ground floor commercial uses (Use Class E) (192 sqm) together with associated car parking, new vehicular and pedestrian access, public realm, landscaping and other associated works following demolition of existing structures and | 45m south | Approved June 2021<br><br>Construction not yet started | Scoped out | The assessment concluded that there will be no adverse effects on any designated sites within range of the Site, including Rochdale Canal SAC/SSSI and Stott's Lane– Ducie Street Basin SBI and Ashton Canal (West) SBI.<br><br>The Site is predominantly hardstanding with occasional areas of introduced shrub and tall ruderal herbs. Loss of this low-quality habitat was assessed as not significant.<br><br>Two bat roosts were identified within brick archways; common |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | buildings \| Land Bound By Gould Street, Williamson Street, Bromley Street And Bilbrook Street Manchester M4 4DD | | | | pipistrelle hibernation and common pipistrelle day roost. Disturbance/destruction to these roosts will be licensed and appropriately mitigated.<br><br>Loss of low-level breeding bird habitat. RAMS measures proposed for birds during vegetation clearance.<br><br>No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the mitigation measures are implemented, it is not anticipated that these proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **4** | 116366/FO/2017 | **Meadowside**<br>Erection of four residential buildings (22 storey building, 17 storey building, 40 storey building and part 12, part 9 storey building) to form 756 residential apartments (Use Class C3a) together with ground floor commercial uses (616 sqm) (Use Classes A1, A2, A3, A4, A5, D1 and B1) with associated car parking, landscaping, amenity areas, creation of new public realm following the closure of Aspin Lane, Mincing Street and Irk Street and other associated works following demolition of existing structures \| Land Bounded By Dantzic Street & Aspin Lane, Land Bounded By Gould Street & Angel Meadows And Land Bounded By Old Mount Street, School Street, Naples Street & Ludgate Street Manchester | 90m south | Approved August 2017<br><br>Under construction, with three of the Scheme's four buildings now complete and occupied. | Scoped out | The ecological appraisal concluded that there will be no adverse effects on any designated sites within range of the Site. The Site is dominated by hardstanding with occasional amenity grassland and introduced shrub. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **5** | 127537/FO/2020 | **25 Rochdale Road**<br>Erection of a 11 storey 229 bedroom hotel (Use Class C1) with ancillary ground floor bar/restaurant together associated public realm and other associated works \| 25 Rochdale Road Manchester M4 4HT | 340m south | Approved October 2020<br><br>Construction not yet started | Scoped out | The ecological report concluded that there will be no adverse effects on any designated sites within range of the Site, including Rochdale Canal SAC/SSSI, Boggart Hole LNR, Rochdale Canal: Scott's Lane to Ducie Street Basin SBI and Ashton Canal (West) SBI. The Site comprised an expanse of hardstanding. No residual significant |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | effects on any receptors were identified in the assessment.<br><br>It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **6** | 124973/FO/2019 | **2 and 3 Angel Square**<br>Erection of an 11 storey building and a 12 storey building with plant rooms above to form a mixed use development comprising 39,184 sq.m (NIA) of Class B1a office use and commercial units of 1,286 sqm (NIA) (Use Classes A1, A2, A3, A4, B1a and D1) along with associated lower ground level car parking, hard and soft landscaping and associated works, including the creation of a new pedestrian route between Angel Street and Miller Street. \| Land Bounded By Co-op Headquarters Miller Street And Angel Street Manchester | 260m south | Approved February 2020<br><br>Construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site, including Rochdale Canal SAC/SSSI. The Site is dominated by hardstanding with areas of unmanaged vegetation, ornamental planting, semi-improved neutral grassland and an allotment area.<br>Loss of low-level breeding bird habitat. RAMS measures proposed for birds and vegetation clearance. Biodiversity enhancement measures detailed including bat and bird boxes. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **7** | 126944/FO/2020 | **Victoria Riverside**<br>Erection of a residential-led mixed use development comprising 3 no. towers (37, 26 and 18 storeys) and podium levels (6 storey) to form 634 residential apartments and townhouse accommodation (Use Class C3) together with commercial accommodation (1222 sqm) (Use Classes A1,A2,A3,A4,A5,B1, D1 and D2)); with associated residential amenity areas, refuse storage, plant (including substation), car parking, cycle storage, landscaping and new public realm including the re-instatement of Bromley Street and other associated works. | 0m south (adjacent to Site boundary) | Approved September 2020<br><br>Under Construction | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. The Site consists of bare ground with a peripheral band of vegetation with no ecological value. Himalayan balsam and Giant Hogweed Schedule 9 invasive species were found to be present. The Site offers no potential for roosting bats and foraging habitat is of low value. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **8** | 131708/FO/2021 | **87 Rochdale Road**<br>Erection of a part 11, part 13 storey building to form residential apartments (Use Class C3a) | 200m south | Approved February 2022 | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. The Site consists of hardstanding and four buildings offering little ecological |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | together with the erection of two blocks of 3 storey townhouses (Use Class C3a) to form 237 residential homes in total with associated commercial floor (Use Class E) (132 sqm), basement car parking, landscaping and public realm, and associated engineering and infrastructure works following demolition of existing buildings and structures. | | Construction not yet started | | value. The bat survey undertaken on the Site identified the four onsite buildings as offering low bat roosting potential. Following emergence surveys none of these buildings were found to support a bat roost. A series of tunnels were found to have hibernation potential. Following hibernation surveys, no hibernating bats were identified. The invasive plant species, wall cotoneaster was identified within the Site. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **9** | 128997/FO/2020 | **40 Swan Street**<br>Erection of a ground plus 9-storey building to form 118 no. residential apartments (Use Class C3), including amenity areas, ground floor food and beverage/ commercial units (Sui Generis/ Use Class E), public realm and landscaping, with supporting infrastructure and associated works following demolition of existing building | 560m south | Approved September 2021<br><br>Construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. The Site consists of hardstanding and two buildings and five shipping containers offering little ecological value. The bat survey undertaken on the Site identified the onsite buildings as offering negligible bat roosting potential. RAMS measures proposed for nesting birds during demolition and vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **10** | 121380/FO/2018 | **Swan House**<br>Erection of a part 31, part 13, part 5 storey building to form 373 residential apartments (Use Class C3a) and 12 serviced apartments (Use Class C1) together with a ground floor commercial unit (408 sqm) (Use Class A1, A2 or A3) with associated car parking, public realm and other associated works following demolition of existing buildings | 510m south | Approved October 2019<br><br>Under Construction | Scoped out | The Site comprises a complex of warehouse buildings with garage areas. The bat survey undertaken on the Site identified the onsite buildings as offering low bat roosting potential. Roost surveys did not identify any roosting bats. RAMS measures proposed for roosting bats and nesting birds during demolition and vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | ecology when considered alongside the Proposed Application 4 Development. |
| **11** | 124888/FO/2019 | **New Cross Central (Mulbury City)**<br>Erection of a 6-9 storey residential building (Use Class C3) comprising 80 no. dwellings including 9 no. townhouses and 71 no. apartments with residents lounge, refuse, plant, new substation, cycle storage, an internal landscaped courtyard and improvements to the adjacent footways | 665m south | Approved January 2020<br><br>Under Construction | Scoped out | The ecological briefing note confirms the Site consists of hardstanding with a number of built structures. The buildings on site were assessed as offering negligible potential for roosting bats. No residual significant effects on any receptors were identified in the assessment.<br><br>It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **12** | 121375/FO/2018 | **20 – 36 High Street**<br>Construction of a 22 storey building comprising 361 residential apartments (122 x 1 bed 2 person, 119 x 2 bed 3 person, 94 x 2 bed 4 person, 21 x 3 bed 5 person and 5 x 3 bed 6 person (34% 1 bed, 59% 2 bed and 7% 3 bed) ground floor commercial floorspace (Use Classes A1 (Shop), A3 (Restaurant and Cafe), A4 (Drinking Establishment) and A5 (Hot Food Take-away) associated landscaping, including new public realm and pedestrian route, together with servicing, cycle parking, access and other associated works following demolition of buildings at 20-22 and 24-26 High Street and 5 market stalls to Church Street. | 720m south | Approved October 2020<br><br>Construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. Building within the Site were assessed as offering low to negligible potential for roosting bats. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **13** | 125678/FO/2019 | **Peeler's Yard**<br>Erection of 8-storey residential building (Use Class C3) comprising 73 residential units, with ground floor commercial use (Classes A1, A2, A3, B1 and D1 (excluding Places of Worship)) (205 sqm); alterations to the retained perimeter wall and chimney including the introduction of a light box; disabled car parking, highways, landscaping and other | 480m south | Approved December 2020<br><br>Site secured, construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. Habitats within the Site were not significant in terms of conservation interest; dominated by hardstanding with small areas of unmanaged grassland, tall ruderal herbs and scrub present. No invasive plant species were found to be present on site. The chimney structure was found to support a day roost of small numbers of common pipistrelle bats, requiring a NE mitigation licence. Mitigation measures for |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | associated works | | | | impact on the roost are incorporated into the design. RAMS measures proposed for birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **14** | 132416/FO/2021 | **Great Ducie Street**<br>Erection of two buildings part 27, 20, 17 storeys and part 11 and 10 storeys to form a mixed use development comprising of 461 residential apartments (Use Class C3a) and ground floor commercial uses (Use Class E) (718 sqm) together with public realm including courtyard pocket park, landscaping, car parking and other associated works | 390m southeast | Approved June 2022<br><br>Construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. The Site comprises an area of derelict hardstanding, bare ground and dense scrub. RAMS measures proposed for birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **15** | 122280/FO/2019 | **Mirabel Street**<br>Erection of new mixed-use development to comprise of one 10 storey building fronting Mirabel Street to accommodate 45 no. Use Class C3 residential apartments (9 no. 1-bed studios, 27 no. 2-bed 3 person apartments and 9 no. 2-bed 4 person apartments) and 7 no. residential car parking spaces at ground level and one part 10, part 14 storey building fronting Great Ducie Street to accommodate 84 no. Use Class C3 residential apartments (31 no. 1-bed 2 person apartments, 26 no. 2-bed 3 person apartments, 18 no. 2-bed 4 person apartments and 9 no. 3-bed 5 person | 450m southeast | Approved December 2020<br><br>Construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. The Site comprises one brick-built commercial structure and an area of hardstanding car parking. The building was assessed as having negligible suitability for roosting bats. The site does not have suitability for nesting birds. No residual significant effects on any receptors were identified in the assessment.<br><br>It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | apartments) and 345 sq. m of commercial floor space at ground level (flexible use Use Class A1 shop, Use Class A2 financial and professional services and Use Class A3 cafe/restaurant) together with creation of roof terrace amenity space, cycle parking, access, servicing and associated works following demolition of existing building \| Land Bounded By Great Ducie Street And Mirabel Street Manchester M3 1PJ | | | | |
| **16** | 127901/FO/2020 | **Manchester Arena Expansion**<br>Expansion of Manchester Arena from 21,000 seats to 24,000, making it Europe's largest indoor arena. Improvement of access from Hunt's Bank and Victoria station. | 290m southeast | Approved April 2021<br><br>Construction not yet started | Scoped out | No ecological assessment report was available on Manchester City Council's planning portal. There are no planning conditions related to ecology in the decision notice. Based on available information no residual significant effects on any receptors are therefore envisaged for this site. |
| **17** | 131314/FO/2021 | **39 Deansgate (Speaker's House)**<br>Erection of a 17 storey building comprising office use (Use Class E(g)(i)) and flexible ground floor commercial units (Use Classes E(a),(b),(c) and sui generis 'drinking establishment'), new electricity sub-station, basement cycle parking and rooftop plant enclosure, together with access, servicing and associated works following demolition of the existing building. | 820m southeast | Approved January 2022<br><br>Construction not yet started | Scoped out | The bat survey report concluded that the buildings provided negligible bat roost suitability. RAMS measures proposed for nesting birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **18** | 130553/FO/2021 | **Island, John Dalton Street**<br>Demolition of the existing buildings and structures and the erection of a 10-storey plus basement office building (Use Class E(g)), with flexible ground floor and basement uses (Use Class E) and rooftop amenity space, works to facilitate the pedestrianisation of the southern part of Ridgefield and other associated works. | 1.15km southeast | Approved September 2021<br><br>Under Construction | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. The bat survey assessed the buildings as having negligible suitability for roosting bats. The Site comprises an area of hardstanding, and buildings. RAMS measures proposed for birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | ecology when considered alongside the Proposed Application 4 Development. |
| **19** | 130354/FO/2021 | **Eliza Yard**<br>Erection of an 8 storey building to form 118 residential apartments (Use Class C3) and ground floor commercial floorspace (Use Class E (a),(c),(g)(i)) (583 sqm) together with amenity space, car and cycle parking provision, hard and soft landscaping, access, servicing and other associated works | 870m southeast | Approved July 2021<br><br>Construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. The Site comprises an area of hardstanding, with ephemeral vegetation and scattered scrub. The PRA concluded that the western boundary wall has low bat roost potential. No roosting bats were identified during the nocturnal roost survey. RAMS measures proposed for birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **20** | 130627/FO/2021 | **Ancoats Mobility Hub**<br>Erection of an 8 storey building to form Mobility Hub including ground floor commercial unit (Use Class E(b)) (221 sqm), delivery hub, 150 cycle spaces and 408 car parking spaces with associated landscaping, access and other associated works following demolition of existing structures. | 770m southeast | Approved July 2021<br><br>Groundworks started, currently in the early stages of construction | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. The Site comprises an area of hardstanding, four buildings, amenity grassland and scattered trees and scrub. The PRA concluded that the buildings and small section of wall present on site have low bat roost potential No roosting bats were identified during the nocturnal roost survey. RAMS measures proposed for birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **21** | 113914/FO/2016 | **1 Lord Street**<br>Erection of a 16 storey building to form 192 residential apartments (Use Class C3a) together with ground floor commercial unit | 140m north | Approved November 2016 | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. The Site comprises an area of hardstanding, |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | (172 sqm) (Use Class A1, A2, A3 or B1) with associated vehicular access from Fernie Street, car parking and hard and soft landscaping following demolition of existing buildings. | | Construction not yet started | | two buildings and bare ground. The PRA concluded that one building has negligible suitability for roosting bats and the has low bat roost potential. No roosting bats were identified during the nocturnal roost survey. RAMS measures proposed for birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **22** | 18/71330/FUL | **Uptown**<br>Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping. | 850m southwest | Approved Oct 2018<br><br>Under construction | Scoped out | No ecological assessment report was available on Salford's planning portal. From the ecological consultation response from GMEU it appears that the only potential impacts identified relate to the potential negative impact on the River Irwell and the potential spread of the invasive species Giant Hogweed and Japanese knotweed, in the absence of mitigation. Conditions dictate the need for appropriate method statements to be produced and implemented to avoid these impacts. Based on available information no residual significant effects on any receptors are therefore envisaged for this site.<br><br>Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **23** | 20/76134/FUL | **Maldron Hotel, Chapel Street**<br>Erection of 16-storey building plus plant comprising a hotel (Use Class C1) with ancillary bar and restaurant uses, access, servicing, landscaping and other associated works. | 1km southwest | Approved July 2021<br><br>Under construction | Scoped out | The ecology letter report concluded that there will be no adverse effects on any designated sites within range of the Site, including Rochdale Canal SAC/SSSI. The habitats within the Site to be of low ecological value, dominated by hardstanding with ephemeral/short perennial species and self-seeded butterfly bush. The invasive plant species, giant hogweed, was found to be present along the western boundary. Due to the lack of features of ecological interest present within the Site, the presence of all protected faunal species was ruled out. No residual significant effects on any receptors were identified in the assessment. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **24** | 19/74465/HYBEIA | **Cortland at Collier's Yard / Bankside** Hybrid planning application for demolition of existing buildings on the site and comprehensive redevelopment to create between 1,407 and 1,521 dwellings, comprising of: (a) Phase 1 (submitted in full with no matters reserved) for development of a 50-storey residential building; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new public park; highways and public realm improvements and other associated works; and, (b) Phases 2 and 3 (submitted in outline with all matters reserved) for the development of two residential buildings up to 42 storeys in height; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new highways; a public square; public realm improvements and other associated works. (EIA development, accompanied by Environmental Statement) \| Land Bound By Greengate, Collier Street, Queen And King Street And Gravel Lane M3 7*Ballota nigra*. | 960m southwest | Approved March 2020<br><br>Under construction | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. The Site comprises existing development, hard-standing and colonising vegetation. No habitats within the Site are priority habitat and are therefore of low ecological value. No roosting bats were identified using the buildings within the Site (Buildings 2 and 3) during the surveys.<br><br>RAMS measures proposed for bats and birds during demolition and vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| | 21/78474/REM | Application for approval of Reserved Matters (Access, Appearance, Landscaping, Layout and Scale) pursuant to Outline Planning Permission 21/78473/HYBEIA for Plot C, comprising the demolition of existing buildings and a residential-led development of a 42-storey (plus ground) building containing 444 apartments together with associated residents' amenities, ground floor commercial floorspace, basement parking, public realm improvements | 960m southwest | Approved March 2022<br><br>Under construction | Scoped out | No ecological assessment report was available on Salford's planning portal. There are no planning conditions related to ecology in the decision notice. Based on available information no residual significant effects on any receptors are therefore envisaged for this site. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | including the delivery of Boulevard West, Collier Square and Collier Street, and other associated infrastructure works. (EIA Development Application accompanied by an Environmental Statement Addendum) \| Land Bound By Greengate And Trinity Way And Collier Street And Intersected By Boond Street And Caygill Street M3 7BN. | | | | |
| **25** | 15/66806/FUL | **Embankment Exchange**<br>Demolition of existing factory walls and river walk way to provide mixed use development comprising of 2 blocks ranging from 15 to 34 storeys in height total of 300 residential units with associated off street parking , together two commercial units comprising of 474sqm of floor space (A1, A2, A3 and B1) at ground floor level. | 640m southwest | Approved December 2015<br><br>Under construction | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. The Site comprises existing hard-standing, wall and colonising vegetation. The wall provides low suitability for roosting bats. No information on nocturnal roost surveys are available on Salford's planning portal. Planning condition 15 requires reassessment of structures for bat roosting potential and findings of roosting survey together with any mitigation strategy prior demolition works.<br><br>RAMS measures proposed for nesting birds during demolition and vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 4 Development. |
| **26** | 19/74205/FULEIA | **Waterloo Place**<br>Erection of a mixed use development comprising a single building with two blocks (14 and 55 storeys) to include: 542 residential apartments, associated residents' facilities and basement parking; and 3 no. commercial units (use classes A1, A2, A3, B1 & D1) with associated landscaping and public realm works. | 620m southwest | Approved January 2020<br><br>Site secured, construction not yet started | Scoped out | No sites designated for wildlife fall within range of the Site. The Site comprises hard-standing, scattered trees and introduced shrub. No habitats within the Site are priority habitat and are therefore of low ecological value. Giant hogweed and Japanese knotweed were identified within or adjacent to the Site.<br><br>RAMS measures proposed for birds and invasive non-native species during demolition and vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | ecology when considered alongside the Proposed Application 4 Development. |

### Likely Residual Cumulative Effects and their Significance

7.188 As anticipated given the inner-city location of this application, the sites considered in this cumulative assessment describe their baseline conditions to be generally of low ecological value, dominated by buildings and hardstanding and some with small areas of grassland or ephemeral vegetation. The majority did not provide suitable bat or bird roosting habitat and in the few instances where bat roosting was confirmed these were small roosts of common species and mitigation would be provided on site. Similarly, bird and bat foraging habitat was limited.

7.189 Due to the heavily developed nature of the landscape, the potential for fragmentation or disturbance effects to accumulate is limited to only those sites close to this application and only where they contain features of relevance to the habitats and species within this application. No inter-project or intra-project cumulative effects are predicted to arise.

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 4)

### Approach

7.190 The cumulative assessment seeks to determine whether any non-significant effects on ecology arising from this application could become significant, or whether the significance of any effects arising from this application would increase when considered alongside similar effects from other plans or proposals, including the Victoria North SRF. With reference to the ecology baseline of this application site, the review of other plans and proposals includes the consideration of loss of habitat, reduction in foraging, sheltering or breeding habitat for species, fragmentation of habitats and disturbance effects. When determining the potential for effects to accumulate, it considers the geographical and as far as can be determined, temporal nature of any effects and associated mitigation proposals.

7.191 In line with the approach to cumulative assessment in EIA, the following section can only consider existing and available information relating to baseline conditions and mitigation proposals when identifying the potential for cumulative effects to arise. Wherever possible, definitive and fixed information relating to each permission, application or allocation, has been used to ensure that the assessment is as robust as is reasonably possible.

7.192 The other plans or proposals considered in this assessment are the same as those presented in **Table 7.8**. As such, all proposals other than the SRF have been scoped out of the cumulative assessment and this assessment will therefore only consider cumulative effects between the Proposed Application 4 Development and the SRF. The likely effects on ecological features have been identified based upon the Northern Gateway Ecology Technical Appendix[31] and the SRF[32].

[31] PCA (2019) Northern Gateway Ecology – Technical Appendix PCAJ168/Draft V1. August 2019.
[32] Manchester City Council (2019) Strategic Regeneration Framework: Manchester Northern Gateway. February 2019.

## Likely Residual Cumulative Effects and their Significance

7.193 This section summarises the significance of the anticipated residual cumulative effects on ecology features based upon a combined assessment of Application 4 and the SRF. Residual effects are those that remain after all proposed mitigation measures are implemented during the construction and demolition phase and the operational phase (see **Table 7.9).**

***Table 7.9**: Residual Cumulative Effects Summary (Application 4 + SRF)*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| ***Construction and Demolition*** | | | | |
| **Semi-natural Woodland**<br><br>**(Regional Value)** | Possible direct impact on adjacent retained woodland in Application 4 and the wider SRF is considered a **negative significant effect** at Regional level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on adjacent retained woodland (pollution/ construction dust) in Application 4 and the wider SRF is considered a **negative significant effect** at Regional level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of invasive species during works across Application 4 and the wider SRF is considered a **negative significant effect** at Local level**.** | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| | Retention of 0.16ha of semi-natural broadleaved woodland in Application 4 is considered a **positive significant effect** at Local level.<br><br>Retention of the largest areas of woodland in the wider SRF is considered a **positive significant effect** at Regional level. | Management and enhancement of retained semi-natural woodland habitat in the LEMP. | **Positive significant effect.** | **Minor beneficial.** |
| | It is anticipated there will be | It is anticipated | **Negative significant** | **Minor adverse** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | woodland losses in the wider SRF. This is considered a **negative significant effect** at Regional level. | commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **effect** in the short-term at Regional level, changing to **positive significant effect** in the medium- to long-term. | changing to **minor beneficial** in the medium- to long-term. |
| **Plantation Woodland**<br><br>**(Regional Value)** | It is anticipated there will be woodland losses in the wider SRF. This is considered a **negative significant effect** at Regional level. | It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **Negative significant effect** in the short-term at Regional level, changing to **positive significant effect** in the medium- to long-term. | **Minor adverse** changing to **minor beneficial** in the medium- to long-term. |
| | Possible direct impact on adjacent retained woodland in Application 4 and the wider SRF is considered a **negative significant effect** at Regional level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on adjacent retained woodland (pollution/ construction dust) in Application 4 and the wider SRF is considered a **negative significant effect** at Regional level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of invasive species during works across Application 4 and the wider SRF is considered a **negative significant effect** at Local level**.** | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| | Retention of the majority of St Catherine's Wood in Application 4 is considered a **positive significant effect** at Local level.<br><br>Retention of the largest areas of woodland in the wider SRF is considered a **positive significant effect** | Management and enhancement of retained plantation woodland habitat in the LEMP. | **Positive significant effect.** | **Minor beneficial.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | at Regional level. | | | |
| **Dense Scrub**<br><br>**(Local Value)** | Likely spread of Himalayan balsam during construction works across site and wider area is considered a **negative significant effect** at Local level**.**<br><br>No anticipated significant effects on dense scrub in the wider SRF. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| **Scattered Broadleaved Trees**<br><br>**(Local Value)** | It is anticipated there will be tree losses in the wider SRF. This is considered a **negative significant effect** at Local level. | It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **Negative significant effect** in the short-term at Local level, changing to **positive significant effect** in the to medium- to long-term. | **Minor adverse** in the short-term changing to **minor beneficial** in the medium- to long-term. |
| | Possible direct impact on adjacent retained trees in Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on adjacent retained trees in Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| **River Irk Corridor**<br><br>**(Local Value)** | De-engineering along *c.*400m of the River Irk corridor and reprofiling riverbanks leading to certain loss of bankside habitat is considered a **negative significant effect** at Local level.<br><br>Possible direct impacts on the River Irk in the wider SRF is considered a **negative significant effect** at Local | Enhancement of reprofiled sections of River Irk through aquatic marginal planting in the LEMP.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. The | **Negative significant effect** in the immediate term at Local level, changing to **positive significant** effect in the medium- to long-term. | **Minor adverse** in the immediate term, changing to **minor beneficial** in the medium – to long-term. |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | level. | SRF itself includes mention of opportunities to enhance the river for biodiversity. | | |
| | Possible indirect impact on River Irk (pollution/ construction dust) in Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of Himalayan balsam, giant knotweed and Japanese knotweed during construction works across Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| **Roosting Bats**<br><br>**(Local Value)** | Direct loss of two common pipistrelle day roosts with potential killing or injury to roosting bats is a **negative significant effect** at Local level.<br><br>It is anticipated there will be loss of bat roosts in the wider SRF due to the number of buildings, trees and other structures within proposed development areas but that due to the types of buildings etc. present, any roosts impacted will likely be of low conservation status. This is considered a **negative significant effect** at Local level. | Implementation of Natural England EPS Licence including Precautionary Working Methods and soft demolition.<br><br>Provision of alternative roosting habitat to mitigate for the loss of available roosting habitat. | **No significant effect.** | **Neutral.** |
| | Possible direct impact on retained woodland and trees with roost suitability in | Implementation of tree protection measures as outlined | **No significant effect.** | **Negligible.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | within AMS. | | |
| | Possible indirect impact on roosting bats through disturbance during construction (noise, vibration, light) in Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of lighting strategy which would include bat sensitive measures.<br><br>Implementation of CEMP.<br><br>Bat box strategy. | **No significant effect.** | **Neutral.** |
| **Bat Foraging and Commuting**<br><br>**(Local Value)** | No additional loss of suitable commuting/ foraging bat habitat in Application 4 is considered to have **no significant effect.**<br><br>It is anticipated there will be losses of bat commuting and foraging habitat in the wider SRF. | Management and enhancement of retained woodland habitat and River Irk corridor in the LEMP.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **No significant effect** in the short- to medium-term changing to **positive significant effect** in the long-term. | **Negligible** in the short- to medium-term, changing to **minor beneficial** in the long-term. |
| | Construction lighting impact on offsite retained commuting corridors and foraging habitat during Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of lighting strategy which would include bat sensitive measures. | **No significant effect.** | **Negligible.** |
| **Breeding Birds**<br><br>**(Local Value)** | No additional loss of suitable breeding bird habitat in Application 4 is considered to have **no significant effect.**<br><br>It is anticipated there will be | Management and enhancement of retained woodland habitat and creation of new habitats in the | **No significant effect** in the immediate term, changing to **positive significant effect** in the long- | **Negligible** in the short to medium-term, changing to **minor beneficial** in the long-term. |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | losses of nesting bird habitat in the wider SRF. This is considered to have a **negative significant effect** at Local level. | LEMP.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated.<br><br>Bird box strategy. | term. | |
| **Fish**<br><br>**(Local Value)** | Potential for disturbing spawning fish and fish dispersion during wall demolition in Application 4 is considered a **negative significant effect** at Local level.<br><br>Possible direct impacts on fish in the wider SRF is considered a **negative significant effect** at Local level. | Restrictions on river works during spawning season (April - July for species encountered during surveys) and pollution measures outlined within CEMP. | **No significant effect.** | **Negligible.** |
| ***Completed and Operational Development*** | | | | |
| **Semi-Natural Woodland**<br><br>**(Regional Value)** | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives in Application 4 and the wider SRF is considered a **negative significant effect** at Regional level. | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure and reduce impact on surrounding ground flora.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure impacts from public pressure are | **No significant effect** changing to **positive significant effect** in the medium- to long-term. | **Neutral** changing to **minor beneficial** in the medium- to long-term. |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | | mitigated. | | |
| **Plantation Woodland**<br><br>**(Regional Value)** | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives in Application 4 and the wider SRF is considered a **negative significant effect** at Regional level. | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure and reduce impact on surrounding ground flora.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure impacts from public pressure are mitigated. | **No significant effect** changing to **positive significant effect** in the medium- to long-term. | **Neutral** changing to **minor beneficial** in the medium- to long-term. |
| **River Irk**<br><br>**(Local Value)** | Potential increase in public pressure leading to likely introduction or spread of invasive species in Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **No significant effect.** | **Negligible.** |
| **Roosting Bats**<br><br>**(Local Value)** | New buildings, additional tree planting and bat boxes could significantly increase the availability of bat roosting opportunities in the medium to long-term. Provisions of new roosting habitat is a **positive significant effect** at Local level | Implementation of LEMP.<br><br>Bat box strategy. | **No significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Negligible** in the immediate term, changing to **minor beneficial** in the medium- to long-term. |
| | Potential lighting impact on potential roosting habitat in Application 4 and the wider | Operational lighting strategy will include bat sensitive | **No significant effect.** | **Negligible.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | SRF is considered a **negative significant effect** at Local level. | measures. | | |
| **Bat Foraging and Commuting**<br><br>**(Local Value)** | Potential lighting impact on foraging/commuting routes in Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible** |
| **Breeding Birds**<br><br>**(Local Value)** | New buildings, habitat creation and enhancement and bird boxes could significantly increase the nesting opportunities in the medium- to long-term. Provisions of new nesting habitat is a **positive significant effect** at Local level. | Implementation of LEMP.<br><br>Bird box strategy. | **No significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Negligible** in the immediate term, changing to **minor beneficial** in the medium- to long-term. |

7.194 The cumulative assessment focused on those ecological features identified in the standalone Application 4 assessment. The wider SRF contains similar habitats to those within Application 4 though the most valuable habitats will be largely retained and a large proportion of the SRF is comprised of low-value habitats e.g. hardstanding and buildings.

7.195 Due to the heavily developed nature of the landscape in the areas of the wider SRF proposed for development, the potential for fragmentation or disturbance effects to accumulate is limited to only those parts of the SRF close to this application and only where they contain features of relevance to the habitats and species within this application. The assessment did identify additional habitat loss or damage, and disturbance effects once the wider SRF was incorporated. However, these can all be adequately mitigated for as detailed in the table.

7.196 Assessment of the Development project i.e. Application 4 and the wider SRF, is provided via a high level combined assessment. It is predicted that there will be no cumulative effects from additional habitat losses in the SRF as no valuable habitat loss is proposed in Application 4. Furthermore, given the commitments within a Northern Gateway Biodiversity Plan, it is likely there would be an overall positive effect on woodland habitat,

quality/quantity of bat foraging and commuting habitat and quantity/quality of breeding bird habitat in the long term.

7.197 The significance of the anticipated residual effects for this scenario are based on the information available at the time of writing. Specific mitigation measures required in respect of any issues pertinent to future applications within the SRF will be identified and agreed within the scope of the assessments prepared and submitted with those applications.

# NT02-NT04 (Full Application 5)

## Baseline Conditions (Application 5)

### Designated Sites

7.198 Full details of the desk-based assessment and specifically the international, national and local designations are presented in **Appendix 7.1**.

#### Internationally Designated Sites

7.199 A data search for internationally designated sites was undertaken within 10km of the Application 5 Site. One SAC was found within the search radius; Rochdale Canal SAC. The Rochdale Canal SAC, designated for its significant population of Annex II species: floating water-plantain, is located 4.4km north-east of the Application 5 Site. Due to the distance and significant inner-city barriers between the Application 5 Site and the SAC, it is not considered that there are any potential direct or indirect pathways of likely significant effect. Rochdale Canal SAC has therefore been scoped out of further assessment.

#### Nationally Designated Sites

7.200 A data search for nationally designated sites was undertaken within 5km of the Application 5 Site. One SSSI was found within the search radius; Rochdale Canal SSSI. The Rochdale Canal SSSI, designated for its diverse assemblage of aquatic flora indicating high water quality, is located 4.4km north-east of the Application 5 Site. Due to the distance and significant inner-city barriers between the Application 5 Site and the SSSI, it is not considered that there are any potential direct or indirect pathways of likely significant effect.

7.201 Although the Application 5 Site falls within the SSSI IRZ for Rochdale Canal SSSI, the parameters of the Proposed Application 5 Development do not meet the risk IRZ threshold. Rochdale Canal SSSI has therefore been scoped out of further assessment.

### Locally Designated Sites

7.202 A data search for statutory locally designated sites was undertaken within 2km of the Application 5 Site. No locally statutory designated sites were identified within the search radius.

7.203 There are three locally non-statutory SBIs within the 2km search radius, as detailed within **Table 7.10.**

***Table 7.10**: Locally designated sites within 2km of Application 5*

| Name of Designation | Distance from Site | Designation Reason |
|---|---|---|
| Rochdale Canal: Scott's Lane to Ducie Street Basin | 0.9km south | The SBI is a canal and therefore classifies as Greater Manchester LBAP habitat. The canal is known to |

| Name of Designation | Distance from Site | Designation Reason |
|---|---|---|
| SBI | | support floating water-plantain. |
| Ashton Canal (West) SBI | 1.2km south | The SBI is a canal and therefore classifies as Greater Manchester LBAP habitat. |
| Reservoirs at Harpurhey SBI | 2km north-east | The SBI supports reedbed, swamp, fen and pond habitat (LBAP habitat). |

7.204 All three SBIs are separated from the Application 5 Site by significant inner city residential, commercial, and industrial development and infrastructure. There are also no hydrological links between any of the listed SBIs and the Application 5 Site. Due to the distance and significant barriers between the Application 5 Site and the SBIs, it is not considered that there are any potential direct or indirect pathways of likely significant effect. All three SBIs have therefore been scoped out of further assessment.

## Habitats and Flora

7.205 The full extended Phase 1 habitat survey is presented in **Appendix 7.2** and detailed on the Phase 1 habitat survey plan (**Figure 7.2**). The habitats within and adjacent to the Application 5 site are summarised below.

### Running Water (River Irk)

7.206 The River Irk is adjacent to a short section of the northern Application 5 Site boundary, flowing east to west. The southern bank of the River Irk is reinforced with vertical brick walls and other stonework. The northern bank is reinforced for the majority but does have some sections which are soft and sandy. There is a raised weir upstream which undoubtedly limits the passage of fauna. The watercourse is subject to fly tipping with little to no submergent aquatic vegetation. Scattered scrub, namely butterfly-bush, is present throughout the entirety of banks of the watercourse.

7.207 The River Irk, while an undoubtedly important landscape feature, does not meet the necessary criteria to qualify as a S41 habitat of principal importance. The section of the River Irk which falls closest to the Application 5 Site is more than 2.5km from its source and has been significantly modified virtually throughout, with aquatic and marginal species typically rare and predominantly associated with localised areas where silt or mud has accumulated alongside the river. The water quality appears to be generally poor with nothing to suggest a significant species diversity. Although the inherent value of the River Irk is considered to be poor, based on its bankside habitat and water quality, its importance in the form of a river corridor is still of significant value to a range of species. The River Irk Corridor has therefore been taken forward in this assessment as an important ecological feature at the Local level.

### Dense Scrub

7.208 There is an area of dense scrub, dominated by bramble, in the south of the Application 5 Site adjacent to the Network Rail railway line (NT03) and within the Marsden Triangle (NT04). Himalayan balsam is present throughout the scrub. Dense scrub is taken forward in this assessment as an important ecological feature at the Local level due to the presence of Himalayan balsam, an Invasive Alien Species.

### Scattered Scrub

7.209 There are small stands of scrub scattered across the Application 5 Site, which is predominantly butterfly-bush associated with areas of hardstanding. Scattered scrub is scoped out of further assessment due to the low quality value for biodiversity, in line with CIEEM guidance.

### Scattered Broadleaved Trees

7.210 Small, scattered silver birch trees are present in the south of the Application 5 Site, adjacent to the Network Rail railway line. All of the scattered trees have been assessed as either Category B or Category C in accordance with BS5837:2012. Scattered trees have therefore been taken forward in this assessment as an important ecological feature at the Local level.

### Other Habitats

7.211 The remainder of the Application 5 Site is either hardstanding, bare ground with ephemeral vegetation growth or buildings. Detailed building descriptions and photographs are provided within **Appendix 7.3**. Hardstanding, bare ground, bare ground with ephemeral vegetation and buildings are all scoped out of further assessment due to the low quality value for biodiversity of both potential features, in line with CIEEM guidance.

### Invasive Plant Species

7.212 Himalayan balsam is an invasive plant species that is listed under the Invasive Alien Species (Enforcement and Permitting) Order 2019. Himalayan balsam was identified in the south of the Application 5 Site adjacent to the railway line.

7.213 As an invasive plant species Himalayan balsam is not classified as important ecological features, but mitigation measures in relation to this species will be detailed later in this assessment.

### Protected Plant Species

7.214 No protected plant species (Schedule 8 of the Wildlife and Countryside Act 1981 as amended) were identified within the Application 5 Site or immediately adjacent.

## Fauna

### Bats

7.215 Full details of the bat assessment can be found within **Appendix 7.3**.

7.216 The ground-based tree assessment found that none of trees within the Application 5 Site had suitability for roosting bats. All trees were assessed as having negligible potential for roosting bats as they were found to be lacking in suitable features, such as cracks, crevices or dense ivy growth, necessary to support roosting bats.

7.217 Within the Application 5 Site there are nine buildings. The location of these buildings in context of the wider site is shown on **Figure 7.2**. Buildings B11, B13, B15, B16, B18, B19 were assessed as offering negligible potential with no suitable features for roosting bats observed. Buildings B12 and B17 were assessed as having low suitability for roosting bats and B14 was assessed as having high suitability for roosting bats.

7.218 Nocturnal roost surveys of buildings B12 and B17 identified no roosting bats. However, nocturnal roost surveys of B14 identified two common pipistrelle day roosts. Common pipistrelle is not included as a UK Priority Species and has a common status. NBMP Data (BCT, 2021)[33] shows a statistically significant upward trend in the field survey data (1999 to 2021; +76.8%). The species is present in the local area. Given the presence of small numbers of common roosting species and the low conservation status of these roosts, roosting bats have been taken forward in this assessment as an important ecological feature at the Local level.

7.219 Although no specific bat activity surveys were undertaken across the Application 5 Site in 2021, a review of the habitat quality and connective importance was made. A review of historic bat activity survey results for the wider Northern Gateway area, which were undertaken by PCA in 2018 and 2019, was also made. The New Town area, which includes the Application 5 Site, was subject to extensive bat surveys on a monthly basis over a six-month period. Very little bat activity was recorded from this neighbourhood with records largely limited to very rarely occurring common pipistrelle flying to the River Irk corridor.

7.220 Nocturnal roost surveys of buildings along Dantzic Street (including outside the Application 5 Site boundary) were undertaken by TEP in 2021. These surveys identified the presence of foraging and/or commuting common pipistrelle and noctule bats. General foraging and commuting activity was noted along the River Irk Corridor and within St. Catherine's Wood (north of the Application 5 Site). These results are akin to the findings of PCA. For the purpose of this assessment bat foraging and commuting have been combined and taken forward in this assessment as an important ecological feature at the Local level.

### Badger

7.221 No evidence of badger using the Application 5 Site was identified during the survey. No badger setts of any classification were found within the Application 5 Site or surrounding habitat. Nor were any field signs of badger

[33] BCT (2021) The National Bat Monitoring Programme: Annual Report 2021. BCT, London.

foraging/commuting activities, such as tracks, snuffle holes, latrines or feeding remains found across the Application 5 Site. Therefore, badgers have been scoped out of further assessment.

### Breeding Birds

7.222 Although no breeding bird surveys were undertaken by TEP in 2021 or 2022, due to overriding health and safety reasons, the Application 5 Site was part of a wider breeding bird survey of the Northern Gateway area, undertaken by PCA in 2018. The New Town area, which includes the Application 5 Site, was subject to three breeding bird surveys between mid-April to mid-June 2018. The New Town neighbourhood is a highly urbanised part of the study area which supported a limited number of breeding species. Records were particularly associated with the vegetation along the railway corridor as well as occasionally better vegetated abandoned industrial land. Wren was the most frequently encountered breeding species along with more rarely occurring blackbird, blackcap, carrion crow, goldfinch, great tit *Parus major*, magpie *Pica pica*, robin, song thrush and woodpigeon. Large numbers of feral pigeon *Columba livia* were present beneath railway bridges. Pied wagtail *Motacilla alba* was also recorded as breeding in buildings. Of these species, song thrush classifies as a S41 priority species.

7.223 The dense scrub habitat and buildings within the Application 5 Site provide limited nesting opportunities for birds. High levels of disturbance from the surrounding area are likely to have a negative effect on successful breeding within the Application 5 Site.

7.224 All the bird species recorded are typical of the habitats present and are mostly common or widespread in the vicinity of the Application 5 Site. Following a review of the Manchester LWS criteria, this site would not qualify as a LWS under any of the qualifying criteria relating to breeding birds and therefore is not considered important at a regional level. Breeding birds are taken forward in this assessment as an important ecological feature at the Local level.

### Water Vole and Otter

7.225 The River Irk is located adjacent to the Application 5 Site. No records of either otter or water vole have been noted in the Irk catchment for many years. The River Irk is considered sub-optimal for both otter and water vole due to the highly engineered banks, limited sources of food for water vole and otter, as well as the disturbed nature of the watercourse. No detailed riparian mammal surveys were therefore undertaken. Water vole and otter have both been scoped out of further assessment.

### Herptiles

7.226 No potential amphibian breeding habitat was identified within 500m of the Application 5 Site boundary and therefore no detailed amphibian surveys were undertaken. Amphibians have been scoped out of further assessment.

7.227 No records of reptiles were obtained from the desk-based searches and reptiles are not known to be present in the local area. Detailed reptile surveys were deemed unnecessary for this site, which was agreed in advance with GMEU. Reptiles have been scoped out of further assessment.

### Invertebrates

7.228 Whilst no detailed invertebrate surveys were undertaken, the homogenous nature of the terrestrial habitat present, along with a general lack of high floristic diversity, is indicative of habitat which is unlikely to be of particular value to this species group. The River Irk, whilst likely supporting a number of aquatic invertebrates, has very poor water quality and is heavily polluted, suggesting it is unlikely to support significant assemblages of invertebrates. The EA conducts regulatory monitoring of invertebrates, macrophytes and fish BQE for compliance and monitoring purposes. A review of WFD status in River Irk Upper (GB112069061161) and River Irk Lower (GB112069061131)[34] showed the invertebrates BQE was classified as poor status suggesting a significantly impaired invertebrate population with low diversity and abundance of species. Terrestrial and aquatic invertebrates have been scoped out of further assessment.

## Fish

### Fish Habitat Survey

7.229 The River Irk within the survey area can be classified as a grayling zone river, which exhibits the flow characteristics which may support rheophilic species such as brown trout or chubb. Brown trout are known to be present in the upper catchment of the River Irk. The fish habitat assessment identified suitable habitat for parr and adult life stages of trout based on flow and substrate criteria. However, water quality and numerous barriers to fish movement including the Scotland and Collyhurst weir are expected to impair the health of any fish population present. It is highly unlikely that migratory fish including anadromous salmonids utilise the River Irk, due to known water quality pressures and barriers within the river, as well as similar pressures on the downstream River Irwell.

### Detailed Fish Survey

7.230 The range of aquatic habitats present adjacent to the Application 5 Site should ordinarily be capable of supporting a variety of fish species as described above. Despite this, only two species of fish (3-spined stickleback and minnow) were captured during the September 2021 surveys. It is suspected that the fish species assemblage observed is likely to reflect poor abiotic and biotic conditions resulting in the apparent absence of other less tolerant species, such as brown trout and bullhead, which would ordinally be expected to occupy the habitats present within the survey extents. The survey results indicate that within the study area the River Irk supports a fish community with a low species diversity. Fish are taken forward in this assessment as an important ecological feature at the Local level.

[34] The Site is contained within the River Irk Lower waterbody.

## Identification of Ecological Features

7.231 This section summarises the potential ecological features that could be impacted by the Proposed Application 5 Development and outlines the ecological value assigned to each feature.

7.232 Features which are not present, or are extremely unlikely to be present, or are accorded an ecological value of less than Local have not been taken forward for assessment. However, some of these features which have been scoped out of the impact assessment, will still require mitigation as part of the Proposed Application 5 Development on the basis of their legal requirements, their implications on nature conservation policies and plans, or for animal welfare reasons.

7.233 **Table 7.11** provides a summary of the preceding paragraphs.

***Table 7.11:*** *Valuation of ecological features (Application 5)*

| Feature | Ecological Value | Scoped in/out of assessment |
|---|---|---|
| Nature Conservation Designations | | |
| Rochdale Canal SAC | International | Scoped Out |
| Rochdale Canal SSSI | National | Scoped Out |
| Reservoirs at Harpurhey SBI | Regional | Scoped Out |
| Rochdale Canal: Scott's Lane to Ducie Street Basin SBI | Regional | Scoped Out |
| Ashton Canal (West) SBI | Regional | Scoped Out |
| **Habitats and Flora** | | |
| River Irk Corridor | Local | **Scoped In** |
| Dense scrub | Local | **Scoped In** |
| Scattered scrub | Local | Scoped Out |
| Scattered trees | Local | **Scoped In** |
| Other Habitats: Hardstanding Bare Ground, bare Ground and Ephemeral and Buildings | Less than Local | Scoped Out |
| Invasive Species: Himalayan balsam, Japanese knotweed | N/A | *Requirements relating to control of invasive species considered under Dense Scrub and River Irk Corridor* |

| Feature | Ecological Value | Scoped in/out of assessment |
|---|---|---|
| and giant hogweed | | |
| **Fauna** | | |
| Bats: Roosting | Local | **Scoped In** |
| Bats: Foraging and Commuting | Local | **Scoped In** |
| Badger | N/A | Scoped Out |
| Breeding Birds | Local | **Scoped In** |
| Water vole | N/A | Scoped Out |
| Otter | N/A | Scoped Out |
| Amphibians | N/A | Scoped Out |
| Reptiles | N/A | Scoped Out |
| Invertebrates (terrestrial and aquatic) | N/A | Scoped Out |
| Fish assemblage | Local | **Scoped In** |

## Embedded Mitigation (Application 5)

### Demolition and Construction

7.234 The detailed development designs include tree planting, rain gardens, green and brown roofs and permeable paving to maximise the green infrastructure across the site whilst simultaneously assisting with flood management and water discharge into the River Irk. Tree planting and green and brown roofs will provide habitat for a range of species including birds and invertebrates which in turn will create a foraging resource for bats. Different planting themes will be used in different areas, but predominantly native and wildlife-friendly species will be used with some non-native but climate resilient species. The development has been designed in such a way that planting, particularly along Travis Square, will act as green 'stepping stones', maintaining connectivity for wildlife.

7.235 Although a lighting strategy is included within the DAS, it does not contain any details on construction lighting. A more detailed lighting strategy, containing details on construction lighting is included as additional mitigation.

### The Completed and Operational Development

7.236 There is no embedded mitigation for ecology during the completed and operational phase. The ongoing management of new habitats as described above will be implemented through a LEMP and is included as additional mitigation rather than embedded.

7.237 Although a lighting strategy is included within the DAS covering the operational phase, it does not contain the level of detail required to be considered as embedded mitigation from an ecology perspective. A more detailed strategy will be required, to be conditioned as part of the full application, containing specific details on lighting height, directionality, lux levels etc. to ensure there will be no significant effects on nocturnal animals (primarily foraging and commuting bats). This more detailed strategy has been considered in this assessment as additional mitigation rather than embedded.

## Assessment of Likely Significant Effects (Application 5)

### Demolition and Construction

#### River Irk Corridor

7.238 Surface water from NT02-04 will be discharged at a restricted rate to the River Irk at one outfall location. The outfall location will have a concrete headwall, no greater than 3m wide. There will be direct loss of bankside habitat due to the drainage solution on site. Direct loss of bankside habitat is considered a **negative significant effect**, but only at the Local level due to the small-scale nature of the loss.

7.239 The Invasive Alien Species Himalayan balsam, giant hogweed and Schedule 9 species Japanese knotweed are present in various areas along the banks of the River Irk Corridor. Works along the riverbanks associated with the drainage solution have the potential to cause the spread of these species further off site and into the wider area, through wind, movement of seeds downstream and movement of construction vehicles. Spread of invasive species is contrary to national legislation and therefore in the absence of mitigation is a **negative significant effect** at the Local level.

7.240 Indirect impacts on the River Irk Corridor during construction are also possible, with effects due to accidental pollution events and the introduction of construction dust. In the absence of mitigation indirect impacts on the River Irk Corridor are considered a **negative significant effect** at the Local level.

#### Dense Scrub

7.241 The Invasive Alien Species Himalayan balsam is present in various areas with the areas of dense scrub within the Application 5 site. Vegetation clearance has the potential to cause the spread of Himalayan balsam, within and off site, through wind and movement of construction vehicles. Spread of invasive species is contrary to national legislation and therefore in the absence of mitigation is a **negative significant effect** at the Local level**.**

### Scattered Trees

7.242 The Proposed Application 5 Development would result in the direct loss of 0.32ha trees but embedded mitigation includes the incorporation of 0.73ha trees. Loss of scattered trees is a certain impact. Direct loss of 0.32ha trees is considered a **negative significant effect** in the short-term**,** but only at the Local level due to the small-scale nature of the loss. This changes to a **positive significant effect** in the medium- to long-term through the new planting.

### Roosting Bats

7.243 Buildings B12 and B17 were assessed as having low suitability for roosting bats and B14 was assessed as having high suitability for roosting bats. Building B14 will be demolished under the outline application (Application 4) and effects on roosting bats in this building have been assessed in the relevant section. Buildings B12 and B17 will be lost under the full application (Application 5). Nocturnal roost surveys of these buildings did not identify any bat roosts in these buildings. There will be no loss of confirmed bat roosts, however there will be a loss of available potential bat roost habitat. Effects on roosting bats associated with building loss is considered a **negative significant effect** at the Local level.

7.244 None of the trees within the Application 5 site were assessed as having roosting potential for bats. Effects on roosting bats associated with tree loss is therefore considered to have a negligible effect due to these works and considered **not significant**.

### Bat Foraging and Commuting

7.245 Loss of scattered trees and dense scrub during construction could disrupt bat foraging and commuting behaviour. Loss of this habitat would reduce the habitat availability and potentially increase the energetic cost of foraging bats in the local area. Bat activity was generally low across the Application 5 site and the assemblage is restricted to primarily common pipistrelle, with rare occurrences of noctule. Greater levels of bat activity were associated with the River Irk Corridor adjacent to the Proposed Application 5 Development. The loss of bat foraging and commuting habitat is considered a **negative significant effect** at the Local level.

7.246 Any proposed construction lighting could have detrimental impact on bat foraging and commuting bats in the absence of mitigation both within and adjacent to the Application 5 site. Artificial lighting has the potential to light up key commuting routes as well as foraging hotspots and therefore disrupting normal behaviours and increasing energetic costs for bats. The potential impact of lighting on bat foraging/commuting is considered a **negative significant effect** at the Local level.

### Breeding Birds

7.247 The Proposed Application 5 Development would result in the permanent loss of nesting habitat for a range of common and local bird species. There is therefore the potential for disturbance/displacement effect on breeding birds that are currently using the Application 5 site, due to the loss of feeding, roosting and nesting habitat. In the

absence of mitigation, the loss of bird feeding, roosting and nesting habitat is considered a **negative significant effect** at the Local level.

7.248 In the absence of mitigation there is also the potential for nesting birds to be killed or injured along with the damage and destruction of nests due to vegetation clearance during construction, especially if during the key breeding season of March to August inclusive. The potential effect of killing, injuring or disturbing breeding birds is considered a **negative significant effect** at the Local level.

### Fish

7.249 Works associated with the drainage solution could result in large quantities of loose sediment entering the river channel. Indirect impacts on fish during construction are possible, with effects due to accidental pollution events and the introduction of construction dust resulting in degradation of the water quality. In the absence of mitigation indirect impacts on fish are considered a **negative significant effect** at the Local level.

## The Completed and Operational Development

### River Irk

7.250 An increase in members of the public accessing the River Irk introduces the potential for both dogs and people to introduce and spread aquatic invasive species. The consequence of spreading invasive species along the River Irk corridor is assessed as having a **negative significant effect** at the Local level.

7.251 The new drainage outfall into the River Irk could result in increased pollutants entering the watercourse. However, **Chapter 10: Drainage and Flood Risk** of this ES identified no significant residual effects on water quality, channel morphology, flood risk or groundwater as a result of the new drainage discharge. As such, **no significant effects** are anticipated from an ecology perspective.

### Roosting Bats

7.252 Proposals include the construction of new buildings along with additional tree planting. In the medium- to long-term this will significantly increase the availability of bat roosting opportunities for a variety of species, including common pipistrelle and soprano pipistrelle both found to be present within the local area. The provision of potential new roosting habitat is a **positive significant effect** at the Local level.

7.253 During operation, artificial light sources include external street lighting on roads and within public realms and from buildings. Adverse artificial lighting has the potential to light up potential bat roosting features found in the new buildings and trees. Prior to mitigation measures during the operational phase, the potential impact of lighting on bat roosting is considered a **negative significant effect** at the Local level.

### Bat Foraging and Commuting

7.254 During operation, artificial light sources include street lighting and external lighting of foot and cycleways. As set out for construction impacts, adverse artificial lighting may reduce the area of suitable unlit habitat for bats to forage and disperse. Prior to mitigation measures during the operational phase, the potential impact of lighting on bat foraging/commuting is considered a negative significant effect at the Local level.

### Breeding Birds

7.255 Vehicular and pedestrian movements around the Application 5 site during the operational phase will result in increased visual and noise disturbances and therefore could disrupt birds nesting in the newly planted habitats suitable for nesting birds. However, the species present would be expected to habituate to any disturbance impacts. Disturbance to nesting birds within and adjacent to the site from operational activities is therefore unlikely to significantly affect medium- to long-term breeding capabilities. The increased public disturbance effect on nesting birds is **not significant.**

7.256 The availability of new buildings will create nesting opportunities for birds at the operational phase. Increases in botanical and invertebrate abundance and diversity as a consequence of new habitat creation and enhancement will also benefit a range of foraging/nesting birds. A **positive significant effect** is predicted for some bird species at the Local level.

7.257 The new residential areas will invariably include some households with domestic cats, which will result in predation and thus mortality or injury to birds using the retained and newly created habitats. Predation by cats is difficult to assess and quantify. Research undertaken in the UK (Woods et. al., 2003[35]) would indicate that the wild bird species most frequently taken by domestic cats are those that are often found closely associated with human habitat. However, net gains to their population (abundance and range) as a consequence of the new habitat creation/ enhancements are likely to result in a trade off, reducing the impact of mortality losses from predation. The increased risk of cat predation on nesting birds is **not significant.**

## Additional Mitigation / Enhancement Measures (Application 5)

7.258 Mitigation or compensation is required for each ecological feature which experiences negative significant effects, to reduce or offset the specific impacts of the Proposed Application 5 Development on that feature. This section sets out the ecological mitigation measures that would be delivered as part of the planning application. They are additional to embedded mitigation measures and any mitigation required by other disciplines.

7.259 In considering the effectiveness of different mitigation measures, the time required for the mitigation to become effective is an important factor; works such as planting, for example, require an establishment period and a maturation period before they have the potential to replace mature and structured habitats that might be

[35] Woods, M., R.A. McDonald & Harris, S. (2003) Predation of wildlife by domestic cats Felis catus in Great Britain. Mammal Review 33: 174-188

damaged or lost during the construction phase. In some instances though, mitigation measures would have an immediate effect. Time periods are considered as follows:

- Immediate – effective immediately;
- Short-term - effective within 2 years;
- Medium-term – effective within 2 – 5 years;
- Long-term – effective within 5 – 10 years.

7.260 For legally protected species within the Proposed Application 5 Development, any specific legal requirements for works affecting them would be met in addition to the proposed mitigation measures for the reduction of effects.

7.261 The mitigation hierarchy requires that adverse impacts are first avoided then where this is not possible, mitigated and as a last resort compensated (off-set). Mitigation measures are discussed with respect to construction and operation below.

## Demolition and Construction

### River Irk

7.262 As described above for Application 4, a CEMP and ISMS will be produced to ensure no accidental direct or indirect effects on the river and no spread of invasive species along the banks.

### Dense Scrub

7.263 As described above for Application 4, an ISMS will be produced to ensure no spread of Himalayan balsam from the ground flora of the scrub.

### Scattered Trees

7.264 Scattered trees will be planted within the Application 5 Site to replace the loss during development. As described above for Application 4, a LEMP will be produced which will set out the long-term management and monitoring objectives for the newly created habitats.

### Roosting Bats

7.265 The loss of potential roosting habitat will be mitigated through the provision of alternative roosting habitat (bat boxes). Suitable bat boxes for the species assemblage associated with the area will be installed on retained trees within adjacent land or incorporated within the proposed buildings within the Application 5 Site

### Bat Foraging and Commuting

7.266 As described above for Application 4, the use/need of construction lighting would be minimal and there would be a curfew of 23:00 beyond which most lighting would be switched off. Any necessary lighting would be directed

away from retained habitats to avoid the possibility of deterring bat activity. Temporary construction lighting methods would be bat sensitive and set out within a lighting strategy.

7.267 Enhancements to bat foraging/commuting habitats will be provided through the LEMP.

### Breeding Birds

7.268 Vegetation clearance would be timed to be carried out in winter. Where this is not possible and works are needed to be carried out during the bird breeding season (March to August inclusive), all areas to be affected would be checked for evidence of nesting birds a maximum of 24hrs prior to the vegetation removal/tree felling works taking place. If any active bird nests are discovered these would be given a minimum standoff of 5m (this may increase depending on species/proposed works and location) where no potentially disturbing works would take place until the young have fledged and the nest vacated. A second nesting bird check would then be undertaken to ensure the tree/vegetation does not contain any further active nests prior to felling/removal works taking place.

7.269 Enhancements to breeding bird habitats will be provided through the LEMP.

### Fish

7.270 As described above for Application 4, works to the river bank would be timed to avoid disturbance of spawning fish in April-July and a CEMP will be implemented to ensure no accidental indirect effects on fish are encountered

## The Completed and Operational Development

### Foraging/Commuting Bats

7.271 As described above for Application 4, a Sensitive Lighting Strategy will set out the lighting proposals during both construction and operation to ensure potential adverse effects on bats are avoided.

# Likely Residual Effects of the Development and their Significance (Application 5)

7.272 This section summarises the significance of the anticipated residual effects on ecology features, which are those that remain after all proposed mitigation measures are implemented during the construction and demolition phase and the operational phase (see **Table 7.12).**

***Table 7.12**: Residual Effects Summary (Application 5)*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| ***Construction and Demolition*** | | | | |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| **River Irk**<br><br>**(Local Value)** | Drainage outfall leading to certain loss of bankside habitat is considered a **negative significant effect** at Local level. | Wider enhancements of the River Irk through the LEMP. | **Negative significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Minor adverse** in the immediate term, changing to **Minor beneficial** in the medium- to long-term. |
| | Possible indirect impact on River Irk (pollution/ construction dust) is considered a **negative significant effect** at Local level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of Himalayan balsam, giant knotweed and Japanese knotweed during construction works across site and wider area is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| **Dense Scrub**<br><br>**(Local Value)** | Likely spread of Himalayan balsam during construction works across site and wider area is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| **Scattered Broadleaved Trees**<br><br>**(Local Value)** | Certain loss of 0.32ha scattered trees is considered a **negative significant effect** at Local level in the short-term. Planting of 0.73ha trees is considered a **positive significant effect** at Local level in the medium- to long-term. | Management of newly planted trees through LEMP. | **Negative significant effect** in the short-term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Minor adverse** in the short-term, changing to **Minor beneficial** in the medium- to long-term. |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| **Roosting Bats**<br><br>**(Local Value)** | Loss of potential roosting habitat is a **negative significant effect** at Local level. | Provision of alternative roosting habitat to mitigate for the loss of available roosting habitat e.g. bat boxes. | **No significant effect.** | **Neutral.** |
| **Bat Foraging and Commuting**<br><br>**(Local Value)** | Loss of available bat foraging/commuting habitat is considered a **negative significant effect** at Local level. | Management and enhancement of newly created habitat and River Irk corridor through LEMP. | **Negative significant effect** in the short- to medium-term, changing to **positive significant effect** in the long-term. | **Minor adverse** in the short- to medium-term, changing to **minor beneficial** in the long-term. |
| | Construction lighting impact on offsite retained commuting corridors and foraging habitat is considered a **negative significant effect** at Local level. | Implementation of lighting strategy which would include bat sensitive measures. | **No significant effect.** | **Negligible.** |
| **Breeding Birds**<br><br>**(Local Value)** | Loss of available bird nesting and foraging habitat is considered a **negative significant effect** at Local level. | Bird box strategy.<br><br>Management of created habitat through LEMP. | **Negative significant effect** in the immediate term, changing to **no significant effect** in the medium- to long-term. | **Minor adverse** in the immediate term, changing to **Neutral** in the medium- to long-term. |
| | Potential for killing or injuring birds/nests through vegetation clearance is considered a **negative significant effect** at Local level. | Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined within CEMP. | **No significant effect.** | **Negligible.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| **Fish**<br><br>**(Local Value)** | Potential for disturbing spawning fish during construction of outfall is considered a **negative significant effect** at Local level. | Restrictions on river works during spawning season (April -July for species encountered during surveys) and pollution measures outlined within CEMP. | **No significant effect.** | **Negligible.** |
| ***Completed and Operational Development*** | | | | |
| **River Irk**<br><br>**(Local Value)** | Potential increase in public pressure leading to likely introduction or spread of invasive species is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **No significant effect.** | **Negligible.** |
| **Roosting Bats**<br><br>**(Local Value)** | New buildings, additional tree planting and bat boxes could significantly increase the availability of bat roosting opportunities in the medium- to long-term. Provisions of new roosting habitat is a **positive significant effect** at Local level | Implementation of LEMP.<br><br>Bat box strategy. | **No significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Negligible** in the immediate term, changing to **minor beneficial** in the medium- to long-term. |
| | Potential lighting impact on potential roosting habitat is considered a **negative significant effect** at Local level. | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible.** |
| **Bat Foraging and Commuting**<br><br>**(Local Value)** | Potential lighting impact on foraging/commuting routes is considered a **negative significant effect** at Local level. | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| **Breeding Birds**<br><br>**(Local Value)** | New buildings, habitat creation and bird boxes could significantly increase the nesting opportunities in the medium- to long-term. Provisions of new nesting habitat is a **positive significant effect** at Local level | Implementation of LEMP.<br><br>Bird box strategy. | **No significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Negligible** in the immediate term, changing to **minor beneficial** in the medium- to long-term. |

## Consideration of Climate Change on Biodiversity (Application 5)

7.273 Due to the proximity between the two sites and the similar habitats present on, and adjacent to them, the climate change consideration for Application 5 is the same as described above for Application 4.

## Conclusions (Application 5)

7.274 The assessment identified seven locally important ecological features, these were: River Irk corridor, dense scrub, scattered broadleaved trees, roosting bats, bat foraging/commuting, breeding birds and fish.

7.275 The potential for disturbance effects and unintended habitat loss or damage resulting from demolition and construction activities were identified through the assessment. The majority of these can be avoided through mitigation measures including the production of a CEMP, LEMP, ISMS and lighting strategy.

7.276 The potential for further disturbance effects and unintended habitat loss or damage resulting from increased public pressure during the operational phase was identified through the assessment. This can be avoided through mitigation measures including the LEMP, ISMS and lighting strategy.

7.277 Habitat loss has been minimised as far as is possible, but some loss is unavoidable. Replacement planting will occur (as set out in the proposed Landscaping Strategy). This results in no negative significant residual impacts from habitat loss.

7.278 A standalone BNG assessment has been undertaken including a metric for Application 5 only. This delivers a net gain of 26.86% such that no off-site habitat is required to exceed 10% net gain for this application. This standalone document is submitted in support of the planning applications.

7.279 No residual effects during the demolition and construction or operational phases have been identified for the Application 5 site.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 5)

### Approach

7.280 The approach to the cumulative assessment is the same as described above for Application 4.

7.281 **Table 7.13** presents consideration of whether a cumulative site identified in the search undertaken by Avision Young on Manchester City Council and Salford City Council planning portals has been scoped in or out of the cumulative impact assessment and presents justification for this decision.

***Table 7.13:*** *Cumulative Sites (Application 5)*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | **Collyhurst Village**<br>City Council Development for the erection of 168, three and four storey dwellinghouses (Use Class C3a) and two, five and six storey apartment buildings to form 76 residential apartments (Use Class C3a) with associated ground floor flexible commercial unit (162 sqm) (Use Class E); and the creation of a new public park; all with associated car and parking, refuse storage, landscaping, public realm and other associated works and infrastructure following demolition of 29 existing residential dwellinghouses, the Collyhurst Village Store and associated car parking | 650m northeast | Approved June 2021<br><br>Groundworks started | Scoped out | The assessment concluded that there will be no adverse effects on any designated sites within range of the Site, including Rochdale Canal SAC/SSSI and Rochdale Canal Stott's Lane– Ducie Street Basin SBI.<br><br>Loss of low-quality grassland and dense scrub, along with the loss of 0.57ha of higher quality semi-natural woodland would result from development of the Site. Timescales of loss are likely to overlap and mitigation may not occur immediately, but this additional loss of woodland in the wider area would not be large enough to change the significance of effect for this feature.<br><br>No invasive plant species were identified during the surveys.<br><br>One building and seven trees with low bat roost potential will be lost due to the development. No bat roosts were identified during the nocturnal roost survey. Mitigation for the loss of available roosting habitat will be implemented through bat box scheme.<br><br>Loss of low-level breeding bird and bat foraging and commuting habitat.<br><br>RAMS measures proposed for bats, birds and hedgehog during felling/demolition and vegetation clearance.<br><br>Biodiversity enhancement measures detailed including bat and bird boxes.<br><br>BNG strategy to deliver 10% net gain in conjunction with Collyhurst South application.<br><br>No residual significant effects on any receptors were identified in the |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | assessment.<br><br>Assuming that the mitigation measures are implemented, it is not anticipated that these proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **2** | 127971/FO/2020 | **Osborne Yard**<br>Erection of a 6 storey building to form 90 residential apartments (Use Class C3a) following demolition of existing structures with associated access, car parking, amenity space, landscaping and other associated works | 950m east | Approved May 2021<br><br>Construction not yet started | Scoped out | The assessment concluded that there will be no adverse effects on any designated sites within range of the Site, including Rochdale Canal SAC/SSSI. Low quality habitats impacted but compensated for with hard landscaping.<br><br>One building with low bat roost potential will be lost due to the development. No bat roosts were identified during the nocturnal roost survey. Mitigation for the loss of available roosting habitat will be implemented through bat box scheme.<br><br>Loss of low-level breeding bird habitat. Mitigation for the loss of available nesting habitat will be implemented through bird box scheme. RAMS measures proposed for birds during vegetation clearance.<br><br>No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming that the mitigation measures are implemented, it is not anticipated that these proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **3** | 128248/FO/2020 | **The Gasworks**<br>Erection of 9 buildings ranging from 8 to 34 storeys in height to form 1202 residential apartments (Use Class C3a) and ground floor commercial uses (Use Class E) (192 sqm) together with associated car parking, new vehicular and pedestrian access, public realm, landscaping and other associated works following demolition of existing structures and | 45m south | Approved June 2021<br><br>Construction not yet started | Scoped out | The assessment concluded that there will be no adverse effects on any designated sites within range of the Site, including Rochdale Canal SAC/SSSI and Stott's Lane– Ducie Street Basin SBI and Ashton Canal (West) SBI.<br><br>The Site is predominantly hardstanding with occasional areas of introduced shrub and tall ruderal herbs. Loss of this low-quality habitat was assessed as not significant.<br><br>Two bat roosts were identified within brick archways; common |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | buildings \| Land Bound By Gould Street, Williamson Street, Bromley Street And Bilbrook Street Manchester M4 4DD | | | | pipistrelle hibernation and common pipistrelle day roost. Disturbance/destruction to these roosts will be licensed and appropriately mitigated.<br><br>Loss of low-level breeding bird habitat. RAMS measures proposed for birds during vegetation clearance.<br><br>No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the mitigation measures are implemented, it is not anticipated that these proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **4** | 116366/FO/2017 | **Meadowside**<br>Erection of four residential buildings (22 storey building, 17 storey building, 40 storey building and part 12, part 9 storey building) to form 756 residential apartments (Use Class C3a) together with ground floor commercial uses (616 sqm) (Use Classes A1, A2, A3, A4, A5, D1 and B1) with associated car parking, landscaping, amenity areas, creation of new public realm following the closure of Aspin Lane, Mincing Street and Irk Street and other associated works following demolition of existing structures \| Land Bounded By Dantzic Street & Aspin Lane, Land Bounded By Gould Street & Angel Meadows And Land Bounded By Old Mount Street, School Street, Naples Street & Ludgate Street Manchester | 90m south | Approved August 2017<br><br>Under construction, with three of the Scheme's four buildings now complete and occupied. | Scoped out | The ecological appraisal concluded that there will be no adverse effects on any designated sites within range of the Site. The Site is dominated by hardstanding with occasional amenity grassland and introduced shrub. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **5** | 127537/FO/2020 | **25 Rochdale Road**<br>Erection of a 11 storey 229 bedroom hotel (Use Class C1) with ancillary ground floor bar/restaurant together associated public realm and other associated works \| 25 Rochdale Road Manchester M4 4HT | 340m south | Approved October 2020<br><br>Construction not yet started | Scoped out | The ecological report concluded that there will be no adverse effects on any designated sites within range of the Site, including Rochdale Canal SAC/SSSI, Boggart Hole LNR, Rochdale Canal: Scott's Lane to Ducie Street Basin SBI and Ashton Canal (West) SBI. The Site comprised an expanse of hardstanding. No residual significant |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | effects on any receptors were identified in the assessment.<br><br>It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **6** | 124973/FO/2019 | **2 and 3 Angel Square**<br>Erection of an 11 storey building and a 12 storey building with plant rooms above to form a mixed use development comprising 39,184 sq.m (NIA) of Class B1a office use and commercial units of 1,286 sqm (NIA) (Use Classes A1, A2, A3, A4, B1a and D1) along with associated lower ground level car parking, hard and soft landscaping and associated works, including the creation of a new pedestrian route between Angel Street and Miller Street. \| Land Bounded By Co-op Headquarters Miller Street And Angel Street Manchester | 260m south | Approved February 2020<br><br>Construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site, including Rochdale Canal SAC/SSSI. The Site is dominated by hardstanding with areas of unmanaged vegetation, ornamental planting, semi-improved neutral grassland and an allotment area.<br>Loss of low-level breeding bird habitat. RAMS measures proposed for birds and vegetation clearance. Biodiversity enhancement measures detailed including bat and bird boxes. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **7** | 126944/FO/2020 | **Victoria Riverside**<br>Erection of a residential-led mixed use development comprising 3 no. towers (37, 26 and 18 storeys) and podium levels (6 storey) to form 634 residential apartments and townhouse accommodation (Use Class C3) together with commercial accommodation (1222 sqm) (Use Classes A1,A2,A3,A4,A5,B1, D1 and D2)); with associated residential amenity areas, refuse storage, plant (including substation), car parking, cycle storage, landscaping and new public realm including the re-instatement of Bromley Street and other associated works. | 0m south (adjacent to Site boundary) | Approved September 2020<br><br>Under Construction | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. The Site consists of bare ground with a peripheral band of vegetation with no ecological value. Himalayan balsam and Giant Hogweed Schedule 9 invasive species were found to be present. The Site offers no potential for roosting bats and foraging habitat is of low value. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **8** | 131708/FO/2021 | **87 Rochdale Road**<br>Erection of a part 11, part 13 storey building to form residential apartments (Use Class C3a) | 200m south | Approved February 2022 | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. The Site consists of hardstanding and four buildings offering little ecological |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | together with the erection of two blocks of 3 storey townhouses (Use Class C3a) to form 237 residential homes in total with associated commercial floor (Use Class E) (132 sqm), basement car parking, landscaping and public realm, and associated engineering and infrastructure works following demolition of existing buildings and structures. | | Construction not yet started | | value. The bat survey undertaken on the Site identified the four onsite buildings as offering low bat roosting potential. Following emergence surveys none of these buildings were found to support a bat roost. A series of tunnels were found to have hibernation potential. Following hibernation surveys, no hibernating bats were identified. The invasive plant species, wall cotoneaster was identified within the Site. No residual significant effects on any receptors were identified in the assessment. |
| **9** | 128997/FO/2020 | **40 Swan Street**<br>Erection of a ground plus 9-storey building to form 118 no. residential apartments (Use Class C3), including amenity areas, ground floor food and beverage/ commercial units (Sui Generis/ Use Class E), public realm and landscaping, with supporting infrastructure and associated works following demolition of existing building | 560m south | Approved September 2021<br><br>Construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. The Site consists of hardstanding and two buildings and five shipping containers offering little ecological value. The bat survey undertaken on the Site identified the onsite buildings as offering negligible bat roosting potential. RAMS measures proposed for nesting birds during demolition and vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **10** | 121380/FO/2018 | **Swan House**<br>Erection of a part 31, part 13, part 5 storey building to form 373 residential apartments (Use Class C3a) and 12 serviced apartments (Use Class C1) together with a ground floor commercial unit (408 sqm) (Use Class A1, A2 or A3) with associated car parking, public realm and other associated works following demolition of existing buildings | 510m south | Approved October 2019<br><br>Under Construction | Scoped out | The Site comprises a complex of warehouse buildings with garage areas. The bat survey undertaken on the Site identified the onsite buildings as offering low bat roosting potential. Roost surveys did not identify any roosting bats. RAMS measures proposed for roosting bats and nesting birds during demolition and vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **11** | 124888/FO/2019 | **New Cross Central (Mulbury City)**<br>Erection of a 6-9 storey residential building | 665m south | Approved | Scoped out | The ecological briefing note confirms the Site consists of hardstanding with a number of built structures. The buildings on site |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | (Use Class C3) comprising 80 no. dwellings including 9 no. townhouses and 71 no. apartments with residents lounge, refuse, plant, new substation, cycle storage, an internal landscaped courtyard and improvements to the adjacent footways | | January 2020<br><br>Under Construction | | were assessed as offering negligible potential for roosting bats. No residual significant effects on any receptors were identified in the assessment.<br><br>It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development.. |
| **12** | 121375/FO/2018 | **20 – 36 High Street**<br>Construction of a 22 storey building comprising 361 residential apartments (122 x 1 bed 2 person, 119 x 2 bed 3 person, 94 x 2 bed 4 person, 21 x 3 bed 5 person and 5 x 3 bed 6 person (34% 1 bed, 59% 2 bed and 7% 3 bed) ground floor commercial floorspace (Use Classes A1 (Shop), A3 (Restaurant and Cafe), A4 (Drinking Establishment) and A5 (Hot Food Take-away) associated landscaping, including new public realm and pedestrian route, together with servicing, cycle parking, access and other associated works following demolition of buildings at 20-22 and 24-26 High Street and 5 market stalls to Church Street. | 720m south | Approved October 2020<br><br>Construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. Building within the Site were assessed as offering low to negligible potential for roosting bats. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **13** | 125678/FO/2019 | **Peeler's Yard**<br>Erection of 8-storey residential building (Use Class C3) comprising 73 residential units, with ground floor commercial use (Classes A1, A2, A3, B1 and D1 (excluding Places of Worship)) (205 sqm); alterations to the retained perimeter wall and chimney including the introduction of a light box; disabled car parking, highways, landscaping and other associated works | 480m south | Approved December 2020<br><br>Site secured, construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. Habitats within the Site were not significant in terms of conservation interest; dominated by hardstanding with small areas of unmanaged grassland, tall ruderal herbs and scrub present. No invasive plant species were found to be present on site. The chimney structure was found to support a day roost of small numbers of common pipistrelle bats, requiring a NE mitigation licence. Mitigation measures for impact on the roost are incorporated into the design. RAMS measures proposed for birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **14** | 132416/FO/2021 | **Great Ducie Street**<br>Erection of two buildings part 27, 20, 17 storeys and part 11 and 10 storeys to form a mixed use development comprising of 461 residential apartments (Use Class C3a) and ground floor commercial uses (Use Class E) (718 sqm) together with public realm including courtyard pocket park, landscaping, car parking and other associated works | 390m southeast | Approved June 2022<br><br>Construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. The Site comprises an area of derelict hardstanding, bare ground and dense scrub. RAMS measures proposed for birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **15** | 122280/FO/2019 | **Mirabel Street**<br>Erection of new mixed-use development to comprise of one 10 storey building fronting Mirabel Street to accommodate 45 no. Use Class C3 residential apartments (9 no. 1-bed studios, 27 no. 2-bed 3 person apartments and 9 no. 2-bed 4 person apartments) and 7 no. residential car parking spaces at ground level and one part 10, part 14 storey building fronting Great Ducie Street to accommodate 84 no. Use Class C3 residential apartments (31 no. 1-bed 2 person apartments, 26 no. 2-bed 3 person apartments, 18 no. 2-bed 4 person apartments and 9 no. 3-bed 5 person apartments) and 345 sq. m of commercial floor space at ground level (flexible Use Class A1 shop, Use Class A2 financial and professional services and Use Class A3 cafe/restaurant) together with creation of roof terrace amenity | 450m southeast | Approved December 2020<br><br>Construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. The Site comprises one brick-built commercial structure and an area of hardstanding car parking. The building was assessed as having negligible suitability for roosting bats. The site does not have suitability for nesting birds. No residual significant effects on any receptors were identified in the assessment.<br><br>It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | space, cycle parking, access, servicing and associated works following demolition of existing building \| Land Bounded By Great Ducie Street And Mirabel Street Manchester M3 1PJ | | | | |
| **16** | 127901/FO/2020 | **Manchester Arena Expansion**<br>Expansion of Manchester Arena from 21,000 seats to 24,000, making it Europe's largest indoor arena. Improvement of access from Hunt's Bank and Victoria station. | 290m southeast | Approved April 2021<br><br>Construction not yet started | Scoped out | No ecological assessment report was available on Manchester City Council's planning portal. There are no planning conditions related to ecology in the decision notice. Based on available information no residual significant effects on any receptors are therefore envisaged for this site. |
| **17** | 131314/FO/2021 | **39 Deansgate (Speaker's House)**<br>Erection of a 17 storey building comprising office use (Use Class E(g)(i)) and flexible ground floor commercial units (Use Classes E(a),(b),(c) and sui generis 'drinking establishment'), new electricity sub-station, basement cycle parking and rooftop plant enclosure, together with access, servicing and associated works following demolition of the existing building. | 820m southeast | Approved January 2022<br><br>Construction not yet started | Scoped out | The bat survey report concluded that the buildings provided negligible bat roost suitability. RAMS measures proposed for nesting birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **18** | 130553/FO/2021 | **Island, John Dalton Street**<br>Demolition of the existing buildings and structures and the erection of a 10-storey plus basement office building (Use Class E(g)), with flexible ground floor and basement uses (Use Class E) and rooftop amenity space, works to facilitate the pedestrianisation of the southern part of Ridgefield and other associated works. | 1.15km southeast | Approved September 2021<br><br>Under Construction | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. The bat survey assessed the buildings as having negligible suitability for roosting bats. The Site comprises an area of hardstanding, and buildings. RAMS measures proposed for birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **19** | 130354/FO/2021 | **Eliza Yard**<br>Erection of an 8 storey building to form 118 residential apartments (Use Class C3) and | 870m southeast | Approved July 2021 | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | ground floor commercial floorspace (Use Class E (a),(c),(g)(i)) (583 sqm) together with amenity space, car and cycle parking provision, hard and soft landscaping, access, servicing and other associated works | | Construction not yet started | | species within the Site. The Site comprises an area of hardstanding, with ephemeral vegetation and scattered scrub. The PRA concluded that the western boundary wall has low bat roost potential. No roosting bats were identified during the nocturnal roost survey. RAMS measures proposed for birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **20** | 130627/FO/2021 | **Ancoats Mobility Hub**<br>Erection of an 8 storey building to form Mobility Hub including ground floor commercial unit (Use Class E(b)) (221 sqm), delivery hub, 150 cycle spaces and 408 car parking spaces with associated landscaping, access and other associated works following demolition of existing structures. | 770m southeast | Approved July 2021<br><br>Groundworks started, currently in the early stages of construction | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. The Site comprises an area of hardstanding, four buildings, amenity grassland and scattered trees and scrub. The PRA concluded that the buildings and small section of wall present on site have low bat roost potential No roosting bats were identified during the nocturnal roost survey. RAMS measures proposed for birds during demolition/ vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **21** | 113914/FO/2016 | **1 Lord Street**<br>Erection of a 16 storey building to form 192 residential apartments (Use Class C3a) together with ground floor commercial unit (172 sqm) (Use Class A1, A2, A3 or B1) with associated vehicular access from Fernie Street, car parking and hard and soft landscaping following demolition of existing buildings. | 140m north | Approved November 2016<br><br>Construction not yet started | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. There are no areas of habitat of nature conservation interest or invasive plant species within the Site. The Site comprises an area of hardstanding, two buildings and bare ground. The PRA concluded that one building has negligible suitability for roosting bats and the has low bat roost potential. No roosting bats were identified during the nocturnal roost survey. RAMS measures proposed for birds during demolition/ vegetation clearance. No residual significant effects on any receptors |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | were identified in the assessment.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **22** | 18/71330/FUL | **Uptown**<br>Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping. | 850m southwest | Approved Oct 2018<br><br>Under construction | Scoped out | No ecological assessment report was available on Salford's planning portal. From the ecological consultation response from GMEU it appears that the only potential impacts identified relate to the potential negative impact on the River Irwell and the potential spread of the invasive species Giant Hogweed and Japanese knotweed, in the absence of mitigation. Conditions dictate the need for appropriate method statements to be produced and implemented to avoid these impacts. Based on available information no residual significant effects on any receptors are therefore envisaged for this site.<br><br>Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **23** | 20/76134/FUL | **Maldron Hotel, Chapel Street**<br>Erection of 16-storey building plus plant comprising a hotel (Use Class C1) with ancillary bar and restaurant uses, access, servicing, landscaping and other associated works. | 1km southwest | Approved July 2021<br><br>Under construction | Scoped out | The ecology letter report concluded that there will be no adverse effects on any designated sites within range of the Site, including Rochdale Canal SAC/SSSI. The habitats within the Site to be of low ecological value, dominated by hardstanding with ephemeral/short perennial species and self-seeded butterfly bush. The invasive plant species, giant hogweed, was found to be present along the western boundary. Due to the lack of features of ecological interest present within the Site, the presence of all protected faunal species was ruled out. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| **24** | 19/74465/HYBEIA | **Cortland at Collier's Yard / Bankside** Hybrid planning application for demolition of existing buildings on the site and comprehensive redevelopment to create between 1,407 and 1,521 dwellings, comprising of: (a) Phase 1 (submitted in full with no matters reserved) for development of a 50-storey residential building; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new public park; highways and public realm improvements and other associated works; and, (b) Phases 2 and 3 (submitted in outline with all matters reserved) for the development of two residential buildings up to 42 storeys in height; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new highways; a public square; public realm improvements and other associated works. (EIA development, accompanied by Environmental Statement) \| Land Bound By Greengate, Collier Street, Queen And King Street And Gravel Lane M3 7*Ballota nigra*. | 960m southwest | Approved March 2020<br>Under construction | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. The Site comprises existing development, hard-standing and colonising vegetation. No habitats within the Site are priority habitat and are therefore of low ecological value. No roosting bats were identified using the buildings within the Site (Buildings 2 and 3) during the surveys.<br>RAMS measures proposed for bats and birds during demolition and vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br>Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| | 21/78474/REM | Application for approval of Reserved Matters (Access, Appearance, Landscaping, Layout and Scale) pursuant to Outline Planning Permission 21/78473/HYBEIA for Plot C, comprising the demolition of existing buildings and a residential-led development of a 42-storey (plus ground) building containing 444 apartments together with associated residents' amenities, ground floor commercial floorspace, basement parking, public realm improvements including the delivery of Boulevard West, Collier Square and Collier Street, and other associated infrastructure works. (EIA Development Application accompanied by an | 960m southwest | Approved March 2022<br>Under construction | Scoped out | No ecological assessment report was available on Salford's planning portal. There are no planning conditions related to ecology in the decision notice. Based on available information no residual significant effects on any receptors are therefore envisaged for this site.<br>It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | Environmental Statement Addendum) \| Land Bound By Greengate And Trinity Way And Collier Street And Intersected By Bond Street And Caygill Street M3 7BN. | | | | |
| **25** | 15/66806/FUL | **Embankment Exchange**<br>Demolition of existing factory walls and river walk way to provide mixed use development comprising of 2 blocks ranging from 15 to 34 storeys in height total of 300 residential units with associated off street parking , together two commercial units comprising of 474sqm of floor space (A1, A2, A3 and B1) at ground floor level. | 640m southwest | Approved December 2015<br><br>Under construction | Scoped out | The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the Site. The Site comprises existing hard-standing, wall and colonising vegetation. The wall provides low suitability for roosting bats. No information on nocturnal roost surveys are available on Salford's planning portal. Planning condition 15 requires reassessment of structures for bat roosting potential and findings of roosting survey together with any mitigation strategy prior demolition works.<br><br>RAMS measures proposed for nesting birds during demolition and vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |
| **26** | 19/74205/FULEIA | **Waterloo Place**<br>Erection of a mixed use development comprising a single building with two blocks (14 and 55 storeys) to include: 542 residential apartments, associated residents' facilities and basement parking; and 3 no. commercial units (use classes A1, A2, A3, B1 & D1) with associated landscaping and public realm works. | 620m southwest | Approved January 2020<br><br>Site secured, construction not yet started | Scoped out | No sites designated for wildlife fall within range of the Site. The Site comprises hard-standing, scattered trees and introduced shrub. No habitats within the Site are priority habitat and are therefore of low ecological value. Giant hogweed and Japanese knotweed were identified within or adjacent to the Site.<br><br>RAMS measures proposed for birds and invasive non-native species during demolition and vegetation clearance. No residual significant effects on any receptors were identified in the assessment.<br><br>Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Application 5 Development. |

### Likely Residual Cumulative Effects and their Significance

7.282 As anticipated given the inner-city location of this application, the Sites considered in this cumulative assessment describe their baseline conditions to be generally of low ecological value, dominated by buildings and hardstanding and some with small areas of grassland or ephemeral vegetation. The majority did not provide suitable bat or bird roosting habitat and in the few instances where bat roosting was confirmed these were small roosts of common species and mitigation would be provided on site. Similarly, bird and bat foraging habitat was limited.

7.283 Due to the heavily developed nature of the landscape, the potential for fragmentation or disturbance effects to accumulate is limited to only those sites close to this application and only where they contain features of relevance to the habitats and species within this application. No inter-project or intra-project cumulative effects are predicted to arise.

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 5)

### Approach

7.284 The cumulative assessment is the same as described previously for Application 4 but includes a consideration of the Victoria North SRF.

7.285 The other plans or proposals considered in this assessment are the same as those presented in **Table 7.13**. As such, all proposals other than the SRF have been scoped out of the cumulative assessment and this assessment will therefore only consider cumulative effects between the Proposed Application 5 Development and the SRF. The likely effects on ecological features have been identified based upon the Northern Gateway Ecology Technical Appendix[36] and the SRF[37].

### Likely Residual Cumulative Effects and their Significance

7.286 This section summarises the significance of the anticipated residual cumulative effects on ecology features based upon a combined assessment of Application 5 and the SRF. Residual effects are those that remain after all proposed mitigation measures are implemented during the construction and demolition phase and the operational phase (see **Table 7.14).**

***Table 7.14**: Residual Cumulative Effects Summary (Application 5 + SRF)*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|

[36] PCA (2019) Northern Gateway Ecology – Technical Appendix PCAJ168/Draft V1. August 2019.
[37] Manchester City Council (2019) Strategic Regeneration Framework: Manchester Northern Gateway. February 2019.

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| ***Construction and Demolition*** | | | | |
| **River Irk**<br><br>**(Local Value)** | Drainage outfall leading to certain loss of bankside habitat is considered a **negative significant effec**t at Local level.<br><br>Possible direct impacts on the River Irk in the wider SRF is considered a **negative significant effect** at Local level. | Wider enhancements of the River Irk through the LEMP.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. The SRF itself includes mention of opportunities to enhance the river for biodiversity. | **Negative significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Minor adverse** in the immediate term, changing to **Minor beneficial** in the medium- to long-term. |
| | Possible indirect impact on River Irk (pollution/ construction dust) in Application 5 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of Himalayan balsam, giant knotweed and Japanese knotweed during construction works across Application 5 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| **Dense Scrub**<br><br>**(Local Value)** | Likely spread of Himalayan balsam during construction works across site and wider area is considered a **negative significant effect** at Local level**.**<br><br>No anticipated significant effects on dense scrub in the wider SRF. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| **Scattered** | Certain loss of 0.32ha | Management of newly | **Negative significant** | **Minor adverse** in |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| **Broadleaved Trees**<br><br>**(Local Value)** | scattered trees is considered a **negative significant effect** at Local level. Changing to **positive significant effect** at Local level due to planting of 0.73 ha trees.<br><br>It is anticipated there will be tree losses in the wider SRF. This is considered a **negative significant effect** at Local level. | planted trees through LEMP<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **effect** in the short-term at Local level, changing to **positive significant effect** in the medium- to long-term. | the short-term, changing to **minor beneficial** in the medium- to long-term. |
| **Roosting Bats**<br><br>**(Local Value)** | Loss of potential roosting habitat is a **negative significant effect** at Local level.<br><br>It is anticipated there will be loss of bat roosts in the wider SRF due to the number of buildings, trees and other structures within proposed development areas but that due to the types of buildings etc. present, any roosts impacted will likely be of low conservation status. This is considered a **negative significant effect** at Local level.<br><br>Possible indirect impacts on roosting bats in the wider SRF through disturbance during construction (noise, vibration, light) is considered a **negative significant effect** at Local level. | Provision of alternative roosting habitat to mitigate for the loss of available roosting habitat e.g. bat boxes.<br><br>Any bat roosts identified in the SRF would be appropriate mitigated for through a Natural England EPS licence.<br><br>Implementation of lighting strategy which would include bat sensitive measures.<br><br>Implementation of CEMP | **No significant effect.** | **Neutral.** |
| **Bat Foraging and Commuting**<br><br>**(Local Value)** | Loss of available bat foraging/commuting habitat in Application 5 and the wider SRF is considered a **negative significant effect** at Local level. | Management and enhancement of newly created habitat and River Irk corridor through LEMP.<br><br>It is anticipated | **Negative significant effect** in the short- to medium-term, changing to **positive significant effect** in the long-term. | **Minor adverse** in the short- to medium-term, changing to **minor beneficial** in the long-term. |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | | commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | | |
| | Construction lighting impact on offsite retained commuting corridors and foraging habitat during Application 5 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of lighting strategy which would include bat sensitive measures. | **No significant effect.** | **Negligible.** |
| **Breeding Birds**<br><br>**(Local Value)** | Loss of available bird nesting and foraging habitat in Application 5 and the wider SRF is considered a **negative significant effect** at Local level. | Bird box strategy.<br><br>Management of created habitat through LEMP.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **Negative significant effect** in the immediate term, changing to **positive significant effect** in the long-term. | **Minor adverse** in the immediate term, changing to **minor beneficial** in the long-term. |
| | Potential for killing or injuring birds/nests through vegetation clearance in Application 5 and the wider SRF is considered a **negative significant effect** at Local level. | Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined within CEMP. | **No significant effect.** | **Negligible.** |
| **Fish**<br><br>**(Local Value)** | Potential for disturbing spawning fish during construction of outfall is considered a **negative significant effect** at Local level. | Restrictions on river works during spawning season (April -July for species encountered during surveys) and pollution | **No significant effect.** | **Negligible.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | Possible direct impacts on fish in the wider SRF is considered a **negative significant effect** at Local level. | measures outlined within CEMP. | | |
| ***Completed and Operational Development*** | | | | |
| **River Irk**<br><br>**(Local Value)** | Potential increase in public pressure leading to likely introduction or spread of invasive species in Application 5 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **No significant effect.** | **Negligible.** |
| **Roosting Bats**<br><br>**(Local Value)** | New buildings, additional tree planting and bat boxes in Application 5 and the wider SRF could significantly increase the availability of bat roosting opportunities in the medium- to long-term. Provisions of new roosting habitat is a **positive significant effect** at Local level | Implementation of LEMP.<br><br>Bat box strategy. | **No significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Negligible** in the immediate term, changing to **minor beneficial** in the medium- to long-term. |
| | Potential lighting impact on potential roosting habitat in Application 5 and the wider SRF is considered a **negative significant effect** at Local level. | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible.** |
| **Bat Foraging and Commuting**<br><br>**(Local Value)** | Potential lighting impact on foraging/commuting routes in Application 5 and the wider SRF is considered a **negative significant effect** at Local level. | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible.** |
| **Breeding Birds**<br><br>**(Local Value)** | New buildings, habitat creation and enhancement and bird boxes could significantly increase the | Implementation of LEMP.<br><br>Bird box strategy. | **No significant effect** in the immediate term at Local level, changing to **positive** | **Negligible** in the immediate term, changing to **minor beneficial** in the |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | nesting opportunities in the medium- to long-term. Provisions of new nesting habitat is a **positive significant effect** at Local level | | **significant effect** in the medium- to long-term. | medium- to long-term. |

7.287 The cumulative assessment focused on those ecological features identified in the standalone Application 5 assessment. The wider SRF contains similar habitats to those within Application 5 though the most valuable habitats will be largely retained and a large proportion of the SRF is comprised of low-value habitats e.g. hardstanding and buildings.

7.288 Due to the heavily developed nature of the landscape in the areas of the wider SRF proposed for development, the potential for fragmentation or disturbance effects to accumulate is limited to only those parts of the SRF close to this application and only where they contain features of relevance to the habitats and species within this application. The assessment did identify additional habitat loss or damage, and disturbance effects once the wider SRF was incorporated. However, these can all be adequately mitigated for as detailed in **Table 7.14**.

7.289 Assessment of the Development project i.e. Application 5 and the wider SRF, is provided via a high level combined assessment. It is predicted that the significance effect from the cumulative losses of bat foraging and commuting habitat and breeding bird habitat could increase depending on the timing and extent of habitat removal. However, given the commitments within a Northern Gateway Biodiversity Plan, it is likely there would be an overall positive effect on quality/quantity of bat foraging and commuting habitat and quantity/quality of breeding bird habitat in the long-term.

7.290 The significance of the anticipated residual effects for this scenario are based on the information available at the time of writing. Specific mitigation measures required in respect of any issues pertinent to future applications within the SRF will be identified and agreed within the scope of the assessments prepared and submitted with those applications.

## In Combination Effects of Applications 4 and 5

7.291 Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 has been set out previously in this chapter. Based upon the separate assessments for Applications 4 and 5, **Table 7.15** provides details on which potential ecological features could be impacted by both applications cumulatively. Features scoped in are those that were previously scoped in for the separate assessments of both applications. Features scoped out include those previously scoped out for both applications or previously scoped in for only one application as there will be no cumulative effects if neither or only one application in isolation is anticipated to have significant effects.

7.292 Residual ecological effects are presented in Table 7.16 including those anticipated from only one application to present a complete picture of the likely effects if both developments are consented together.

***Table 7.15:*** *Valuation of ecological features (Applications 4 and 5 combined)*

| Feature | Ecological Value | Scoped in/out of assessment |
|---|---|---|
| **Nature Conservation Designations** | | |
| Rochdale Canal SAC | International | Scoped Out |
| Rochdale Canal SSSI | National | Scoped Out |
| Reservoirs at Harpurhey SBI | Regional | Scoped Out |
| Rochdale Canal: Scott's Lane to Ducie Street Basin SBI | Regional | Scoped Out |
| Ashton Canal (West) SBI | Regional | Scoped Out |
| River Irwell SBI | Regional | Scoped Out |
| **Habitats and Flora** | | |
| Semi-natural Woodland | Regional | Scoped Out of further combined assessment as only Application 4 will result in likely significant effects |
| Plantation Woodland | Regional | Scoped Out of further combined assessment as only Application 4 will result in likely significant effects |
| River Irk Corridor | Local | **Scoped In** |
| Dense scrub | Local | **Scoped In** |
| Scattered scrub | Local | Scoped Out |

| Feature | Ecological Value | Scoped in/out of assessment |
|---|---|---|
| Scattered trees | Local | **Scoped In** |
| Other Habitats: Hardstanding, Bare Ground, bare Ground and Ephemeral, Introduced Shrub and Buildings | Less than Local | Scoped Out |
| Invasive Species: Himalayan balsam, Japanese knotweed and giant hogweed | N/A | *Requirements relating to control of invasive species considered under River Irk Corridor* |
| **Fauna** | | |
| Bats: Roosting | Local | **Scoped In** |
| Bats: Foraging and Commuting | Local | **Scoped In** |
| Badger | N/A | Scoped Out |
| Breeding Birds | Local | **Scoped In** |
| Water vole | N/A | Scoped Out |
| Otter | N/A | Scoped Out |
| Amphibians | N/A | Scoped Out |
| Reptiles | N/A | Scoped Out |
| Invertebrates (terrestrial and aquatic) | N/A | Scoped Out |
| Fish assemblage | Local | **Scoped In** |

## Assessment of Likely Significant Effects (Applications 4 and 5)

### Demolition and Construction

#### Semi-natural Woodland

7.293 Effects on semi-natural woodland would be as reported under the assessment of Application 4.

#### Plantation Broad-leaved Woodland

7.294 Effects on plantation broad-leaved woodland would be as reported under the assessment of Application 4.

### River Irk Corridor

7.295 Retaining wall demolition is proposed along *c*.400m of the southern bank of the River Irk. This is in addition to the three locations assessed in Application 2: Union Plaza and two locations near St. Catherine's Wood. Where the wall is proposed to be removed the riverbank will be reprofiled, to create connection with the river and in the long-term to improve aquatic habitat. Elevated deck structures have been proposed to maintain circulation through the park and provide further connectivity to the river in line with the established strategies.

7.296 Wall demolition and reprofiling would result in a temporary direct loss of bankside habitat in the short-term, albeit the majority of this is already hard engineering. The drainage solution in Application 5 will result in small-scale permanent bankside habitat loss where a concrete headwall, no greater than 3m wide, will be installed. Direct loss of bankside habitat cumulatively remains a **negative significant effect** at the Local level. However, reprofiling and naturalising the river corridor in these areas will provide **positive significant effects** at the Local level in the medium to long-term.

7.297 Indirect impacts on the River Irk Corridor during construction of both Applications 4 and 5 are also possible due to accidental pollution events and the introduction of construction dust. In the absence of mitigation the cumulative indirect impacts on the River Irk Corridor are considered a **negative significant effect** at the Local level.

7.298 The Invasive Alien Species Himalayan balsam and giant hogweed and Schedule 9 species Japanese knotweed are present in various areas along the banks of the River Irk Corridor. Works along riverbanks under both Application 4 and 5 have the potential to cause the spread of these species on-site. Construction activities also introduce the risk of spreading these species off-site and into the wider area, through wind, movement of seeds downstream and movement of construction vehicles. Spread of invasive species is contrary to national legislation and therefore in the absence of mitigation is a cumulative **negative significant effect** at the Local level.

### Dense Scrub

7.299 The Invasive Alien Species Himalayan balsam is present in various areas of dense scrub within the Application 5 site and within an area of dense bramble scrub in the south of the Application 4 site. Vegetation clearance and other construction work has the potential to cause the spread of Himalayan balsam, within and off site, through wind and movement of construction vehicles. Spread of invasive species is contrary to national legislation and therefore in the absence of mitigation is a cumulative **negative significant effect** at the Local level**.**

### Scattered Trees

7.300 Application 5 would result in the loss of 0.32ha trees but there would be planting of 0.73ha trees and there would be no tree loss in Application 4. Direct loss of 0.32ha trees therefore remains a **negative significant effect** at the Local level in the short-term, changing to a **positive significant effect** at the Local level in the medium- to long-term.

7.301 Direct impacts on retained trees during construction are possible, with the accidental encroachment into tree protection areas. However, trees will only be retained in Application 4 and therefore in the absence of mitigation direct impacts on retained trees remain a **negative significant** effect at the Local level.

7.302 Indirect impacts on the retained trees during construction are also possible, with effects due to accidental pollution events and the introduction of construction dust. However, trees will only be retained in Application 4 and therefore in the absence of mitigation indirect impacts on retained trees remain a **negative significant effect** at the Local level.

### Roosting Bats

7.303 There are no trees with bat roost suitability within the site boundaries of both Applications 4 and 5. Five trees within St. Catherine's Wood were assessed as having bat roost suitability and will be retained within development proposals. Direct impacts on retained woodland areas, including trees with roost suitability, during construction of Application 4 only are possible, with the accidental encroachment into tree protection areas causing damage/destruction to potential bat roosts in the woodland. In the absence of mitigation direct impacts on potential roosting bats in trees is considered a cumulative **negative significant effect** at the Local level as Application 5 will result in no significant effect on trees with bat roost suitability.

7.304 Buildings B12 and B17 were assessed as having low suitability for roosting bats and B14 was assessed as having high suitability for roosting bats. Building B14 will be demolished under Application 4 and Buildings B12 and B17 will be demolished under Application 5. Nocturnal roost surveys identified two common pipistrelle day roosts in building B14. Demolition of building B14 will result in the loss of two roosts of low conservation concern of a common bat species. Nocturnal roost surveys did not identify any bat roosts in Buildings B12 and B17. Demolition of these buildings will not result in the loss of confirmed roosts but there will be an additional loss of potential bat roost habitat, albeit habitat assessed as having low suitability for roosting bats. In the absence of mitigation the impact on roosting bats and buildings remains cumulatively a **negative significant effect** at the Local level.

7.305 No direct impacts on the P&P bridge are proposed within the design of either Application 4 or 5. Direct impacts on roosting bats associated with bridge structures is therefore considered to have a negligible effect due to these works and considered cumulatively as **not significant.**

7.306 Indirect disturbance impacts on potential roosting bats in bridge structures during construction of Application 4 only is possible, through noise and vibration from construction traffic. There are no anticipated impacts from Application 5 on bridge structures and therefore, in the absence of mitigation, impacts on roosting bats and bridge structures remains a **negative significant effect** at the Local level.

7.307 Any proposed construction lighting could have detrimental impacts on roosting bats in the absence of mitigation both within and adjacent to the Site of Application 4. Artificial construction lighting has the potential to light up

bridge structures or trees and therefore potential bat roosting features themselves. There will be no retained potential roosting features in, or adjacent to, Application 5. Therefore, the potential impact of lighting on bat roosting is limited to those identified in the Application 4 assessment and remains a **negative significant effect** at the Local level due to the loss of small number of bat roosts of common species of low conservation value.

### Bat Foraging and Commuting

7.308 Application 5 will result in the loss of some scattered trees and dense scrub during construction which could disrupt bat foraging and commuting behaviour. Loss of this habitat would reduce the habitat availability and potentially increase the energetic cost of foraging bats in the local area as discussed in the assessment for Application 5. Application 4 will not result in the loss of any foraging or commuting habitat beyond that already assessed in previous Applications 1 and 2. The cumulative impacts of habitat loss on foraging and commuting bats therefore remains a **negative significant effect** at the Local level.

7.309 There is the potential that construction lighting under both Applications 4 and 5 could have detrimental impact on foraging and commuting bats in the absence of mitigation, both within and adjacent to the Site. The cumulative potential impact of lighting on bat foraging/commuting is considered a **negative significant effect** at the Local level.

### Breeding Birds

7.310 Application 5 would result in the permanent loss of nesting habitat for a range of common and local bird species. In the absence of mitigation, there is therefore the potential for disturbance/displacement effect on breeding birds that are currently using the Site, due to the loss of feeding, roosting and nesting habitat. Application 4 would not result in the loss of any nesting habitat beyond that already assessed in previous Applications 1 and 2. Cumulative effects on breeding birds associated with habitat loss therefore remain the same as assessed for Application 5 and is considered a **negative significant effect** at the Local level.

7.311 In the absence of mitigation there is also the potential for nesting birds to be killed or injured along with the damage and destruction of nests due to vegetation clearance during construction of Application 5, especially if during the key breeding season of March to August inclusive. Application 4 would not involve any vegetation removal. The potential effect of killing, injuring or disturbing breeding birds is therefore considered to remain a **negative significant effect** at the Local level.

### Fish

7.312 Works associated with river wall demolition and reprofiling in Application 4 and with the drainage solution in Application 5 could result in large quantities of loose sediment entering the river channel. Indirect impacts on fish during construction are possible due to accidental pollution events and the introduction of construction dust resulting in degradation of the water quality. In the absence of mitigation, indirect impacts on fish are considered cumulatively a **negative significant effect** at the Local level.

## The Completed and Operational Development

### Semi-natural Woodland

7.313 Effects on semi-natural woodland would be as reported under the assessment of Application 4.

### Plantation Broad-leaved Woodland

7.314 Effects on plantation broad-leaved woodland would be as reported under the assessment of Application 4.

### River Irk Corridor

7.315 An increase in members of the public accessing the River Irk as a result of both Applications 4 and 5 introduces the potential for both dogs and people to introduce and spread aquatic invasive species. The cumulative consequence of spreading invasive species along the River Irk corridor is considered a **negative significant effect** at the Local level.

### Roosting Bats

7.316 Prior to mitigation during the operational phase, there is potential impact of artificial lighting on bat roosting habitat associated with Applications 4 and 5. In the absence of mitigation this cumulative impact is unlikely to change the assessment and will remain a **negative significant effect** at the Local level.

7.317 The Application 4 and 5 proposals both include the construction of new buildings and tree planting. In the medium- to long-term this will significantly increase the availability of bat roosting opportunities for a variety of species, including common pipistrelle and soprano pipistrelle both of which are present in the local area. The cumulative provision of potential new roosting habitat is considered a **positive significant effect** but still only at the Local level due to the species most likely to benefit being those common in the local area and of low conservation status.

### Bat Foraging and Commuting

7.318 Prior to mitigation during the operational phase, there is potential impact of artificial lighting on bat foraging/ commuting habitat associated with Applications 4 and 5. In the absence of mitigation this cumulative impact is unlikely to change the assessment and will remain a **negative significant effect** at the Local level.

### Breeding Birds

7.319 Vehicular and pedestrian movements around the Site during the operational phase in Application 4 and 5 will result in increased disturbance and could therefore disrupt birds nesting in retained and newly planted habitats. However, the species present would be expected to habituate to any disturbance impacts and disturbance from operational activities is therefore unlikely to significantly affect medium- to long-term breeding capabilities. The cumulative disturbance effects on nesting birds is considered **not significant.**

7.320 The availability of new buildings will create nesting opportunities for birds in the operational phase of both Applications 4 and 5. Increased botanical and invertebrate abundance and diversity as a consequence of new habitat creation and enhancement will also benefit a range of foraging/nesting birds. A **positive significant effect** is predicted for some bird species remaining at the Local level due to the common nature of the species most likely to benefit.

7.321 The new residential areas in Applications 4 and 5 will invariably include some households with domestic cats, which will result in predation and thus mortality or injury to birds using the retained and newly created habitats. However, net gains to their population (abundance and range) as a consequence of the new habitat creation and enhancement are likely to result in a trade off, reducing the impact of mortality losses from predation. The increased cumulative risk of cat predation on nesting birds is considered **not significant.**

## Phasing Effects (Applications 4 and 5)

7.322 Phasing effects have been considered only for those significant effects identified above that will arise from both Applications 4 and 5. The proposed phasing strategy will have no effect on cumulative non-significant effects or significant effects only arising from one of Application 4 and Application 5.

### Demolition and Construction

#### River Irk Corridor

7.323 The proposed drainage outfall of Application 5 will take place in Phase 1 of the development. The proposed demolition of *c*.400m of retaining wall along the southern bank will take place across Phases 2 and 3. This phasing spreads out the habitat loss and likely pollution effects from the river works temporally, giving the river and associated species time to react and acclimatise to changes. The significance of any likely pollution effects is reduced compared to if the works were not phased. Despite this, the habitat loss and possible indirect pollution are both still considered **negative significant effects** at the Local level. It is assumed that reprofiling and naturalising the river corridor will only take place following completion of all phases to prevent newly created/ enhanced habitat being negatively affected by later phases of development. Although this increases the duration of temporary habitat loss, this remains a **positive significant effect** at the Local level.

7.324 The proposed phasing is likely to increase the likelihood of spreading invasive species as works will occur on the riverbanks on different occasions throughout the year when different species are likely to be visible and therefore more liable to be accurately identified and avoided. Any mapped extents of invasive species are likely to have increased by the commencement of later phases if appropriate management measures are not implemented to eradicate or prevent the spread. Spread of invasive species remains a **negative significant effect** at the Local level**.**

### Dense Scrub

7.325 One section of dense scrub with Himalayan balsam is present within both site boundaries where they overlap. The proposed phasing is likely to increase the likelihood of spreading this species as works will occur on, or adjacent to, the dense scrub on different occasions throughout the year, increasing the likelihood that works will occur when seedpods are present (the primary method of spread for this species). Any mapped extents of invasive species are likely to have increased by the commencement of later phases if appropriate management measures are not implemented to eradicate or prevent the spread. Spread of invasive species remains a **negative significant effect** at the Local level**.**

### Scattered Trees

7.326 The proposed phasing will have no effect on the magnitude or significance of effects on scattered trees as each effect will only be the result of either Application 4 or Application 5, not both combined. The loss of trees and direct and indirect impacts on retained trees remain **negative significant effects** at the Local level.

### Roosting Bats

7.327 Phase 1 will involve the demolition of Buildings B12 and B17 which were assessed as having low potential for roosting bats though no roosts were recorded during surveys. Phase 3 will involve the demolition of Building B14 which contains two common pipistrelle day roosts. This proposed phasing means that suitable roosting habitat will be lost prior to the confirmed roosts, reducing the risk of bats starting to roost in B12 or B17 prior to their demolition. Bats displaced from the confirmed roost should move to suitable roosting habitat off-site if all suitable habitat has already been removed on-site. This reduces the risk of affecting roosting bats further than necessary. Despite this, the loss of roosting habitat remains a **negative significant effect** at the Local level**,** but that effect is lessened by the phasing plan.

### Bat Foraging and Commuting

7.328 It is assumed that construction lighting will initially only be active in Phase 1 until works commence in other Phases to minimise initial impacts. Given the primarily urban habitats in and surrounding the Phase 1 area, artificially lighting this area is likely to have the least impact on foraging and commuting bats compared with Phases 2 and 3. Bat activity levels are likely to be particularly low and any bats present are likely to be displaced along either the river corridor or St Catherine's Park, both of which will be retained but will also be affected by artificial lighting in later phases of the development. There will be no barriers to bat movement between Phase 1 and neighbouring retained habitats when construction and lighting begins. All vegetation clearance in Phases 2 and 3 should have already occurred under Application 2 prior to these phases commencing. The habitat suitability on-site for foraging and commuting bats will therefore be minimal but both phases neighbour St Catherine's Park and the River Irk. Although lighting may affect bats using these neighbouring habitats, some displacement is already likely to have occurred due to the previous vegetation clearance (assessed as an effect

under the ES for Application 2). The proposed phasing plan is not considered to alter this effect, and it remains a **negative significant effect** at the Local level.

### Fish

7.329 The proposed drainage outfall of Application 5 will take place in Phase 1 of the development. The proposed demolition of *c*.400m of retaining wall along the southern bank will take place across Phases 2 and 3. This phasing spreads out the likely pollution effects from the river works temporally, giving fish time to react and acclimatise to changes. The significance of any likely pollution effects is reduced compared to if the works were not phased. Despite this, possible indirect pollution is still considered a **negative significant effect** at the Local level.

## The Completed and Operational Development

### River Irk Corridor

7.330 Works on the River Irk corridor are proposed in all three phases of the development and it runs through the centre of the development. It is therefore likely that the river will be fenced off from public access until the development is complete to prevent members of the public entering an active construction site. The risk of spreading invasive species along the river corridor during operation remains a **negative significant effect** at the Local level but this is lessened in the short-term by the phasing plan.

### Roosting Bats

7.331 The phasing plan means that construction will be ongoing in some areas of the development, whilst other areas will be complete. There may be some additional light spill from construction lighting into completed phases. However, this is unlikely to be significant as the completed phases themselves will be well lit around new buildings for security and the impact is unlikely to be any higher than in a non-phased development where some elements are naturally completed before others. This therefore remains a **negative significant effect** at the Local level.

7.332 The creation of new roosting habitat in buildings and trees will be sequential following phase completion. This reduces the duration between initial habitat loss and habitat creation though it is unlikely bats will begin roosting in any features in completed phases until construction across all phases is complete (and once roosting features are available in trees which will likely be in the long-term). The phasing has no real effect on the provision of new roosting habitat and it remains a **positive significant effect** at the Local level.

### Bat Foraging and Commuting

7.333 The proposed phasing plan has no effect on the significance of effect of artificial lighting on foraging and commuting bats during operation. Construction will be ongoing in subsequent phases once Phase 1 is complete but all will be artificially lit from either construction or operational lighting, as if all phases were being developed at the same time. This remains a **negative significant effect** at the Local level.

### Breeding Birds

7.334 The creation of new nesting habitat in buildings and trees will be sequential following phase completion. This reduces the duration between initial habitat loss and habitat creation though it is unlikely birds will begin nesting in any features in completed phases until construction across all phases is complete (and once trees are sufficiently mature enough to support nests). The phasing has no real effect on the provision of new nesting habitat and it remains a **positive significant effect** at the Local level.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5)

7.335 Information relating to additional mitigation/ enhancement measures for Applications 4 and 5 has been set out previously in this chapter. No further mitigation is required as a result of the combined effects of Applications 4 and 5. Only those measures relevant to the scoped in features of this combined assessment (as per **Table 7.15**) are considered when assessing likely residual effects.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5)

7.336 This section summarises the significance of the anticipated residual effects on ecology features as a result of Applications 4 and 5 cumulatively including those anticipated to arise from only one of the applications. Residual effects are those that remain after all proposed mitigation measures are implemented during the construction and demolition phase and the operational phase (see **Table 7.16).**

***Table 7.16**: Residual Effects Summary (Applications 4 and 5 combined)*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| ***Construction and Demolition*** | | | | |
| **River Irk**<br><br>**(Local Value)** | De-engineering along *c.*400m of the River Irk corridor and reprofiling riverbanks in Application 4 and drainage outfall in Application 5 leading to certain loss of bankside habitat is considered a **negative significant effect** at Local level. | Enhancement of reprofiled sections of River Irk through aquatic marginal planting in the LEMP.<br><br>Wider enhancements of the River Irk through the LEMP. | **Negative significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Minor adverse** in the immediate term, changing to **minor beneficial** in the medium- to long-term. |
| | Possible indirect impact on River Irk (pollution/ | Implementation of CEMP. | **No significant effect.** | **Negligible.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | construction dust) in Applications 4 and 5 is considered a **negative significant effect** at Local level. | | | |
| | Likely spread of Himalayan balsam, giant knotweed and Japanese knotweed during construction works in Applications 4 and 5 is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| **Semi-natural woodland**<br><br>**(Regional Value)** | Possible direct impact on adjacent retained woodland in Application 4 is considered a **negative significant effect** at Regional level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on adjacent retained woodland (pollution/ construction dust) in Application 4 is considered a **negative significant effect** at Regional level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of Himalayan balsam during works across Application 4 site and wider area is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| | Retention and | Management and | **Positive significant** | **Minor beneficial.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | enhancement of 0.16ha of semi-natural broadleaved woodland in Application 4 is considered a **positive significant effect** at Local level. | enhancement of retained semi-natural woodland habitat in the LEMP. | **effect.** | |
| **Plantation Woodland**<br><br>**(Regional Value)** | Possible direct impact on adjacent retained woodland in Application 4 is considered a **negative significant effect** at Regional level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on adjacent retained woodland (pollution/ construction dust) in Application 4 is considered a **negative significant effect** at Regional level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of Himalayan balsam and Japanese knotweed during works across Application 4 site and wider area is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| | Retention of the majority of St Catherine's Wood in Application 4 is considered a **positive significant effect** at | Management and enhancement of retained plantation woodland habitat in the LEMP. | **Positive significant effect.** | **Minor beneficial.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | Local level. | | | |
| **Dense Scrub**<br><br>**(Local Value)** | Likely spread of Himalayan balsam during construction works in Applications 4 and 5 is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| **Scattered Broadleaved Trees**<br><br>**(Local Value)** | Certain loss of 0.32ha scattered trees in Application 5 is considered a **negative significant effect** at Local level in short-term changing to **positive significant effect** in medium- to long-term due to planting of 0.73ha trees. | Replacement planting and management and enhancement of retained scattered trees in the LEMP. | **Negative significant effect** in the short-term at Local level, changing to **positive significant effect** in the to medium- to long-term. | **Minor adverse** in the short-term, changing to **Minor beneficial** in the medium- to long-term. |
| | Possible direct impact on adjacent retained trees in Application 4 is considered a **negative significant effect** at Local level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on adjacent retained trees in Application 4 is considered a **negative significant effect** at Local level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| **Roosting Bats**<br><br>**(Local Value)** | Direct loss of two common pipistrelle day roosts in Application 4 with potential killing or injury to roosting bats is a **negative** | Implementation of Natural England EPS Licence including Precautionary Working Methods and soft demolition. | **No significant effect.** | **Neutral.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | **significant effect** at Local level.<br><br>Loss of potential roosting habitat in Application 5 is a **negative significant effect** at Local level. | Provision of alternative roosting habitat to mitigate for the loss of available roosting habitat e.g. bat boxes. | | |
| | Possible direct impact on retained woodland and trees with roost suitability in Application 4 is considered a **negative significant effect** at Local level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on roosting bats through disturbance during construction (noise, vibration, light) in Application 4 is considered a **negative significant effect** at Local level. | Implementation of lighting strategy which would include bat sensitive measures.<br><br>Implementation of CEMP.<br><br>Bat box strategy. | **No significant effect.** | **Neutral.** |
| **Bat Foraging and Commuting**<br><br>**(Local Value)** | Loss of available bat foraging/commuting habitat in Application 5 is considered a **negative significant effect** at Local level. | Management and enhancement of newly created habitat and River Irk corridor through LEMP. | **Negative significant effect** in the short- to medium-term, changing to **positive significant effect** in the long-term. | **Minor adverse** in the short- to medium-term, changing to **minor beneficial** in the long-term. |
| | Construction lighting impact on offsite retained commuting corridors and foraging habitat in Applications 4 and 5 is considered a **negative significant effect** at Local level. | Implementation of lighting strategy which would include bat sensitive measures. | **No significant effect.** | **Negligible.** |
| **Breeding Birds** | Loss of available bird nesting and foraging | Bird box strategy. | **Negative significant effect** in the | **Minor adverse** in the immediate |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| **(Local Value)** | habitat in Application 5 is considered a **negative significant effect** at Local level. | Management of created habitat through LEMP. | immediate term, changing to **no significant effect** in the medium- to long-term. | term, changing to **Neutral** in the medium- to long-term. |
| | Potential for killing or injuring birds/nests through vegetation clearance in Application 5 is considered a **negative significant effect** at Local level. | Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined within CEMP. | **No significant effect.** | **Negligible.** |
| **Fish**<br><br>**(Local Value)** | Potential for disturbing spawning fish and fish dispersion during wall demolition in Application 4 and construction of outfall in Application 5 is considered a **negative significant effect** at Local level. | Restrictions on river works during spawning season (April -July for species encountered during surveys) and pollution measures outlined within CEMP. | **No significant effect.** | **Negligible.** |
| ***Completed and Operational Development*** | | | | |
| **River Irk**<br><br>**(Local Value)** | Potential increase in public pressure leading to likely introduction or spread of invasive species as a result of Applications 4 and 5 is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **No significant effect.** | **Negligible.** |
| **Semi-Natural Woodland**<br><br>**(Regional Value)** | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives in Application 4 is considered a | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to | **No significant effect.** | **Neutral.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | **negative significant effect** at Regional level. | direct public pressure and reduce impact on surrounding ground flora. | | |
| **Plantation Woodland**<br><br>**(Regional Value)** | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives in Application 4 is considered a **negative significant effect** at Regional level. | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure and reduce impact on surrounding ground flora. | **No significant effect.** | **Neutral.** |
| **Roosting Bats**<br><br>**(Local Value)** | New buildings, additional tree planting and bat boxes could significantly increase the availability of bat roosting opportunities in the medium to long-term in Applications 4 and 5. Provisions of new roosting habitat is a **positive significant effect** at Local level | Implementation of LEMP.<br><br>Bat box strategy. | **No significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Negligible** in the immediate term, changing to **minor beneficial** in the medium- to long-term. |
| | Potential lighting impact on potential roosting habitat in Applications 4 and 5 is considered a **negative significant effect** at Local level. | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible.** |
| **Bat Foraging and Commuting**<br><br>**(Local Value)** | Potential lighting impact on foraging/commuting routes in Applications 4 and 5 is considered a **negative** | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | **significant effect** at Local level. | | | |
| **Breeding Birds**<br><br>**(Local Value)** | New buildings, habitat creation and enhancement and bird boxes could significantly increase the nesting opportunities in the medium- to long-term in Applications 4 and 5. Provisions of new nesting habitat is a **positive significant effect** at Local level. | Implementation of LEMP.<br><br>Bird box strategy. | **No significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Negligible** in the immediate term, changing to **minor beneficial** in the medium- to long-term. |

## Consideration of Climate Change of Biodiversity (Applications 4 and 5)

7.337 Due to the close proximity of both sites and the similar habitats present, the consideration of climate change of both applications together is the same as described above for Application 4.

## Conclusions (Applications 4 and 5)

7.338 The assessment identified two regionally important ecological features (semi-natural broadleaved woodland and plantation woodland) and seven locally important ecological features (River Irk corridor, dense scrub, scattered broadleaved trees, roosting bats, bat foraging/commuting, breeding birds and fish).

7.339 The potential for disturbance effects and unintended habitat loss or damage resulting from demolition and construction activities were identified through the assessment. The majority of these can be avoided through mitigation measures including the production of a CEMP, LEMP, ISMS and lighting strategy.

7.340 The potential for further disturbance effects and unintended habitat loss or damage resulting from increased public pressure during the operational phase was identified through the assessment. This can be avoided through mitigation measures including the LEMP, ISMS and lighting strategy.

7.341 Habitat loss has been minimised as far as is possible, but some loss is unavoidable. Replacement planting will occur (as set out in the proposed Landscaping Strategy). This results in no negative significant residual impacts from habitat loss.

7.342 A standalone BNG assessment has been undertaken for the entire site using a pre-works baseline and Op-en's proposed Landscape Masterplan which shows FEC's illustrative landscape proposals for the residential led mixed use development at Red Bank Neighbourhood (proposed under Application 4) and their detailed landscape proposals for the New Town neighbourhood plots to the south of Dantzic Street (proposed under Application 5). The Landscape Masterplan also identifies MCC's intentions for Red Bank and shows the HIF enabling and infrastructure works and new park at St Catherine's Wood which have been granted full planning permission under Applications 1 and 2. This delivers net gain in excess of 10% (16.27%) such that the use of off-site woodland is not required. This standalone document is submitted in support of the planning applications.

7.343 No residual cumulative effects during the demolition and construction or operational phases have been identified for Applications 4 and 5 when assessed together.

## Assessment of Cumulative Effects with Identified Committed Schemes (Applications 4 and 5)

### Approach

7.344 The cumulative assessment is as described above for Application 4 but includes a consideration of the likely cumulative effects between Applications 4 and 5 together with other identified plans and projects.

7.345 The cumulative sites considered are the same as those presented in **Table 7.8** and **Table 7.13.** As all cumulative sites were previously scoped out of the cumulative impact assessment for both Applications 4 and 5, they have also been scoped out of the cumulative impact assessment for the combined assessment of Applications 4 and 5 for the reasons given in **Table 7.8** and **Table 7.13.**

### Likely Residual Cumulative Effects and their Significance

7.346 As anticipated given the inner-city location of these applications, the Sites considered in this cumulative assessment describe their baseline conditions to be generally of low ecological value, dominated by buildings and hardstanding and some with small areas of grassland or ephemeral vegetation. The majority did not provide suitable bat or bird roosting habitat and in the few instances where bat roosting was confirmed these were small roosts of common species and mitigation would be provided on site. Similarly, bird and bat foraging habitat was limited.

7.347 Due to the heavily developed nature of the landscape, the potential for fragmentation or disturbance effects to accumulate is limited to only those sites close to these applications and only where they contain features of relevance to the habitats and species within these applications. No inter-project or intra-project cumulative effects are predicted to arise.

# In Combination Effects of Applications 4 and 5 and SRF

## Assessment of Likely Significant Effects (Applications 4 and 5 and SRF)

7.348 This assessment adds a consideration of the likely impacts of the wider SRF into the combined assessment for Applications 4 and 5. As minimal details are known regarding SRF proposals, the wider SRF has been considered in this assessment as a cumulative scheme. As such, most of the assessment remains as presented above for the combined effects of Applications 4 and 5 and has not been duplicated here. This includes:

- The features scoped in for assessment (see **Table 7.15**);
- Assessment of likely significant effects (during both construction and operation);
- Phasing effects;
- Additional mitigation;
- Likely residual effects and conclusion;
- Consideration of climate change of biodiversity; and,
- Assessment of cumulative effects of other schemes.

## Cumulative Effects with Identified Committed Schemes (Applications 4 and 5 and SRF)

### Approach

7.349 The cumulative assessment is as described above but includes a consideration of the Victoria North SRF alongside other identified plans and projects.

7.350 The other plans or proposals considered in this assessment are the same as those presented in **Table 7.8** and **Table 7.13**. As such, all proposals other than the SRF have been scoped out of the cumulative assessment and this assessment will therefore only consider cumulative effects between Application 4, Application 5 and the SRF. The likely effects on ecological features have been identified based upon the Northern Gateway Ecology Technical Appendix[38] and the SRF[39].

### Likely Residual Cumulative Effects and their Significance

7.351 This section summarises the significance of the anticipated residual cumulative effects on ecology features based upon a combined assessment of Application 4, Application 5 and the SRF. Residual effects are those that remain after all proposed mitigation measures are implemented during the construction and demolition phase and the operational phase (see **Table 7.17).**

[38] PCA (2019) Northern Gateway Ecology – Technical Appendix PCAJ168/Draft V1. August 2019.
[39] Manchester City Council (2019) Strategic Regeneration Framework: Manchester Northern Gateway. February 2019.

***Table 7.17**: Residual Cumulative Effects Summary (Application 4, Application 5 + SRF)*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| ***Construction and Demolition*** | | | | |
| **River Irk**<br><br>**(Local Value)** | De-engineering along *c.*400m of the River Irk corridor and reprofiling riverbanks in Application 4 and drainage outfall in Application 5 leading to certain loss of bankside habitat is considered a **negative significant effect** at Local level.<br><br>Possible direct impacts on the River Irk in the wider SRF is considered a **negative significant effect** at Local level. | Enhancement of reprofiled sections of River Irk through aquatic marginal planting in the LEMP.<br><br>Wider enhancements of the River Irk through the LEMP.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. The SRF itself includes mention of opportunities to enhance the river for biodiversity. | **Negative significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Minor adverse** in the immediate term, changing to **minor beneficial** in the medium- to long-term. |
| | Possible indirect impact on River Irk (pollution/ construction dust) in Applications 4 and 5 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of Himalayan balsam, giant knotweed and Japanese knotweed during construction works in Applications 4 and 5 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| **Semi-natural Woodland**<br><br>**(Regional Value)** | Possible direct impact on adjacent retained woodland in Application 4 and the wider SRF is considered a **negative significant effect** at Regional level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on adjacent retained woodland (pollution/ construction dust) in Application 4 and the wider SRF is considered a **negative significant effect** at Regional level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of invasive species during works across Application 4 and the wider SRF is considered a **negative significant effect** at Local level**.** | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| | Retention of 0.16ha of semi-natural broadleaved woodland in Application 4 is considered a **positive significant effect** at Local level.<br><br>Retention of the largest areas of woodland in the wider SRF is considered a **positive significant effect** at Regional | Management and enhancement of retained semi-natural woodland habitat in the LEMP. | **Positive significant effect.** | **Minor beneficial.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | level. | | | |
| | It is anticipated there will be woodland losses in the wider SRF. This is considered a **negative significant effect** at Regional level. | It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **Negative significant effect** in the short-term at Regional level, changing to **positive significant effect** in the medium- to long-term. | **Minor adverse** changing to **minor beneficial** in the medium- to long-term. |
| **Plantation Woodland**<br><br>**(Regional Value)** | It is anticipated there will be woodland losses in the wider SRF. This is considered a **negative significant effect** at Regional level. | It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **Negative significant effect** in the short-term at Regional level, changing to **positive significant effect** in the medium- to long-term. | **Minor adverse** changing to **minor beneficial** in the medium- to long-term. |
| | Possible direct impact on adjacent retained woodland in Application 4 and the wider SRF is considered a **negative significant effect** at Regional level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on adjacent retained woodland (pollution/ construction dust) in Application 4 and the wider SRF is considered a **negative significant effect** at Regional level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| | Likely spread of invasive species during works across Application 4 and the wider SRF is | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | considered a **negative significant effect** at Local level**.** | | | |
| | Retention of the majority of St Catherine's Wood in Application 4 is considered a **positive significant effect** at Local level.<br><br>Retention of the largest areas of woodland in the wider SRF is considered a **positive significant effect** at Regional level. | Management and enhancement of retained plantation woodland habitat in the LEMP. | **Positive significant effect.** | **Minor beneficial.** |
| **Dense Scrub**<br><br>**(Local Value)** | Likely spread of Himalayan balsam during construction works in Applications 4 and 5 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **Positive significant effect.** | **Minor beneficial.** |
| **Scattered Broadleaved Trees**<br><br>**(Local Value)** | Certain loss of 0.32ha scattered trees in Application 5 is considered a **negative significant effect** at Local level in ***the*** short-term changing to **positive significant effect** in medium- to long-term through planting of 0.73ha trees.<br><br>It is anticipated there will be tree losses in the wider SRF. This is considered a **negative significant** | Management and enhancement of retained and newly planted scattered trees in the LEMP.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **Negative significant effect** in the short-term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Minor adverse** in the short-term changing to **minor beneficial** in the medium- to long-term. |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | **effect** at Local level. | | | |
| | Possible direct impact on adjacent retained trees in Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on adjacent retained trees in Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of CEMP. | **No significant effect.** | **Negligible.** |
| **Roosting Bats**<br><br>**(Local Value)** | Direct loss of two common pipistrelle day roosts in Application 4 with potential killing or injury to roosting bats is a **negative significant effect** at Local level.<br><br>Loss of potential roosting habitat in Application 5 is a **negative significant effect** at Local level.<br><br>It is anticipated there will be loss of bat roosts in the wider SRF due to the number of buildings, trees and other structures within proposed development areas but that due to the types of buildings etc. present, any roosts | Implementation of Natural England EPS Licence including Precautionary Working Methods and soft demolition.<br><br>Provision of alternative roosting habitat to mitigate for the loss of available roosting habitat e.g. bat boxes. | **No significant effect.** | **Neutral.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | impacted will likely be of low conservation status. This is considered a **negative significant effect** at Local level. | | | |
| | Possible direct impact on retained woodland and trees with roost suitability in Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible.** |
| | Possible indirect impact on roosting bats through disturbance during construction (noise, vibration, light) in Application 4 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of lighting strategy which would include bat sensitive measures.<br><br>Implementation of CEMP.<br><br>Bat box strategy. | **No significant effect.** | **Neutral.** |
| **Bat Foraging and Commuting**<br><br>**(Local Value)** | Loss of available bat foraging/commuting habitat in Application 5 and the wider SRF is considered a **negative significant effect** at Local level. | Management and enhancement of newly created habitat and River Irk corridor through LEMP.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **Negative significant effect** in the short- to medium-term, changing to **positive significant effect** in the long-term. | **Minor adverse** in the short- to medium-term, changing to **minor beneficial** in the long-term. |
| | Construction lighting impact on offsite retained commuting corridors and foraging | Implementation of lighting strategy which would include bat sensitive measures. | **No significant effect.** | **Negligible.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | habitat in Applications 4 and 5 and the wider SRF is considered a **negative significant effect** at Local level. | | | |
| **Breeding Birds**<br><br>**(Local Value)** | Loss of available bird nesting and foraging habitat in Application 5 and the wider SRF is considered a **negative significant effect** at Local level. | Bird box strategy.<br><br>Management of created habitat through LEMP.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **Negative significant effect** in the immediate term, changing to **positive significant effect** in the long-term. | **Minor adverse** in the immediate term, changing to **minor beneficial** in the long-term. |
| | Potential for killing or injuring birds/nests through vegetation clearance in Application 5 and the wider SRF is considered a **negative significant effect** at Local level. | Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined within CEMP. | **No significant effect.** | **Negligible.** |
| **Fish**<br><br>**(Local Value)** | Potential for disturbing spawning fish and fish dispersion during wall demolition in Application 4 and construction of outfall in Application 5 is considered a **negative significant effect** at Local level.<br><br>Possible direct impacts on fish in the wider SRF is considered a **negative significant** | Restrictions on river works during spawning season (April -July for species encountered during surveys) and pollution measures outlined within CEMP. | **No significant effect.** | **Negligible.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | **effect** at Local level. | | | |
| ***Completed and Operational Development*** | | | | |
| **River Irk**<br><br>**(Local Value)** | Potential increase in public pressure leading to likely introduction or spread of invasive species as a result of Applications 4 and 5 and the wider SRF is considered a **negative significant effect** at Local level. | Implementation of ISMS. | **No significant effect.** | **Negligible.** |
| **Semi-Natural Woodland**<br><br>**(Regional Value)** | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives in Application 4 and the wider SRF is considered a **negative significant effect** at Regional level. | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure and reduce impact on surrounding ground flora.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure impacts from public pressure are mitigated. | **No significant effect** changing to **positive significant effect** in the medium- to long-term. | **Neutral** changing to **minor beneficial** in the medium- to long-term. |
| **Plantation Woodland**<br><br>**(Regional Value)** | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives in Application 4 and the wider SRF is considered a **negative significant effect** at Regional | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure and reduce impact on surrounding ground | **No significant effect** changing to **positive significant effect** in the medium- to long-term. | **Neutral** changing to **minor beneficial** in the medium- to long-term. |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | level. | flora.<br><br>It is anticipated commitments within a Northern Gateway Biodiversity Plan will ensure impacts from public pressure are mitigated. | | |
| **Roosting Bats**<br><br>**(Local Value)** | New buildings, additional tree planting and bat boxes could significantly increase the availability of bat roosting opportunities in the medium to long-term in Applications 4 and 5 and the wider SRF. Provisions of new roosting habitat is a **positive significant effect** at Local level | Implementation of LEMP.<br><br>Bat box strategy. | **No significant effect** in the immediate term at Local level, changing to **positive significant effect** in the medium- to long-term. | **Negligible** in the immediate term, changing to **minor beneficial** in the medium- to long-term. |
| | Potential lighting impact on potential roosting habitat in Applications 4 and 5 and the wider SRF is considered a **negative significant effect** at Local level. | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible.** |
| **Bat Foraging and Commuting**<br><br>**(Local Value)** | Potential lighting impact on foraging/commuting routes in Applications 4 and 5 and the wider SRF is considered a **negative significant effect** at Local level. | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible.** |
| **Breeding Birds**<br><br>**(Local Value)** | New buildings, habitat creation and enhancement and | Implementation of LEMP. | **No significant effect** in the immediate term at Local level, | **Negligible** in the immediate term, changing to **minor** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | bird boxes could significantly increase the nesting opportunities in the medium- to long-term in Applications 4 and 5 and the wider SRF. Provisions of new nesting habitat is a **positive significant effect** at Local level. | Bird box strategy. | changing to **positive significant effect** in the medium- to long-term. | **beneficial** in the medium- to long-term. |

7.352 The cumulative assessment focused on those ecological features identified in both the standalone Application 4 and 5 assessments. The wider SRF contains similar habitats to those within Applications 4 and 5 though the most valuable habitats will be largely retained and a large proportion of the SRF is comprised of low-value habitats e.g. hardstanding and buildings.

7.353 Due to the heavily developed nature of the landscape in the areas of the wider SRF proposed for development, the potential for fragmentation or disturbance effects to accumulate is limited to only those parts of the SRF close to these applications and only where they contain features of relevance to the habitats and species within these applications. The assessment did identify additional habitat loss or damage, and disturbance effects once the wider SRF was incorporated. However, these can all be adequately mitigated for as detailed in the table.

7.354 Assessment of the Development project i.e. Application 4, Application 5 and the wider SRF, is provided via a high level combined assessment. It is predicted that the significance effect from the cumulative losses of bat foraging and commuting habitat and breeding bird habitat could increase depending on the timing and extent of habitat removal. However, given the commitments within a Northern Gateway Biodiversity Plan, it is likely there would be an overall positive effect on quality/quantity of bat foraging and commuting habitat and quantity/quality of breeding bird habitat in the long-term.

7.355 The significance of the anticipated residual effects for this scenario are based on the information available at the time of writing. Specific mitigation measures required in respect of any issues pertinent to future applications within the SRF will be identified and agreed within the scope of the assessments prepared and submitted with those applications.

# 8. Cultural Heritage

## Introduction

8.1 This chapter assesses the effects of the Proposed Development on Cultural Heritage. In particular it considers effects that may arise as a result of the Proposed Development (Applications 4 and 5) on heritage assets including built heritage and buried archaeological remains. Details of the Proposed Development can be seen in Chapter 5.

8.2 The chapter describes the methods used to assess the likely significant effects, the baseline conditions at the Site and surroundings, the potential direct and indirect effects of the Proposed Development arising in terms of Cultural Heritage considerations, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It also provides an overview of the legislative and policy framework. It has been written by WSP.

8.3 Cultural heritage is defined in the Principles of Cultural Heritage Impact Assessment in the UK (IEMA 2021[1]) as "*…buildings and structures, monuments, parks and gardens, battlefields, townscapes, landscapes, seascapes archaeological sites, myths, festivals and traditions, whether intangible, visible, buried or submerged*." This chapter covers all aspects of cultural heritage.

8.4 This chapter has been completed on the assumption that the required works in Application Areas 1, 2 and 3 have been completed and do not require any further assessment. This area is known as the 'Housing Infrastructure Fund' or HIF, and cross-referenced where relevant in the chapter.

8.5 This chapter is supported by figures which are located in **Volume 2a: Main Text Figures** and appendices which are located in **Volume 3: Appendices** of this ES. The chapter and its associated figures and appendices are intended to be read as part of the wider ES and in conjunction with the Historic Environment Desk-Based Assessment (HEDBA) (**Appendix 8.1**).

## Assessment Methodology and Significance Criteria

### Legislative Framework, Policy and Guidance

#### Legislative Framework

8.6 The applicable legislative framework is summarised as follows and presented in detail in the HEDBA:

[1] IEMA (2021) Principles of Cultural Heritage Impact Assessment in the UK. Available online for IEMA and CIfA members

- Ancient Monuments and Archaeological Areas Act 1979[2]; and
- The Planning (Listed Buildings and Conservation Areas) Act 1990[3].

### Policy

8.7 The relevant policy documents are as follows:

- National Planning Policy Framework (NPPF)[4]; and
- Manchester's Local Development Framework: Core Strategy Development Plan 2012[5];
- CC 9 Design and Heritage[6]; and
- EN 3 Heritage[7].

8.8 In addition, this chapter has been prepared in accordance with the Government's National Planning Practice Guidance (NPPG)[8].

### Guidance

8.9 The following guidance documents have been used during the preparation of this chapter:

- Charted Institute for Archaeologists' (CIfA) 'Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment' (2020)[9];
- CIfA's 'Standard and guidance for desk-based assessment' (2020)[10];
- CIfA's 'Standard and guidance for the archaeological investigation and recording of standing buildings or structures' (2020)[11];
- Historic England's 'The Setting of Heritage Assets – Historic Environment Good Practice Advice in Planning Note 3 [Second Edition]' (2017)[12]; and
- Ministry of Housing, Communities and Local Government's (MHCLG) 'NPPF' (July 2021)[13].

## Methodology for Determining Baseline Conditions and Sensitive Receptors

[2] The Stationary Office (1979) Ancient Monuments and Archaeological Areas Act (1979) (as amended)
[3] The Stationary Office (1990), Planning (Listed Buildings and Conservation Areas) Act (1990)
[4] MHCLG (2021) [Ministry of Housing, Communities and Local Government], July 2021 National Planning Policy Framework (NPPF)
[5] Manchester City Council (2012) Manchester's Local Development Framework Core Strategy Development Plan Document.
[6] Manchester City Council (2012) Manchester's Local Development Framework Core Strategy Development Plan Document, CC9 Design and Heritage.
[7] Manchester City Council (2012) Manchester's Local Development Framework Core Strategy Development Plan Document, EN 3 Heritage.
[8] NPPG (2019) Advises on enhancing and conserving the historic environment, Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government.
[9] CIfA (2020) Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment
[10] CIfA (2020) Standard and guidance for desk-based assessment
[11] CIfA (2020) Standard and guidance for the archaeological investigation and recording of standing buildings or structures
[12] Historic England (2017) The Setting of Heritage Assets – Historic Environment Good Practice Advice in Planning Note 3 [Second Edition]
[13] MHCLG [now Department for Levelling Up, Housing and Communities] (July 2021) National Planning Policy Framework

8.10 The same methodology was used for both the assessment of the outline Application 4 and the assessment of the Full Application 5. The assessment has assumed that the HIF works (Applications 1, 2 and 3) would be substantially complete as to enable Application 4 to be built out in due course as Application 2 establishes the levels on which most of Application 4 will be built (apart from the Travis Island area). Therefore for the purposes of the Application 4 construction assessments it is generally assumed that the works comprised in Applications 1, 2 and 3 have been completed before the Application 4 development starts. Applications 1, 2 and 3 were all accompanied by an ES and the archaeological impacts associated with those works have already been assessed when those were applications were granted planning permission.

8.11 This section of this ES chapter presents the following:

- Information sources that have been consulted throughout the preparation of this chapter;
- The methodology behind the assessment of cultural heritage effects, including the criteria for the determination of the value (sensitivity) of each receptor and magnitude of impact from the existing or 'baseline' condition;
- An explanation as to how the identification and assessment of potential cultural heritage effects has been reached; and
- The significance criteria and terminology for the assessment of cultural heritage residual effects.

8.12 The assessment scenarios in respect of the EIA for the Proposed Development are set out in **Volume 2: Main Text, Chapter 2: Approach.**

## Significance Criteria

### Introduction

8.13 Following the characterisation of the baseline conditions, the methodology used to characterise the likely environmental effects on above ground assets and on potential buried heritage assets has entailed:

- Evaluating the significance of heritage assets, based on existing designations and professional judgment where such resources have no formal designation, and considering historical, archaeological, architectural and artistic interest as outlined in the NPPF (MCHLG 2021);
- Evaluating the contribution that setting makes to the overall significance of above ground heritage assets selected for assessment;
- Predicting the magnitude of change upon the known or potential heritage significance of assets and the likelihood and resulting significance of environmental effect;
- Considering the mitigation measures that have been included within the Proposed Development and any additional mitigation that might be required in order to avoid, reduce or off-set any significant negative effects; and

- Quantifying any residual effects (those that might remain after mitigation).

## Assessing Asset (Receptor) Heritage Significance

8.14 The NPPF defines significance as *'The value of a heritage asset to this and future generations because of its heritage interest. That interest may be historic, archaeological, architectural or artistic*.'

8.15 These values encompass the criteria that Historic England are obliged to consider when statutorily designating heritage assets. Each asset is evaluated against the range of criteria listed above on a case-by-case basis. Unless the nature and exact extent of buried archaeological remains within any given area has been determined through prior investigation, significance is often uncertain.

8.16 In relation to designated heritage assets, the assessment considers the contribution which the historic character and setting makes to the overall significance of the asset.

8.17 **Table 8.1** gives examples of the significance of designated and non-designated heritage assets.

***Table 8.1:*** *Significance of heritage assets*

| Significance Value | Description / Nature of Heritage Asset |
|---|---|
| Very High | • World Heritage Sites. |
| High | • Scheduled Monuments;<br>• Grade I Listed Buildings;<br>• Grade II* Listed Buildings;<br>• Grade II Listed Buildings which can be shown to have exceptional qualities in their fabric or historical associations, or which are clearly associated with heritage assets of high, national significance;<br>• Conservation Areas containing buildings of great importance; and / or<br>• Undesignated heritage assets of clear national importance. |
| Medium | • Grade II Listed Buildings which can be shown to have qualities in their fabric or historical association of regional importance only;<br>• Historic (unlisted) buildings that can be shown to have exceptional qualities in their fabric or historical associations;<br>• Conservation Areas containing buildings that contribute significantly to its historic character;<br>• Historic Townscape or built-up areas with important historic integrity in their buildings, or built settings; and / or |

| Significance Value | Description / Nature of Heritage Asset |
|---|---|
| | • Known heritage assets of regional importance. |
| Low | • Locally Listed Buildings;<br>• Historic (unlisted) buildings of modest quality in their fabric or historical association;<br>• Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings;<br>• Known heritage assets of local importance; and / or<br>• Heritage Assets compromised by poor preservation and / or poor survival of contextual associations. |
| Negligible | • Buildings of no architectural or historical note;<br>• Buildings of intrusive character;<br>• Heritage assets with very little or no surviving archaeological interest;<br>• Artefact find spots (where the artefacts are no longer in situ and where their provenance is uncertain); and / or<br>• Poorly preserved examples of particular types of minor historic landscape features (e.g. quarries and gravel pits, dilapidated sheepfolds, etc). |
| Uncertain | • Buildings with some hidden (i.e. inaccessible) potential for historical significance; and / or<br>• Unknown heritage assets. |

## Magnitude of Impact

8.18 Determination of magnitude of impact (i.e. change) upon the significance of known or potential heritage assets is based on the severity of the likely impact (e.g. physical effects on built heritage assets or the permanent presence of new structures etc. that result in changes to the contribution of setting to the heritage significance of a built heritage asset). **Table 8.2** describes the criteria used in this assessment to determine the magnitude of change.

***Table 8.2**: Magnitude of impact*

| Magnitude of Impact (Change) | Description of Impact |
|---|---|
| Very large | • Change to most or all key archaeological materials or key historic building |

| Magnitude of Impact (Change) | Description of Impact |
|---|---|
| | elements, such that the resource is totally altered.<br>• Comprehensive changes to setting. |
| Large | • Changes to many key archaeological materials or key historic building elements, such that the resource is clearly modified; and / or<br>• Considerable changes to setting that affect the character of the asset |
| Medium | • Changes to key archaeological materials or key historic building elements, such that the asset is slightly altered; and / or<br>• Slight changes to setting. |
| Small | • Very minor changes to archaeological materials or historic building elements or setting. |
| No Change | • No change. |

## Significance of Environmental Effect

8.19 The assessment of likely significant effects has considered the site preparation, demolition and construction phase and the operational phase of the Proposed Development. It has been assumed that the required archaeological work in the HIF (Application Areas 1, 2 and 3) have been completed. The significance level attributed to each effect has been assessed based on the heritage significance of the affected receptor (heritage asset) and the magnitude of change (impact) to the heritage significance of the receptor due to the Proposed Development.

8.20 The environmental effect is outlined in **Table 8.3**. Effects may be either negative (adverse) or positive (beneficial) and are defined initially without mitigation. However, all effects are assessed as adverse in relation to cultural heritage in this assessment. The table is essentially a guide only, so that the process is transparent and the rationale for the effect scores is provided in the relevant sections. Where the resulting effect comprises two separate levels (i.e., 'Large or 'Very Large), professional judgement has been applied to select the most appropriate significance of effect.

***Table 8.3**: Matrix of Effect Significance*

| Sensitivity / Value | Magnitude of Impact | | | | |
|---|---|---|---|---|---|
| | No Change | Small | Medium | Large | Very Large |
| Very high | Negligible | Minor | Major or Moderate | Major | Major |

| | | | | | |
|---|---|---|---|---|---|
| High | Negligible | Minor | Moderate or Minor | Major or Moderate | Major |
| Medium | Negligible | Minor or negligible | Minor | Moderate or Minor | Major or Moderate |
| Low | Negligible | Minor or negligible | Minor or negligible | Minor | Moderate or Minor |
| Negligible | Negligible | Negligible | Minor or negligible | Minor or negligible | Minor |

8.21 Where information is insufficient to be able to quantify either the asset significance or magnitude of change with any degree of certainty, the effect is given as 'uncertain'. This might be the case for possible buried heritage assets, the presence, nature, date, extent and significance of which is uncertain due to the absence of any archaeological investigation.

8.22 The following terms have been used to define the significance of the effects identified:

- Major Beneficial;
- Moderate Beneficial;
- Minor Beneficial;
- Negligible;
- Minor Adverse;
- Moderate Adverse; and
- Major Adverse.

8.23 Residual effects that are classified as **moderate or above** are considered to be '**significant'** in EIA terms. Residual effects classified as minor or below are considered to be '**not significant'**.

## Mitigation Measures and Significance of Residual Effect

8.24 An appropriate mitigation strategy would aim to offset or reduce any adverse effect. Measures to mitigate effects would normally consist of design adjustments (i.e. embedded mitigation), to allow significant resources to be protected and retained (preservation *in situ*) or, where this is not feasible, investigation and recording in advance of development (e.g. archaeological standing building recording in advance of demolition) with dissemination at an appropriate level (preservation by record).

8.25 As heritage assets are an irreplaceable resource it is generally considered as standard practice within the planning system to implement mitigation measures in order to reduce or offset any level of adverse effect on a heritage asset where the proposed change would physically alter or remove the asset, including minor adverse. This is to ensure that finite and irreplaceable remains are not removed / lost without record. The level of

mitigation proposed is, in each case, proportionate to the significance of the asset being affected. The residual effect reflects the success rating for the recommended mitigation strategy.

## Limitations and Assumptions

8.26 The information presented in this report has been drawn from data obtained from a variety of sources and includes secondary information. It is assumed that this information is accurate.

8.27 The assessment is based on details of the scope of the Proposed Development presented at the time of compilation. Any ongoing design changes may require changes to the assessment.

8.28 The data provided by Historic Environment Records is not a record of all surviving heritage assets, but a record of the discovery of wide range of archaeological and historical components of the historic environment. There is a potential for the presence of further, unrecorded, heritage assets and components of the historic environment to be present.

## Study Area

8.29 A 500m study area around the Proposed Development has been applied for the assessment of designated heritage assets. A 300m study area has been applied for non-designated heritage assets and was used to establish the known historic environment context and the potential for hitherto unknown buried archaeological remains.

## Survey and data sources

8.30 The following survey and data sources were utilised to provide asset information for the baseline:

- WSP 2023 - Redbank & Dantzic Street Masterplan Historic Environment Desk-Based Assessment is the main source of information which has informed the baseline for the **Volume 2: Main Text, Chapter 8: Cultural Heritage**. This is presented in **Appendix 8.1**. This further incorporates data from the sources listed below.
- Arup 2022 - Proposed HIF Infrastructure Works, Victoria North, Manchester. Historic Environment Baseline Assessment was also consulted for baseline information.
- Historic England - National Heritage List (NHL) with information on statutorily designated heritage assets. Statutory designations (Scheduled Monuments; statutorily Listed Buildings; Registered Parks and Gardens; Historic Battlefields) can provide a significant constraint to development.
- Greater Manchester Archaeological Advisory Service - Historic Environment Record (HER) Primary repository of archaeological information. Includes information from past investigations, local knowledge, find spots, and documentary and cartographic sources.
- British Geological Survey (BGS) - Solid and drift geology digital map; online BGS geological borehole record data. Subsurface deposition, including buried geology and topography, can provide an indication of potential for early human settlement, and potential depth of archaeological remains.

- Internet - Web-published local history; Archaeological Data Service. Many key documentary sources, such as the Victoria County History, the Survey of London, and local and specialist studies are now published on the web and can be used to inform the archaeological and historical background. The Archaeological Data Service includes an archive of digital fieldwork reports.

## Consultation

8.31 Consultation was undertaken with appropriate stakeholders in previous stages of the EIA. This was primarily with the LPA Archaeological Advisor at GMAAS. **Table 8.4** provides a summary of the consultation undertaken in support of the preparation of this assessment.

***Table 8.4**: Consultation*

| Consultee | Application | Date and Time | Comments |
|---|---|---|---|
| GMAAS | Outline Application 4 and Full Application 5 | 30/11/2022 | The DBA assessment was sent to the Heritage Management Director at GMAAS, who replied with some suggested edits, which have now been undertaken. This includes comments that the post-medieval and industrial periods should be separated, and that Historic Environment Desk-Based Assessment should be updated to reflect all available latest information relating to the HIF works. This has been completed in the DBA (see **Appendix 8.1**) |
| HER GMAAS | Outline Application 4 and Full Application 5 | 14/7/2022 | A complete historic environment search was completed in July 2022. |
| EIA Scoping Report | Outline Application 4 and Full Application 5 | December 2022 | The Scoping report presented the potential significant effects of archaeology and heritage of the proposals during both the construction and operational phases. |
| EIA Scoping Opinion | Outline Application 4 and Full Application 5 | March 2023 | EIA Scoping Opinion Response – Comments and Actions.<br><br>Comment*: Whilst Greater Manchester Archaeology Advisory Service (GMAAS) have considered that archaeology can be scoped out, for completeness and in the interest of a robust ES, I consider they should remain scoped into the ES." Scoping Response received from GMAAS.*<br><br>Archaeology has been included within this chapter of the ES.<br><br>Comment: *"GMAAS anticipate that the HEDBA will be updated in the* |

| Consultee | Application | Date and Time | Comments |
|---|---|---|---|
| | | | *light of any additional information deriving from the progress of the Infrastructure scheme and submitted in support of a future planning application for the Red Bank Neighbourhood. The Scoping Report suggests that pre-determination evaluation of the archaeological assets is required, and whilst this would represent best practice in line with the NPPF and local planning policy, GMAAS will be content to secure archaeological interests as a condition attached to a future consent, not least as some of the sites of archaeological interest in the application area are not currently accessible for intrusive investigation."*<br><br>This has been acknowledged in in the updated DBA (**Appendix 8.1** and paragraph 8.60 for Application 4 and paragraph 8.80 for Application 5 within this chapter)<br><br>Comment; *The above advice relates to the below-ground archaeological interest. In terms of the built heritage, the Scoping Report proposes that detailed consideration should only be afforded to designated heritage assets that lie within the site boundary. Through the townscape and visual impact chapter of the ES, there needs to be due consideration to the impact on the city scape and on assets outside of the development boundary."*<br><br>This chapter, and the DBA (see **Appendix 8.1**), considers the setting of heritage assets within the wider area and any changes that may occur as a result of Application 4 and Application 5.<br><br>Comment; *"There are a couple of minor points on the Scoping Report that ought to be noted. In particular that there is a crucial distinction between the 'Post-medieval Period' (1530s – mid-18th century) and the 'Industrial Period' (mid-18th-century – c. 1914), and erroneously refer to several sites of 19th-century origin as 'post-medieval'. In doing so, the Resource Assessment and the Research Objectives for the Industrial Period set out in the current North West Historic Environment Research Framework have been overlooked (https://researchframeworks.org/nwrf/industrial/). This should be addressed."* |

| Consultee | Application | Date and Time | Comments |
|---|---|---|---|
| | | | This has been addressed within the DBA **Appendix 8.1.** |

# Site-wide Baseline (Applications 4 and 5)

8.32 The following section provides a summary of the baseline conditions for the Proposed Development. Full details are provided in the HEDBA in **Appendix 8.1.** Assets within the red line boundaries for Applications 4 and 5 are detailed in the appropriate sections, below.

## Heritage Assets

8.33 Within 500m of the Proposed Development there are 35 Listed Buildings, comprising one Grade I, one Grade II* and 33 Grade II, and three Conservation Areas. Within the 300m study area, there are 68 non-designated heritage assets.

## Historic Background

8.34 A summary of the overall baseline is presented below. The HEDBA contains a comprehensive overview of each period and the assets contained within it.

8.35 The Proposed Development is located on a river and would have been an important resource during the prehistoric periods. It is possible that evidence of resource exploitation from the prehistoric periods is present within the alluvial deposits in the bed of the River Irk and its floodplain.

8.36 Mamucium was the Roman fort at Manchester, 2.3km to the south-west of the Proposed Development, which was built as a part of the process of controlling the Pennines. Just outside the Proposed Development, quantities of Roman and later coins (MGM1928) were found in the old riverbed of the Irk between Scotland and Ducie bridges when the river was diverted by 200 yards by the construction of the railway line of the Lancashire and Yorkshire Railway between 1899 and 1901. However, there are no known sites or finds dated to this period within either the Application 4 or 5 sites.

8.37 The scarcity of remains from the prehistoric, Roman and early medieval periods within the study area is likely to be the result of extensive later medieval and post-medieval development which has obscured or removed earlier archaeological evidence (Newman 2006). However, a funerary urn stamped with decoration typical of the early

medieval period was found within the study area in 1850. It is unfortunately now lost but is considered to be the earliest dated post-Roman find from Manchester.

8.38 Manchester became a town of regional importance during the early part of the late medieval period, receiving its market charter in 1282. Development was then focused in the area of the Hanging Ditch, Fennel Street, Deansgate and Market Street approximately 1.5 km south-west of the Proposed Development. Throughout this period, the area of the Proposed Development probably comprised open or agricultural land beyond the area of settlement associated with the town. In the 1500s, due to the town's burgeoning textile trade, the population of Manchester doubled, resulting in the expansion of the settlement. This rapid development would be characteristic of the city throughout the post-medieval period. However, there are no known remains of late medieval date within the Application 4 or 5 sites and the potential for any such buried remains has been deemed low.

8.39 By the 16th century, Manchester had become an important centre of the woollen cloth trade. Cotton imported from the eastern Mediterranean became increasingly popular for use in mixed cloth. Manchester's damp climate also proved helpful to production of cotton, meaning the cotton fibres were less likely to snap. It was firmly established as a centre of production by the end of the 17th century. Rapid development would become characteristic for Manchester throughout the post-medieval and subsequent Industrial period, and the textile industry was the main driving force behind this.

8.40 Another major addition to the area during this period was the construction of the Lancashire and Yorkshire Railway in *c.* 1844 which ran along a viaduct over the River Irk immediately to the south of the Proposed Development with Manchester Victoria Station, to the southwest of the Proposed Development, opening the same year.

## Topography

8.41 The Proposed Development occupies the north-east to south-west orientated valley slope of the River Irk. North of the river, ground levels fall from approximately 50m AOD in the north to approximately 30m AOD along the river channel. South of the river, ground levels rise from river level to approximately 40m AOD at the southern boundary (ARUP 2021)[14].

## Geology

8.42 The bedrock geology comprises sandstone and mudstone, overlain by superficial till (BGS 2022).

8.43 Borehole data indicates that made ground deposits up to 5m deep lie over the natural geology which is typically Glacial Till, or Alluvium closer to the river. In some areas, these soils appear to be absent, and the made ground lies directly over the Coal Measures bedrock (typically a sandstone rockhead formation) (ARUP 2022).

[14] ARUP, (2021) Victoria North HIF Infrastructure Works, Stage 2 Design Report, Manchester

# Red Bank (Outline Application 4)

## Specific Baseline Conditions (Application 4)

8.44 Five non-designated assets were identified within the Application 4 site, identified from the HER data and site visit. The assets are summarised here with a more comprehensive description presented in the HEDBA.

8.45 The earliest asset, Caves (site of) at Red Bank (MGM11114) has been provisionally dated to the prehistoric period and comprises two dome-shaped caves. Here, two large dome-shaped caves or chambers approximately 3m high were discovered, with pick-axe marks on the walls. This asset is sited in the centre of the Application 4 site, close to Hargreaves Street. The caves have since been used for depositing sewage.

8.46 The site of Travis Isle Mill (MGM11058) is located in the north-eastern part of the Application 4 site and is dated to the post-medieval period. Swire's map of 1824 shows several long buildings and appears to be next to the River Irk in the area of the proposed RB05 plot. A dwelling house and cottages may represent the structures to the south-east of the mill in RB16-17.

There are four assets within the Application 4 site which dated to the industrial period; two chemical works, the Dolphin Baths, and a railway viaduct. The site of Collyhurst Dye Works (MGM10846) is at the north-east, just within the perimeter of the Application 4 site, on the banks of the River Irk. The site of Iron and Red Liquor Works (MGM17185) is to the east of Hargreaves Street, also on the bank of the river, at the south-western area of the Application 4 site. The works were early examples of chemical manufacturing plants in Manchester. The Manchester, Whitefield and Radcliff line ran over a viaduct from Victoria Station which forms the northern boundary of the Proposed Development. The Red Bank viaduct (WSP001) is comprised of an historic four span masonry arch and is dated to before 1891. At the northern extent of RB05 is a footbridge over the railway sidings that was depicted in several of L S Lowry's paintings and drawings. They are known as Barney's Steps (WSP003).

## Embedded Mitigation (Application 4)

8.47 There are no embedded mitigation measures with regards to Cultural Heritage within Application 4.

## Assessment of Likely Significant Effects (Application 4)

### Demolition and Construction

8.48 The assessment has identified that there are no significant effects to heritage assets within Application 4, as outlined in Section 5.4 of the HEDBA, on the assumption that the Housing Infrastructure Fund (HIF) enabling works will be complete, which will have removed all surviving remains in those areas (RB01 – RB07, RB10 and RB12B).

8.49 There is potential for effects from changes to the setting of one designated heritage asset, Union Bridge (NHL 1255163), which is a Grade II listed building, during the construction phase of works. The bridge is located

adjacent to the Application Boundary of NT01, at the junction of Roger Street and Dantzic Street. As a Grade II listed structure, the asset is considered to be of medium value. The significance of this asset is through its historical and architectural value, as a surviving 18th century bridge; the earliest surviving structure in the Proposed Scheme area. Its setting is the River Irk. This is the only aspect of its setting that contributes to its significance. As its position over the river will remain unchanged, there will be no impact to this asset.

8.50 There is low potential for buried heritage assets of prehistoric, Roman and medieval periods within the Application 4 site due to subsequent post-medieval and industrial development which is likely to have removed any earlier deposits. Should remains from this date survive, they would likely be of low value as they would be compromised by poor preservation due to later development. The magnitude of any impact would be no more than medium, resulting in a significance of effect of no more than slight adverse. As a result, no significant effects have been identified.

8.51 There is high potential for post-medieval and industrial remains within the Application 4 site associated with Collyhurst Dye Works (MGM10846), Travis Isle Mill (MGM11058), Iron and Red Liquor Works (MGM17185) and the Dolphin Baths, such as foundations and surfaces. They are of particular interest based on their local archaeological and historical interest for the information they contain about the 19th century industrial development of this part of Manchester and are considered to be of medium value. Any subsurface remains would be totally altered by the demolition and construction phases. However, the extant planning permission (MCC ref 133143/VO/2022) for the HIF enabling works at Victoria North included a Historic Environment Baseline Assessment undertaken by Arup, dated 4 February 2022. Subsequent to this, an Archaeological Written Scheme of Investigation was produced by Orion in September 2022. This proposes a series of trial trenches on targeted areas covering areas RB01 – RB07, RB10, and RB12B (see Appendix 8.1). On the basis that these works will be undertaken as part of the HIF enabling works and completed prior to work at Application 4, there will be no impacts on the industrial assets discussed above, and no further archaeological work will be required.

## The Completed and Operational Development

8.52 An assessment of operational effects on buried heritage assets have been scoped out on the basis that, once the Proposed Application 4 Development has been completed, no further ground disturbance will occur.

8.53 While there is potential for effects from changes to the setting of the designated Grade II listed Union Bridge (NHL 1255163) during the operation of the scheme, there will be no change to the element of its setting that contributes to its significance. As its position over the river will remain unchanged, there will be no change to this asset, and no effect.

8.54 While the Red Bank viaduct (WSP001) is along the red line boundary of the Proposed Scheme, no works are envisaged for the viaduct as part of the enabling works for the Infrastructure Works site. The viaduct has lost its historical association with the railway and its associated infrastructure, with the surrounding area now

overgrown waste ground. Therefore, the setting does not contribute to the significance of the heritage value of the asset. As a consequence, there is no impact upon it.

8.55 Barney's steps (WSP003) are outside the Proposed Scheme area and will not be physically affected by the works. The footbridge has lost its association with the railway which it once crossed and appears to no longer be in use as a footbridge.

## Additional Mitigation / Enhancement Measures (Application 4)

8.56 The impacts and effects on the heritage assets can, in some instances, be reduced through the use of mitigation measures. This section presents the recommended mitigation measures and assesses the likely residual impact and effects on the value of archaeological remains.

### Demolition and Construction

8.57 The demolition and construction effects are described in paragraphs 8.49 -8.52 above.

8.58 On the basis that RB01 – RB07, RB10, and RB12B will be excavated and mitigated as part of the HIF, no further archaeological mitigation is required. The HIF mitigation comprises that detailed in the Archaeological Written Scheme of Investigation produced by Orion in September 2022, which proposes a series of trial trenches.

### The Completed and Operational Development

8.59 There is no effect on the Grade II listed Union Bridge, the Red Bank viaduct (WSP001) or Barney's Steps (WSP003). Consequently, no mitigation is required.

## Likely Residual Effects of the Development and their Significance (Application 4)

8.60 As all potentially affected assets will be dealt with as part of the HIF, there are no impacts and consequently no residual effects.

8.61 None of the built heritage assets will be impacted by changes in their setting.

## Conclusions (Application 4)

8.62 The assessment has identified five assets within the boundary. As all potentially affected assets will be dealt with as part of the HIF enabling works, there are no residual impacts, and no further archaeological mitigation is required. None of the built heritage assets will be impacted by changes in their setting.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 4)

### Approach

8.63 Cumulative effects are 'elevated' effects which occur where the combined effect of the Proposed Development with other Proposed Developments in the vicinity, on a shared buried heritage asset or caused by significant changes to the setting of an asset, is more severe than that reported at the Proposed Development site. As there are no effects caused by Application 4, there are no cumulative effects.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

8.64 No significant cumulative effects are anticipated in relation to cultural heritage during the demolition and construction phase of Application 4.

#### The Completed and Operational Development

8.65 No significant cumulative effects are anticipated in relation to cultural heritage during the operational phase of the Application 4 Development.

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 4)

### Approach

8.66 Cumulative effects are 'elevated' effects which occur where the combined effect of the Proposed Development with other Proposed Developments in the vicinity, on a shared buried heritage asset or caused by significant changes to the setting of an asset, is more severe than that reported at the Proposed Development site. As there are no significant effects caused by Application 4, there are no cumulative effects.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

8.67 No significant cumulative effects are anticipated in relation to cultural heritage during the demolition and construction phase of Application 4, committed developments and the SRF.

#### The Completed and Operational Development

8.68 No significant cumulative effects are anticipated in relation to cultural heritage during the operational phase of the Application 4 Development, committed developments and the SRF.

# NT02-NT04 (Full Application 5)

## Specific Baseline Conditions (Application 5)

8.69 Two non-designated assets were identified within the Application 5 site, identified from the HER data and site visit. The assets are summarised here with a more comprehensive description presented in the HEDBA (**Appendix 8.1**). These are the site of Flag Row Terraced Housing (MGM17178) and the site of Portland Street Glassworks (MGM13681), both of which dated to the post-medieval period. Trial trenching of the glassworks in 2017 showed that there were substantial remains present, which were investigated in 2019 through an open area excavation. The main building and substantial remains of the glass furnace were recorded during the works.

## Embedded Mitigation (Application 5)

8.70 There are no embedded mitigation measures with regards to Cultural Heritage within Application 5.

## Assessment of Likely Significant Effects (Application 5)

### Demolition and Construction

8.71 The assessment has identified that there are no significant residual effects to heritage assets from Application 5, as outlined in section 5.4 of the HEDBA.

8.72 There is low potential for buried heritage assets of prehistoric, Roman and medieval periods within the Application 5 site due to subsequent post-medieval and industrial development which is likely to have removed any earlier deposits. Should remains from this date survive, they would likely be of low value as they would be compromised by poor preservation due to later development. The magnitude of any impact would be no more than medium, resulting in a significance of effect of no more than minor adverse. As a result, no significant effects have been identified.

8.73 There is high potential for post-medieval remains within the Application 5 site, associated with Flag Row Terraced Housing (MGM17178), and other unmarked housing shown on historic Ordnance Survey mapping. The terraced housing would be of low value as it would be compromised by poor preservation due to demolition. As they would be totally altered by demolition and construction phases, this would have a large magnitude of impact resulting in a **minor adverse** significance of effect without mitigation.

8.74 The site of Portland Street Glassworks (MGM13681) is considered to be of medium value as it is a known heritage asset of regional importance. However, this site has been excavated and no remains are anticipated to survive. Therefore, there is no impact on this asset.

### The Completed and Operational Development

8.75 An assessment of operational effects on buried heritage assets have been scoped out on the basis that, once the Proposed Development has been completed, no further ground disturbance will occur as part of the Proposed Development. There will also be no setting effects on any heritage assets surrounding the Proposed Development. No further mitigation is therefore required.

## Additional Mitigation / Enhancement Measures (Application 5)

### Demolition and Construction

8.76 The impacts and effects on the heritage assets can, in some instances, be reduced through the use of mitigation measures. This section presents the recommended mitigation measures and assesses the likely residual impact and effects on the value of archaeological remains.

8.77 The area of NT02 was subject to excavation in 2019, where substantial remains of former 19th century glassworks (Portland Street Glass Works (MGM13681) were uncovered. Because of the good survival of remains here, this indicates that further archaeological remains could be located within the adjacent areas of NT03 and NT04.

8.78 The area of NT03 and NT04 cannot be evaluated at this stage due to the presence of extant structures and ground level changes. As confirmed in the Scoping Response from GMAAS, the required evaluation will be undertaken as a condition of the planning application consent. The aim of the evaluation would be to determine the presence, importance, extent, date, and level of survival of the buried heritage assets, and to inform a mitigation strategy which would be implemented either prior to or during the construction stage.

8.79 Where below ground assets cannot be preserved *in situ*, a programme of archaeological excavation would be undertaken to ensure the remains are preserved in record. This could be in the form of open area excavation prior to construction and/or watching brief during construction and would reduce the impacts but not completely remove them.

### The Completed and Operational Development

8.80 An assessment of operational effects on buried heritage assets have been scoped out on the basis that, once the Proposed Development has been completed, no further ground disturbance will occur as part of the Proposed Development. There will also be no setting effects on any heritage assets surrounding the Proposed Development. No further mitigation is therefore required.

## Likely Residual Effects of the Development and their Significance (Application 5)

8.81 Specific mitigation measures have been incorporated as set out above and taken into account during assessment. With mitigation in place the magnitude of impact on the post-medieval and industrial archaeological

reins could be reduced to medium. However, the residual significance of effect would remain as minor adverse.. The residual effects are summarised in **Table 8.5** below.

***Table 8.5**: Residual Effects Summary*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Previously unrecorded prehistoric, Roman, and medieval archaeological remains | Minor adverse | Preservation by record | **Minor adverse *(not significant)*** |
| Post-medieval and industrial archaeological remains | Minor adverse | Preservation by record | **Minor adverse (*not* significant)** |
| ***The Completed and Operational Development*** | | | |
| Previously unrecorded prehistoric, Roman, and medieval archaeological remains | There will be no further effects from the Completed and operational development | | |
| Post-medieval and industrial archaeological remains | There will be no further effects from the Completed and operational development | | |

## Conclusions (Application 5)

8.82 The assessment has identified two assets within the boundary, resulting in a significance of effect of minor adverse. Archaeological mitigation will be required.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 5)

### Approach

8.83 Cumulative effects are 'elevated' effects which occur where the combined effect of the Proposed Development with other Proposed Developments in the vicinity, on a shared buried heritage asset or caused by significant changes to the setting of an asset, is more severe than that reported at the Proposed Development site. As there are no significant effects caused by Application 5, there are no cumulative effects.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

8.84 There are no residual cumulative effects.

#### The Completed and Operational Development

8.85 There will not be any further changes to the any cultural heritage assets after the completion of the Proposed Development.

# Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 5)

## Approach

8.86 Cumulative effects are 'elevated' effects which occur where the combined effect of the Proposed Development with other Proposed Developments in the vicinity, on a shared buried heritage asset or caused by significant changes to the setting of an asset, is more severe than that reported at the Proposed Development site. As there are no significant effects caused by Applications 45, there are no cumulative effects.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

8.87 There are no residual cumulative effects.

### The Completed and Operational Development

8.88 There will not be any further changes to the any cultural heritage assets after the completion of the Proposed Development.

# In Combination Effects of Applications 4 and 5

8.89 Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 has been set out previously in this chapter.

## Assessment of Likely Significant Effects (Applications 4 and 5)

8.90 The assessment has identified that there are no significant residual effects to heritage assets within Application 4 or Application 5, as outlined in section 5.4 of the HEDBA. Consequently, the effects for Application 4 and Application 5 in combination would be as reported in the assessments above.

## Phasing Effects (Applications 4 and 5)

8.91 There are no phasing effects within Application 4 and Application 5. None of the impacts are significant, and the excavation of archaeological features is not affected by the phasing of a development.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5)

8.92 No further additional mitigation is required to that previously set out under the assessments of Application 4 and Application 5.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5)

8.93 There are no residual effects other than reported for Application 5 above.

## Assessment of Cumulative Effects with Identified Committed Schemes (Applications 4 and 5)

### Approach

8.94 Cumulative effects are 'elevated' effects which occur where the combined effect of the Proposed Development with other Proposed Developments in the vicinity, on a shared buried heritage asset or caused by significant changes to the setting of an asset, is more severe than that reported at the Proposed Development site. As there are no effects caused by Application 4,, and significant effects caused by Application 5, there are no cumulative effects.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

8.95 There are no residual effects other than reported for Application 5 above.

## The Completed and Operational Development

8.96 There are no residual effects other than reported for Applications 4 and 5 above.

# In Combination Effects of Applications 4 and 5 and SRF

8.97 Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 has been set out previously in this chapter.

## Assessment of Likely Significant Effects (Applications 4 and 5 and SRF)

### Demolition and Construction

8.98 As there are no significant effects predicted within either Application 4 or Application 5, there are no further in combination effects from the SRF.

### The Completed and Operational Development

8.99 There are no residual effects other than reported for Applications 4 and 5 above.

## Phasing Effects (Applications 4 and 5 and SRF)

8.100 There are no phasing effects within Application 4 and Application 5 with SRF. None of the impacts are significant, and the excavation of archaeological features is not affected by the phasing of a development.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5 and SRF)

### Demolition and Construction

8.101 No further additional mitigation is required to that previously set out under the assessments of Application 4 and Application 5.

### The Completed and Operational Development

8.102 No further additional mitigation is required to that previously set out under the assessments of Application 4 and Application 5.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5 and SRF)

8.103 As there are no significant effects predicted within either Application 4 or Application 5, there are no residual effects.

## Assessment of Cumulative Effects with Identified Committed Schemes (Applications 4 and 5 and SRF)

### Approach

8.104 Cumulative effects are 'elevated' effects which occur where the combined effect of the Proposed Development with other Proposed Developments in the vicinity, on a shared buried heritage asset or caused by significant

changes to the setting of an asset, is more severe than that reported at the Proposed Development site. As there are no significant effects caused by Applications 4 and 5, there are no cumulative effects.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

8.105 There are no residual cumulative effects.

### The Completed and Operational Development

8.106 There will not be any further changes to the any cultural heritage assets after the completion of the Proposed Development.

# 9. Ground Conditions

## Introduction

9.1 This chapter assesses the effects of the Proposed Development on ground / groundwater conditions including contamination status. In particular it considers effects that may arise as a result of the Proposed Development on sensitive receptors and existing ground conditions.

9.2 The chapter describes the methods used to assess the likely significant effects, the assumed baseline conditions at the site and surrounding areas, the potential direct and indirect effects of the development arising in terms of ground / groundwater conditions, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It has been written by WSP.

9.3 This chapter is supported by appendices which are located in **Volume 3: Appendices** of this ES:

- **Appendix 9.1**: CIRIA C552 Risk Assessment
- **Appendix 9.2**: Scenario 1a: Application 4 CSM baseline and Construction Phase – ES Chapter
- **Appendix 9.3**: Scenario 1c: Application 4 & Committed Schemes: CSM baseline and Construction Phase
- **Appendix 9.4**: Scenario 1d: Application 4 & Committed Schemes & SRF: CSM baseline and Construction Phase
- **Appendix 9.5**: Scenario 2a: Application 5 CSM baseline and Construction Phase
- **Appendix 9.6**: Scenario 2c: Application 5 & Committed Schemes: CSM baseline and Construction Phase
- **Appendix 9.7**: Scenario 2d: Application 5 & SRF: CSM baseline and Construction Phase
- **Appendix 9.8**: Scenario 3a: Application 4 & Application 5: CSM baseline and Construction Phase
- **Appendix 9.9**: Scenario 3c: Application 4 & Application 5 & Committed Schemes: CSM baseline and Construction Phase
- **Appendix 9.10**: Scenario 4a: Application 4 & Application 5 & SRF: CSM baseline and Construction Phase
- **Appendix 9.11**: Scenario 4c: Application 4 & Application 5 & SRF & Committed Schemes: CSM baseline and Construction Phase
- **Appendix 9.12:** Ove Arup and Partners Ltd, Northern Gateway, Ground Conditions Desk Study, reference MNG-ARP-SW-RP-CG-102, dated 15 August 2019
- **Appendix 9.13:** Ove Arup and Partners Ltd, Victoria North Infrastructure Works, Ground Investigation Interpretative Report, reference VNIF-ARP-ZZ-YYY-RP-CG-0012 (P01), dated 16 August 2022

- **Appendix 9.14**: LK Consult (LKC), Pre-Development Remediation Strategy, Victoria North Infrastructure Work, reference CL-602-LKC 22 1587-01, dated 18 November 2022.
- **Appendix 9.15:** Ove Arup and Partners Ltd, Victoria North Infrastructure Works. Ground Investigation Interpretative Report. Ref. NVIF-ARP-ZZ-YYY-RP-CG-0009 (P03), dated 23 February 2022.
- **Appendix 9:16:** WSP. Preliminary Risk Assessment. Application 4: Red Bank Neighbourhood (Outline Application), dated April 2023.
- **Appendix 9.17:** RoC Consulting, Plots NT02, NT03 & NT04 Dantzic Street, Phase 2 Site Investigation Report, reference 4328-ROC-ZZ-XX-RP-ES-P2-101, dated 21 October 2022.
- **Appendix 9.18:** Hydrock Consultants Limited, Dantzic Street – Phase 2, Manchester: Ground Conditions Desk Study Report**,** reference R/151819/G001, dated 7 December 2015.
- **Appendix 9:19:** Roc Consulting, Addendum Note, Preliminary Ground Investigation Technical Note: Plots NT02, NT03, NT04 Dantzic Street, reference 4328-ROC-ZZ-XX-TN-ES-P2TN, dated 27 September 2022.
- **Appendix 9:20:** Roc Consulting, Phase 1 Desktop Study: Plots NT02, NT03 & NT04 Dantzic Street, reference 4328-ROC-ZZ-XX-RP-ES-PH1DTS, 12 January 2023.
- **Appendix 9:21:** WSP. Preliminary Risk Assessment. Application 5: Plots NT02-04 (Full Application), dated April 2023.

# Assessment Methodology and Significance Criteria

9.4 The following Assessment Methodology and Significance Criteria are applicable to both the assessment of Application 4 and Application 5, unless where specifically stated.

9.5 As outlined in Section 9 of the EIA Scoping Report (**Volume 3: Appendices: Appendix 2.1)**, this ES Chapter will exclusively focus on assessing the 'Demolition, Groundworks, and Construction' effects and 'Cumulative effects with identified committed schemes and the SRF' for a Study Area up to 1km from the Site boundary.

9.6 As set out in **Volume 2: Main Text, Chapter 5: The Proposed Development**, the following activities are to be assessed as part of the 'Demolition, Groundworks, and Construction' effects;

- Activity 1 – Site preparation and remediation;
- Activity 2 – Foundations and piling;
- Activity 3 – Erection of structure;
- Activity 4 – External and internal fitting out; and
- Activity 5 - Groundworks and landscaping.

9.7 Operational effects have been scoped out of the assessment as it is assumed that the aforementioned, Demolition, Groundworks, and Construction Phase (henceforth referred to as the 'Construction Phase') will ultimately create suitable development platforms for follow-on development. Furthermore, as the Proposed Development is residential-led, additional mitigation measures to mitigate the risk of future contamination during operation are unforeseen. The Operational Phase of the Proposed Development will not result in any significant impacts associated with Ground Conditions.

9.8 In addition, as outlined in Section 9 of the EIA Scoping Report, this ES Chapter will not consider effects on the following ground-related items since they are not relevant to the Site location:

- Potentially valuable agricultural land (the Site is non-agricultural);
- Sites of geological importance (closest classified feature is located over 1.5km southwest);
- Sterilisation of minerals (the Site is not within a mineral safeguarding area); and
- Ground stability relating to historical coal mining (the Site is not within an area expected to be at risk from coal mining related instability).

## Study Area

9.9 As outlined in Chapters 1 to 5 of this ES, the Victoria North initiative (formerly referred to as 'Northern Gateway') covers approximately 155 hectares (ha) of land to the north of Manchester City Centre between Victoria Station, NOMA and the Northern Quarter in the south-west, and Queens Park and the intermediate ring road (Queens Road) to the north-east. The initiative proposes residential led redevelopment through the construction of seven 'neighbourhoods', identified as Red Bank, New Town, New Cross, South Collyhurst, Vauxhall Garden, Collyhurst Village and Smedley Dip and Eggington Street. Together the seven neighbourhoods form the Northern Gateway Strategic Regeneration Framework (SRF).

9.10 Separate planning applications have been made for each neighbourhood and this ES chapter focuses on effects to ground / groundwater conditions exclusively to the proposed neighbourhoods of Red Bank (Application 4) and three plots within New Town (Application 5). A short description of the site locations for the proposed Red Bank and New Town neighbourhoods is provided below in Paragraphs 9.11 to 9.12.

9.11 The area to be redeveloped into the Red Bank Neighbourhood is located in the Lower Irk Valley, with the River Irk running adjacent to the southern boundary, flowing northeast to southwest. At present the area contains the Red Bank Plateau (an area of hardstanding, prepared ground and woodland); Travis Island (an area of hardstanding, vacant commercial premises and a semi-permanent caravan park along the eastern bank of the River Irk); and the Red Bank Viaduct (contains large areas of hardstanding, along with the viaduct itself). At the point of development, infrastructure and remediation works will have been carried out on the Red Bank area (excluding Travis Island), under the HIF Application 2. The infrastructure work includes earthworks to create of development platforms, road networks, services / utilities and the creation of new and improved green

infrastructure and landscaping, which will also include excavation and off-site disposal of contamination-impacted material identified in previous phases of intrusive investigation. Suitable material will be re-used to form the development platform.

9.12 New Town Neighbourhood, specifically land designated for the development of plots NT02, NT03 and NT04, is also located in the Lower Irk Valley, to the south of the aforementioned Red Bank Neighbourhood, with the River Irk running adjacent to the northern boundary. At present the area is occupied by industrial units to the west and semi vegetated disused land to the east. Prior to development the site will have undergone full clearance of remaining structures; it has been assumed that contamination proven at the site (see **Appendix 9.17 – 9.20**) will be remediated as part of the development scheme, as required by the NPPF and Planning policy.

9.13 In accordance with Section 9 of the EIA Scoping Report, the following Study Areas have been adopted, for both Applications 4 and 5, in terms of impact of the Proposed Development to the baseline ground / groundwater conditions:

- A 250m buffer has been utilised in relation to risk to human health receptors, extending to a
- 1km buffer in relation to sensitive controlled waters receptors.

## Survey and Data Sources

9.14 The baseline ground / groundwater conditions for the Study Area have been established through desktop study of publicly available data and completion of intrusive ground investigations. The data sources considered as part of the study are summarised below and located in **Volume 3: Appendices** of this ES.

### Red Bank Neighbourhood (Outline Application 4)

- Ove Arup and Partners Ltd, Northern Gateway, Ground Conditions Desk Study, reference MNG-ARP-SW-RP-CG-102, dated 15 August 2019. Presented in **Appendix 9.12**. Prepared for FEC for the provision of engineering support and identifying constraints and opportunities at Red Bank Neighbourhood. The report includes the assessment of Plots RB01 – RB07, RB10, RB16 and RB17 and part of Plot RB12B.
- Ove Arup and Partners Ltd, Victoria North Infrastructure Works, Ground Investigation Interpretative Report, reference VNIF-ARP-ZZ-YYY-RP-CG-0012 (P01), dated 16 August 2022. Presented in **Appendix 9.13**. Prepared for BAM for the HIF Infrastructure Works (HIF IW) at the Victoria North site, now known as Red Bank Neighbourhood. The report presents an interpretation of several phases of ground investigation completed between 2019 and 2022, by Allied Exploration and Geotechnics Limited and BAM Ritchies, and provides information on existing baseline conditions through the presentation of a conceptual site model. The report includes the assessment of the entirety of Plots RB01 – RB05 and RB12B, part of Plots RB06 and RB07, but does not include Plot RB10 nor Plots RB16 and RB17 i.e. Travis Island. It is understood that a Ground Investigation specification has been prepared by Ove Arup and Partners Ltd for Travis Island and intrusive investigation is imminent.

- LK Consult (LKC), Pre-Development Remediation Strategy, Victoria North Infrastructure Work, reference CL-602-LKC 22 1587-01, dated 18 November 2022. Presented in **Appendix 9.14.** Prepared for BAM Nuttall Ltd for the HIF Infrastructure Works at the Victoria North site, now known as Red Bank Neighbourhood. The report presents the strategy of pre-development works, including earthworks to create development platforms, road networks, services / utilities and the creation of new and improved green infrastructure and landscaping. The strategy covers the Application 4 (excluding Plots RB16 and RB17 i.e. Travis Island).
- Ove Arup and Partners Ltd, Victoria North Infrastructure Works. Ground Investigation Interpretative Report. Ref. NVIF-ARP-ZZ-YYY-RP-CG-0009 (P03), dated 23 February 2022. Presented in **Appendix 9.15**. Prepared for BAM Nuttall Ltd for the HIF Infrastructure Works at the Victoria North site, now known as Red Bank Neighbourhood. The report builds on the interpretation of several phases of ground investigation, with particular focus on 2019 and 2021 investigations. The report includes the assessment of all Plots associated with Application 4.
- **Appendix 9.16:** WSP. April 2023. Preliminary Risk Assessment. Application 4: Red Bank Neighbourhood (Outline Application). Desk study report prepared to support Environmental Statement.

## New Town Neighbourhood (Full Application 5)

- Ove Arup and Partners Ltd, Victoria North Infrastructure Works. Ground Investigation Interpretative Report. Ref. NVIF-ARP-ZZ-YYY-RP-CG-0009 (P03), dated 23 February 2022. Presented in **Appendix 9.15**. Prepared for BAM Nuttall Ltd for the HIF Infrastructure Works at the Victoria North site, now known as Red Bank Neighbourhood. The report builds on the interpretation of several phases of ground investigation, with particular focus on 2019 and 2021 investigations. The report includes the assessment of all Plots associated with Application 5.
- RoC Consulting, Plots NT02, NT03 & NT04 Dantzic Street, Phase 2 Site Investigation Report, reference 4328-ROC-ZZ-XX-RP-ES-P2-101, dated 21 October 2022. Presented in **Appendix 9.17**. Prepared for FEC to assist in the redevelopment of the site as New Town Neighbourhood. The report presents an interpretation of two phases of ground investigation completed in 2020 and 2022, by LK Consults and ROC Consulting respectively and provides information on existing baseline conditions through the presentation of a conceptual site model. This report is currently being used to inform supplementary investigation works at Plot NT02 to delineate identified contamination and if determined necessary, construct a Detailed Quantitative Risk Assessment. The report includes the assessment of the entirety of Plots NT02-NT04.
- **Appendix 9.18:** Hydrock Consultants Limited, Dantzic Street – Phase 2, Manchester: Ground Conditions Desk Study Report**,** reference R/151819/G001, dated 7 December 2015. Hydrock prepared a Phase 1 Ground Conditions Report for Land Property Investment Consultancy Ltd. The report reviews available desk study / walk-over information and provides a preliminary assessment of the site conditions. Overall risk from land contamination at the site was considered by Hydrock to be low for the site's current use, and low to moderate for proposed residential end use. A ground investigation was recommended to refine the conceptual site model.

- **Appendix 9:19:** Roc Consulting, Addendum Note, Preliminary Ground Investigation Technical Note: Plots NT02, NT03, NT04 Dantzic Street, reference 4328-ROC-ZZ-XX-TN-ES-P2TN, dated 27 September 2022. Roc Consulting prepared a Preliminary Ground Investigation Technical Note for Plots NT02-04 prior to the submission of the Phase 2 Site Investigation Report to provide interim summary information. At the time of writing, the main ground investigation works were complete, and monitoring of the installed borehole locations was ongoing.
- **Appendix 9:19:** Roc Consulting, Phase 1 Desktop Study: Plots NT02, NT03 & NT04 Dantzic Street, reference 4328-ROC-ZZ-XX-RP-ES-PH1DTS, 12 January 2023. RoC Consulting prepared a Phase 1 Ground Conditions Report for FEC, to provide a preliminary assessment of Plots NT02-04 and establish baseline geo-environmental and geotechnical conditions. The report reviews available desk study / walk-over information and provides a preliminary assessment of the site conditions. Overall risk from land contamination at the site was considered by RoC Consulting to be very low for the sites current use, and low to moderate for proposed residential end use.
- **Appendix 9.20**: WSP. April 2023. Preliminary Risk Assessment. Application 5: Plots NT02-04 (Full Application). Desk study report prepared to support Environmental Statement.

## Construction Phase Assessment Methodology

9.15 The Environment Agency's Land Contamination Risk Management framework (LCRM) (2020) advocates the use of a Conceptual Site Model (CSM) to assess the significance of contamination. The CSM considers the presence of, and linkage between, the following three elements:

- Contamination source (i.e. hazardous chemical);
- Viable exposure / migration pathway; and
- Sensitive receptor.

9.16 Without the presence of all three elements there is no risk, even if a contaminant is present. Therefore, the presence of measurable concentrations of contamination within the ground and subsurface does not automatically imply that a contamination risk exists, since the contamination must be defined in terms of pollutant linkages and unacceptable risk of harm. The nature and importance of both pathways and receptors that are relevant to a particular Site will vary according to the intended use of the Site, its characteristics, and its surroundings.

9.17 LCRM will be used as a technical framework in the understanding of how contamination issues that may arise could be managed. The CSM will be used to identify and assess the potential effects on the identified sensitive receptors and outline mitigation measures to manage the risks identified in the assessment. The CSMs will be used to:

- Identify and assess the potential effects of baseline conditions on the identified sensitive receptors (including human health, controlled waters, buildings and services);
- Identify and assess the potential effects of the Proposed Development (Construction phase) on baseline ground conditions; and
- Outline mitigation measures to manage the risks identified in the assessment.

9.18 This assessment assumes that the HIF works under Application 2 are completed prior to Application 4, however the following points should be noted:

- The HIF enabling and infrastructure works (Applications 1 and 2) will not necessarily all be completed prior to the Red Bank Neighbourhood Outline application or NT02-04 Full application (Applications 4 and 5).
- The HIF enabling and infrastructure works (Applications 1 and 2) do not cover NT02-NT04 (Application 5) or the Travis Island area (Plots RB16 and RB17) of Application 4.

9.19 The Effect(s) of the scheme will be identified by comparison of the post-Application 2 Baseline and Construction phase CSMs, and the differences between the two assessed in terms of their significance. The site remediation works to be carried out under Application 2 are described in more detail in **Paragraph 9.50** / **Appendix 9.14**. As Application 2 has been granted planning consent and it will be necessary to complete these works before commencement of Application 4 construction, it has been assumed that the site baseline condition for the purposes of this ES chapter will be post-remediation. The CSMs presented in this chapter describe both current and future baseline site conditions, however it is the future baseline conditions which have been carried forward for the assessment.

9.20 The level of risk has been evaluated in accordance with the methodology set out in CIRIA C552: Contaminated Land Risk Assessment: A guide to good practice (CIRIA, 2001). This involves classification of the consequence and probability associated with each potential contaminant linkage and thereby the corresponding level of risk (risk category). Those risk categories presented (Very Low, Low, Low to Moderate, Moderate, High, Very High) follow guidance presented in publication C552, which states that risk levels should be based on an understanding of both the probability (likelihood) of a risk occurring and the magnitude of the potential consequence (severity) of a risk. CIRIA defines four levels of probability and four levels of severity with relation to contaminated land, as illustrated in **Appendix 9.1** (Tables 1 and 2).

9.21 In accordance with the LCRM guidance, a CSM will be prepared for the current Baseline condition of the site and the confirmed receptors. The Baseline CSM will assume that no remediation has been carried out.

9.22 A Construction phase CSM will also be prepared, based on the existing ground conditions (prior to any required remediation) and identifying the potential for new sources of contamination to be introduced to the site plus changes in exposure / contaminant migration pathways and / or receptors.

## Characterisation of Impact

9.23 The following types of effect are considered:

- Direct impacts that arise from activities that form an integral part of the Proposed Development (e.g., change in ground conditions for example reduction in surface water infiltration and potential impact on below ground contaminants);
- Indirect impacts that arise from activities not explicitly forming part of the Proposed Development (e.g., increased traffic movements if significant off-site disposal of contaminated material is required);
- Permanent impacts that result from an irreversible change to the baseline environment or impacts which persist for the foreseeable future (e.g., introduction of sensitive receptors to the site i.e. residents);
- Temporary impacts that persist for a limited period only, for example, due to particular construction activities (e.g., dust from construction plant activities);
- Beneficial impacts that have a positive influence; and
- Adverse impacts that have a negative influence.

## Significance Criteria

9.24 The significance level attributed to each identified effect will be assessed on the basis of the value / sensitivity of the affected receptor / receiving environment and the magnitude of impact due to the Proposed Development. Where Potential Pollution Linkages (PPLs) have been identified by the CSM, the likely significant effects associated with the Proposed Development during construction have been assessed using the significance assessment criteria detailed below. As per the EIA Scoping Report, no potential significant Operational Phase effects are anticipated and therefore no impact assessment is required as the matter has been scoped out.

9.25 The assessment of effects uses an incremental scale of significance ranging from a major adverse effect to a major beneficial effect. These criteria consider water resources and the human, ecological and property receptor**.** The significance of effects is assessed based upon the known or potential ground conditions revealed by the baseline investigation and the proposed extent and anticipated method of groundworks disturbance and construction. These criteria have been derived by taking account of the guidance provided in the Construction Industry Research Information Association (CIRIA) report C522. This describes the magnitude of potential consequences (severity) of risk occurring.

9.26 This assessment examines the contamination-related effects upon water resources but does not assess the physical effects on water resources (hydrology and hydrogeology) which will be further assessed in **Chapter 10: Drainage and Flood Risk**.

9.27 As set out in **Chapter 2: EIA Approach**, effects that are classified as moderate or above are considered to be significant. Effects classified as below moderate are considered to be not significant.

9.28 The following terms have been used to define the significance of the effects identified and apply to both beneficial and adverse effects:

- Major effect: effects at this level are material in the decision-making process;
- Moderate effect: effects at this level are likely to be material in the decision-making process;
- Minor effect: effects at this level can be considered to be material decision-making factors; and
- Negligible effect.

9.29 The criteria for determining the magnitude of identified impacts, the sensitivity of receptors and the significance of the resulting effects are presented in **Table 9.1** to **Table 9.4.**

***Table 9.1****: Description of the Magnitude of an Impact Classification*

| Magnitude of Impact | Impact type | Typical Criteria Descriptors |
|---|---|---|
| **Very Large** | Adverse | Loss of resource and / or quality and integrity of resource; severe damage to key characteristics, features or elements.<br>Contamination:<br>• Human health: significant contamination identified;<br>• Contamination levels significantly exceed background levels and relevant screening criteria; and / or<br>• Measured impact on controlled water receptor. |
| | Beneficial | Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality.<br>Contamination:<br>• Human health: Significant reduction in risk to human, animal or plant health.<br>• Significant regional scale improvement to the quality of potable groundwater or surface water resources. |
| **Large** | Adverse | Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.<br>Contamination:<br>• Human health: contaminant concentrations exceed background levels and are in line with limits of relevant screening criteria. Significant contamination can be present. Control / remediation measures are required to reduce risks to human health / make land suitable for intended use; and / or<br>• Controlled waters: potential impact of surface or groundwater resource |

| Magnitude of Impact | Impact type | Typical Criteria Descriptors |
|---|---|---|
| | Beneficial | Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.<br><br>Contamination:<br>• Human health: Moderate to Major reduction in risk to human, animal or plant health.<br>• Significant local-scale / moderate regional scale improvement to the quality of potable groundwater or surface water resources. |
| **Medium** | Adverse | Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (potentially more) key characteristics, features or elements.<br>Contamination:<br>• Human health: contaminant concentrations are below relevant screening criteria. Significant contamination is unlikely with a low risk to human health. Best practice measures can be required to minimise risks to human health; and / or<br>• Measured concentrations are below controlled water quality targets. |
| | Beneficial | Minor benefit to, or addition of, one (potentially more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.<br><br>Contamination:<br>• Human health: Moderate reduction in risk to human, animal or plant health.<br>• Moderate local-scale improvement to the quality of potable groundwater or surface water resources.<br>• Moderate local-scale improvement to the quality of groundwater or surface water resources used for commercial or industrial abstraction only. |
| **Small** | Adverse | Very minor loss or detrimental alteration to one or more characteristics, features or elements.<br><br>Contamination:<br>• Contaminant concentrations substantially below levels outlined in relevant screening criteria. No requirement for control measures to reduce risks to human health / make land suitable for intended use / protect controlled waters. |

| Magnitude of Impact | Impact type | Typical Criteria Descriptors |
|---|---|---|
| | Beneficial | Very minor benefit to or positive addition of one or more characteristics, features or elements.<br>Contamination:<br>• Human health: Minor reduction in risk to human, animal or plant health.<br>• Slight local-scale improvement to the quality of potable groundwater or surface water resources.<br>• Minor local-scale scale local scale improvement to groundwater or surface water resources that are used for, or have potential to be used for, industrial or commercial abstractions. |
| **No change / neutral** | N/A | No measurable loss or alteration of characteristics, features or elements; not observable in either direction. Reported contaminant concentration levels are at or below background concentrations for human health and controlled water receptors. |

9.30 The sensitivity of the affected receptor / receiving environment is assessed on their value / susceptibility to change as a result of the Proposed Development and is assessed as either very high, high, medium, low or negligible as described in **Table 9.2**. This is a deviation to the approach set out in Section 9 of the EIA Scoping Report which assesses the sensitivities as either high, medium or low, with negligible sensitivity removed. The updated criteria to be employed in this ES chapter is in accordance with the overall EIA methodology set out in **Chapter 2: Approach**.

***Table 9.2**: Sensitivity Criteria for Receptor / Receiving Environment (as applicable to the scheme)*

| Sensitivity | Criteria | Example |
|---|---|---|
| **Very High** | Very high importance and rarity, international scale and very limited potential for substitution. | • Human health - very high sensitivity land (for example, residential or allotments);<br>• Surface water: watercourse having Good WFD classification or designation under EC or UK legislation; and / or<br>• Groundwater: Principal Aquifer located within Source Protection Zone 1 (SPZ1). |
| **High** | High importance and rarity, national scale, and limited potential for substitution. | • High sensitivity land use such as public open space;<br>• Surface water: Watercourse having Moderate WFD classification; and / or |

| Sensitivity | Criteria | Example |
|---|---|---|
| | | • Groundwater: Principal Aquifer located within SPZ2. |
| **Medium** | High or medium importance and rarity, regional scale, limited potential for substitution. | • Medium sensitivity land use such as commercial or industrial;<br>• Surface waters: watercourse not having WFD classification linking to a WFD watercourse within 100m; and / or<br>• Principal Aquifer or Secondary A Aquifer. |
| **Low** | Low or medium importance and rarity, local scale. | • Low sensitivity land use such as highways and rail;<br>• Surface waters - watercourse not having WFD classification linking to a WFD watercourse within 250m; and / or<br>• Unproductive stratum. |
| **Negligible** | Very low importance and rarity, local scale. | • Undeveloped surplus land / no sensitive land use proposed.<br>• Surface water: no surface watercourses located within 250m; and / or<br>• Groundwater: no pathway to underlying aquifer. |

***Table 9.3**: Matrix for the Assessment of the Significance of Effects*

| | | Magnitude of Impact | | | | |
|---|---|---|---|---|---|---|
| | | No Change | Small | Medium | Large | Very Large |
| **Sensitivity of Receptor / Receiving Environment** | Very High | Negligible | Minor | Major or moderate* | Major* | Major* |
| | High | Negligible | Minor | Moderate or minor | Major or moderate* | Major* |
| | Medium | Negligible | Minor or negligible | Minor | Moderate or minor | Major or moderate* |
| | Low | Negligible | Minor or negligible | Minor or negligible | Minor | Moderate or minor |
| | Negligible | Negligible | Negligible | Minor or negligible | Minor or negligible | Minor |

* 'Significant effects' in EIA terms shown in orange

***Table 9.4**: Overall Effects*

| Significance * | Description |
|---|---|
| **Major Beneficial** | Major reduction in risks to human, animal or plant health. Significant regional scale improvement to the quality of potable groundwater or surface water resources. |
| **Moderate Beneficial** | Significant reduction in risks to human, animal or plant health, to acceptable levels. Significant local improvement to the quality of potable groundwater or surface water resources. Significant improvement to the quality of groundwater or surface water resources used for public water supply. |
| **Minor Beneficial** | Risks to human, animal or plant health are reduced to acceptable levels. Local scale improvement to the quality of groundwater or surface water resources used for commercial or industrial abstraction. |
| **Negligible / Neutral** | Low risk site classification – no appreciable effect on human, animal or plant health, potable groundwater or surface water resources. |
| **Minor Adverse** | Medium risk site classification and potential pollutant linkages with human health and / or animal / plant populations identified. Reversible, localised reduction in the quality of groundwater or surface water resources used for commercial or industrial abstractions, Secondary Aquifer, etc. |
| **Moderate Adverse** | Medium risk site classification and proven (or likely significant) pollutant linkages with human health and / or animal / plant populations, with harm from long-term exposure. Effect on a potable groundwater or surface water resource at a local level e.g. effect on an outer groundwater Source Protection Zone. Temporary alteration to the regional hydrological or hydrogeological regime or permanent alteration to the local regime. |
| **Major Adverse** | High risk site classification – acute or severe chronic effects to human health and / or animal / plant populations predicted. Effect on a potable groundwater or surface water resource of regional importance e.g. Principal Aquifer, public water reservoir or inner protection zone of a public supply borehole. |

* 'Significant effects' in EIA terms shown in orange

## Operational Phase Assessment Methodology

9.31 As per the EIA Scoping Report, no potential significant Operational Phase effects are anticipated and therefore no impact assessment is required as the matter has been scoped out.

## Identification of Sensitive Receptors

9.32 The following sensitive receptors have been identified within the defined Study Area in relation to the 'Demolition, Groundworks, and Construction' phase;

- Groundworkers and construction workers (immediately within the Site boundary);
- Third-party neighbours (within 250m of the Site); and
- Controlled waters including groundwater and surface water features (within 1km of the Site).

## Assumptions / Limitations

9.33 This assessment is subject to the following limitations and assumptions which are applicable to both Application 4 and Application 5:

- Pre-demolition and construction embedded mitigation is the completion of the Application 2 HIF works which will create suitable development platforms through remediation at Application 4 (excluding Plots RB16 and RB17 i.e., Travis Island). It is noted that the Remediation Strategy does not specifically target risks associated with ground gas and impacted groundwater. As such, these risks will remain at the Construction Phase.
- Based on review of third-party reporting, remediation at Application 5 is required however no works are to be completed as part of the Application 2 HIF works, and as such, the existing baseline will not change or improve, in regard to the expected baseline during the Construction Phase.
- The assessment will assume 'embedded mitigation' will be undertaken (i.e. mitigation required to prevent adverse effects that is already embedded in the regulatory regime controlling the development process).
- In line with **Volume 2: Main Text, Chapter 5: The Proposed Development**, assumptions in regard to the Construction Phase will be followed. Specific assumptions relevant to the Ground Conditions assessment include management / control measures for pollution, demolition, waste management and minimisation, and materials storage and handling.
- In line with **Volume 2: Main Text, Chapter 5: The Proposed Development**, assumptions in regard to the phased delivery of the works at Applications 4 and 5 will be followed.
- Following completion of the Construction Phase, the plots will be occupied by site users (residents). Moreover Plots RB01-05 and RB12b and NT02-04 will be occupied by site users prior to the completion of the Construction Phase at Plots RB16 / 17 / 06 / 07 / 10.

## Consultation

9.34 The following statutory and non-statutory consultation, presented in **Table 9.5**, has been undertaken to date; please note that responses have not been received from all consultees.

***Table 9.5**: Consultation*

| Consultee | Application | Date and Time | Comments | Actions |
|---|---|---|---|---|
| Manchester City Council | 4 | January 2023 | EIA Scoping Report, containing Chapter 9 Ground Conditions Chapter, provided to Consultee. | Response received and actions outlined below. |
| Manchester City Council | 5 | January 2023 | EIA Scoping Report, containing Chapter 9 Ground Conditions Chapter provided to Consultee. | Response received and actions outlined below. |
| Environment Agency | 4 & 5 | March 2023 | The Scoping Opinion comprised the following relevant comments:<br>• Agreement that the Ground Conditions topic is to be scoped into the ES<br>• Stated the requirement for topic-specific assessment methodologies to be provided<br>• Note that remediation proposed as part of Application 2 does not include the wider Application 4 or 5 area, and therefore the Baseline should assume that no remediation has been carried out in Application 4 or 5 areas. | Comments noted, and have been actioned within this ES chapter. |
| Manchester City Council | 4 & 5 | March 2023 | The Scoping Opinion comprised the following relevant comments:<br>• Agreement that the Construction Phase is scoped in based on potential for residual contamination (following HIF works completed as part of Application 2, at Application 4, excluding at Travis Island).<br>• Acknowledgement of the production of a Preliminary Risk Assessment for the development proposed under Application 4, within which the 'expected baseline conditions' would be described.<br>• Inclusion of reporting prepared for Application 2 which is relevant to Application 4 baseline reporting. Includes ground investigation reporting which identifies the | Comments noted, and have been actioned within this ES chapter. |

| Consultee | Application | Date and Time | Comments | Actions |
|---|---|---|---|---|
| | | | presence of additional forms of contamination (e.g. PFAS) not identified with the prior 2019 and 2021 reporting produced by Arup Ltd.<br>• Advice early action is taken to ensure all necessary information / data required to assess ground conditions and subsequent remedial requirements is achieved and obtained.<br>• Welcome opportunity to discuss ground investigation / remedial requirements relating to Application 5.<br>• Welcome recognition made in Scoping Report that additional investigative works and minor remedial actions may be required post Application 2 works. | |

# Red Bank (Outline Application 4)

## Baseline Conditions (Application 4)

9.35 Information contained within this section is drawn from the PRA report produced by WSP for Application 4 and presented in **Appendix 9.16**. For completeness of the ES chapter, a concise summary has been prepared and it is recommended that the PRA is read in conjunction for full details.

### Baseline Information

9.36 Application 4 is located approximately 320m to the northeast of Manchester Victoria Station, within the Lower Irk Valley and is centred at National Grid Reference SJ 84504 99513. The Site is bound to the northwest by Red Bank Street and the disused Red Bank Viaduct; to the northeast by an historical pedestrian railway bridge; to the east by Collyhurst Road; and to the south by the Hope Valley Line railway viaduct. The River Irk flows from north-east to south-west through the southern portion of the area.

### Desk Study (Phase 1)

9.37 Topographically, the Site is centred on the valley of the River Irk, with topographical lows of approximately 31 meters above ordnance datum (m AOD) along the river at Travis Island, and topographical highs of approximately 43m AOD to the north at Red Bank Plateau. It is important to note that the reported highs at Red Bank Plateau have been artificially built up in the 1800s to form a platform for former railway infrastructure, as discussed below.

9.38 The Application 4 site is characterised by the legacy of more than 150 years of industrial uses and Victorian / pre-Victorian infrastructure, including most notably a decommissioned gasworks (at Red Bank Plateau), a large area of dismantled railway sidings (between River Irk and Red Bank Road) of the former Prestwich Branch of the Lancashire and Yorkshire Railway, and an area once occupied by gas holders associated with the offsite Rochdale Road Gasworks (at Travis Island). At present, the Application 4 site is largely disused, with both operational and vacant commercial premises along the banks of River Irk and mixed ground cover comprising hardstanding and woodland.

9.39 The Application 4 site is located within an area of Manchester City Centre which has been subject to high density industrial land use in the past. The most significant historical industrial land uses adjacent to Application 4 include the Rochdale Road Gasworks, three identified landfill sites and the Lancashire and Yorkshire Railway line.

9.40 Published geology indicates the Site is within an area of 'artificial ground' underlain by superficial deposits of Glacial Till in the northwest and southeast and Alluvium along the River Irk. Underlying bedrock geology from east to west comprises sandstone of the Collyhurst Formation, mudstone of the Manchester Marls Formation and sandstone of the Chester Formation. A fault, trending north-northwest to south-southeast, cuts across the centre of the Application 4 site, within the Manchester Marl Formation.

9.41 The Environment Agency classifies the Glacial Till as a secondary (undifferentiated) aquifer, the alluvium as a secondary (A) aquifer, the Manchester Marls Formation as a Secondary (B) Aquifer and the Collyhurst and Chester Formations as Principal Aquifers.

9.42 A review of the Coal Authority Mining Risk GIS System indicates that the Application 4 site is located within a Coal Mining Reporting Area though is not located within a Development High Risk zone. Third-party acquired Coal Authority Reporting indicates that the Application 4 site is not within the zone of influence of any present workings or any proposed underground or opencast workings.

9.43 The site does not lie within a groundwater Source Protection Zone. No licenced groundwater or surface water abstractions are located within the Application 4 site, however, there are four recorded active groundwater abstraction licences located within 500m for cooling and process water associated with offsite breweries.

9.44 The River Irk is classed as a heavily modified water body (HMWB) in recognition of physical modifications by human activity. The river is canalised through the majority of the Site. The Irk currently has an overall status of 'moderate' with an ecological potential of 'moderate' and a chemical status of 'fail' (specific concerns over cypermethrin, perflourooctane sulphanate (PFOS) and mercury). The reasons for not achieving 'good' status within the Irk catchment include ammonia due to continuous sewage discharges and diffuse sources including land contamination and landfill leachate, and phosphate due to sewage discharges and urban development.

## Intrusive Ground Investigation Data and Interpretation (Phase 2)

9.45 Encountered ground conditions during previous ground investigations at the Application 4 site are consistent with published geology, identifying Made Ground (recorded to a maximum depth of 16.5 meters below ground level (bgl), at Red Bank Plateau, within the infilled former meander bend), over superficial deposits (Alluvium up to 7.00m bgl adjacent to the river along the south-eastern boundary and Glacial Till across the remainder of the site up to 16.8m bgl) over the bedrock geology (Chester Pebble Beds, Manchester Marls, Collyhurst Sandstone, encountered at depths ranging between approximately 28m above Ordnance Datum (AOD) to 38m AOD).

9.46 During the ground investigations and subsequent monitoring rounds, groundwater was observed in the Made Ground, Glacial Till and Alluvium deposits. Perched water within Made Ground is considered likely separated from the underlying bedrock aquifers by low permeability Glacial Till where present, however, where Glacial Till is absent and Made Ground directly overlies alluvium or bedrock, the groundwater in these strata is likely to be in continuity with the river.

9.47 Visual and olfactory evidence of contamination was encountered at the former gas works area and infilled former meander bend (Red Bank Plateau) and at identified infilled reservoirs (adjacent to Red Bank Viaduct). Field evidence was reported in Made Ground and alluvium deposits and included hydrocarbon odours, discoloration oily sheens on perched groundwater and deposits of metallic blue sand. In addition to this,

evidence for volatile contaminants were confirmed, which the greatest readings encountered at the former gas works area of Red Bank Plateau.

9.48 Infrastructure including masonry footing and concrete slabs through to be associated with the former gas works were encountered to a maximum recorded depth of 2.65 metres below ground level (m bgl). A singular metal vessel, partly filled with oil was also identified, surrounded by impacted soils and groundwater.

9.49 Screening of soil sample analytical results reported concentrations which exceed the applied residential end use assessment criteria for asbestos, heavy metals, polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs) and inorganic compounds (including cyanide). Screening of groundwater samples against groundwater and drinking water quality standards reported exceedances of heavy metals, inorganics (ammoniacal nitrogen and cyanide), organics, TPH and PAHs. In addition, surface water contaminants identified at the River Irk (upstream, central and downstream) comprise heavy metals and PAH. Ground gas risk assessment recorded elevated carbon dioxide and methane concentrations, applicable to Characteristic situations 1, 2 and 3 (CS1, CS2 and CS3) at the Application 4 site.

9.50 However, based on the proposed remediation strategy to be completed under Application 2 at Application 4 (excluding Plots RB16 and RB17 i.e., Travis Island) it is assumed that the Site will be suitable for use on completion of remediation. The remediation strategy does not include any specific groundwater improvement activities; however removal of contaminated material will result in no ongoing source of potential groundwater contamination. Ground gas monitoring data indicates CS1, CS2 and CS3 at the Site; the remediation strategy does not include any ground gas mitigation and therefore it is assumed that this potential risk will remain post remediation. These assumptions form the baseline condition of the Site.

9.51 There is no ground investigation data available for Travis Island and therefore it has been necessary to assume the following contaminant groups associated with previous land uses (gasholders and rope works) may be present, as a minimum: PAH, TPHs, cyanide, asbestos and heavy metals.

## Conceptual Site Model

9.52 **Table 9.6** provides an evaluation of the potential contaminant linkages associated with current Site condition baseline, future (post-remediation) baseline and intended redevelopment on the basis of the information currently available using the CIRIA risk definitions and risk matrix method. The future baseline presented assumes that the remediation works under Application 2 have been completed prior to commencement of Application 4 (excluding at Travis Island).

9.53 The Application 2 remediation will comprise:

- Stockpiling and disposal of fly-tipped material;

- Removal of structures, hardstanding, below-ground obstructions and material which has visual / olfactory evidence of contamination;
- Stockpiling and testing of excavated material to segregate material for either re-use or off-site disposal; and,
- Dewatering where required and on-site storage prior to chemical testing and off-site disposal.

9.54 The Pre-development Remediation Strategy (**Appendix 9.14**) states that a separate remediation strategy will be required for Construction Phase remediation, anticipated to include building gas protection measures, environmental cover systems for gardens and areas of soft landscaping, and barrier pipe for all potable supply pipes.

***Table 9.6*** *Baseline Conceptual Site Model – Red Bank Neighbourhood (Outline Application 4): Current & Future Scenarios*

| Conceptual Site Model | | | | Baseline Assessment | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Current site condition | | | Following completion of Application 2 remediation | | | Comments |
| Source | Pathway | Receptor | Sensitivity | Probability of Complete Linkage | Consequence if Linkage Present | Current Baseline Risk Level | Probability of Complete Linkage | Consequence if Linkage Present | Future Baseline Risk Level | |
| **Travis Island:**<br>Asbestos (if present) within existing Made Ground / fill materials / buried obstructions / substructure<br>Chemicals of concern associated with existing Made Ground / fill materials<br>Chemicals of concern from spills / leaks from historical uses on site / off site<br>Hazardous ground gases and vapours associated with chemical substances of concern in soil / Made Ground / organic soils | Dermal contact with and ingestion of contaminants in soil-derived dust and water. Inhalation of contaminants in soil-derived dust and ground gas / vapours derived from volatile contaminants. Inhalation of asbestos fibres. | Groundworkers & construction workers | Medium | Receptor is not present as no construction work is underway. | | | Receptor is not present as Application 2 (HIF site) is complete / Travis Island not started. | | | Remediation carried out under the scope of Application 2 will not include Travis Island, and therefore no change in human health receptor risk level is anticipated once Application 2 has been completed. It is assumed that all current receptors are present in the future baseline scenario.<br>Ground investigation has identified olfactory evidence of contamination (hydrocarbon odour), positive asbestos identification and concentrations of cyanide and PAH within soils which exceeds residential end use (with plant uptake). At present, no ground works or activities involving the disturbance of Made Ground or removal of hardstanding are taking place. Identified sources of contamination are either concealed, e.g. beneath topsoil or hardstanding, or in a condition where exposure is limited. |
| | | Existing site workers | Medium | Low | Medium | Low / Moderate | Low | Medium | Low / Moderate | |
| | | Residents of semi-permanent caravan site | Medium | Likely | Medium | Moderate | Likely | Medium | Moderate | |
| | | Third-party neighbours | Medium | Low | Medium | Low / Moderate | Low | Medium | Low / Moderate | |
| **Travis Island:**<br>Chemicals of concern associated with existing Made Ground / fill materials<br>Chemicals of concern from spills / leaks from historical uses on site / off site | Leaching of contaminants in the unsaturated zone to groundwater in underlying aquifers.<br>Migration of contaminated water through preferential pathways such as underground services, pipes and granular material to groundwater in underlying aquifers. | Controlled waters – Superficial Aquifers (Secondary A and Secondary undifferentiated Aquifers) | Medium | Likely | Medium | Moderate | Likely | Medium | Moderate | Ground investigations have identified leachable concentrations of heavy metals in excess of water quality standards and concentrations of cyanide and PAH within groundwater which exceed controlled waters assessment. Identified contaminants are considered reflective of previous historical land uses including occupation by gas holders. Application 2 remediation is not designed to address groundwater contamination. |
| | | Controlled waters – Bedrock Aquifers (Secondary B and Principal Aquifers) | Medium | Likely | Medium | Moderate | Likely | Medium | Moderate | |
| | Lateral migration of contaminated groundwater with discharge to surface watercourses as base flow.<br>Discharge of contaminants entrained in surface water run-off followed by overland flow and discharge. | Controlled waters – Surface waters (River Irk) | High | Low | Medium | Low / Moderate | Low | Medium | Low / Moderate | Elevated concentrations of heavy metals (mercury and zinc) and PAH (fluoranthene) have been identified at the River Irk (upstream, central and downstream) during ground investigations. No increase in reported concentration downstream of the site was identified, indicating that the site does not currently represent a source of surface water contamination. |
| **Application 4 (excluding Travis Island)**<br>Asbestos (if present) within existing Made Ground / fill materials / buried obstructions / substructure<br>Chemicals of concern associated with existing Made Ground / fill materials<br>Chemicals of concern from spills / leaks from historical uses on site / off site | Dermal contact with and ingestion of contaminants in soil-derived dust and water. Inhalation of contaminants in soil-derived dust. Inhalation of asbestos fibres. | Groundworkers & construction workers | Medium | Receptor is not present as no construction work is underway. | | | Receptor is not present as Application 2 (HIF site) is complete / Travis Island not started. | | | |
| | | Existing site occupiers | Medium | Low | Medium | Low / Moderate | Receptor no longer present | | | It is assumed that the units which are currently occupied in the southern area of Application 4 will be vacated prior to completion of the Application 2 HIF works. |
| | | On-site site users at Plots RB01-05 and RB12b | Medium | Receptor is not present as no construction work is underway. | | | Receptor is not present as Application 2 (HIF site) is complete / Travis Island not started. | | | By Q4 2029, the Construction Phase will be completed at Plots RB01-05 and RB12b and it is assumed that shortly after, the plots will be occupied with residents. However, the Construction Phase at the onsite neighbouring Plots RB16 / 17 / 06 / 07 / 10 continues to Q4 2032. As such there is an introduction of a human health receptor at Plots RB01-05 and RB12b during this timescale. |
| | | Third-party neighbours | Medium | Low | Medium | Low / Moderate | Unlikely | Medium | Low | Ground investigation has identified visual and olfactory evidence of contamination (hydrocarbon odours, oily sheens, metallic blue sand etc), positive asbestos identification and concentrations of heavy metals, polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs) and inorganic compounds (including cyanide) within soils which exceed residential end use criteria.<br>Review of Remediation Strategy to be completed under Application 2 outlines procedures for soil source removal and subsequent validation works at the site. Therefore, the probability of a complete linkage is unlikely. |
| | Leaching of contaminants in the unsaturated zone to groundwater in underlying aquifers.<br>Migration of contaminated water through preferential pathways such as underground services, pipes and granular material to groundwater in underlying aquifers. | Controlled waters – Superficial Aquifers (Secondary A and Secondary undifferentiated Aquifers) | Medium | Likely | Medium | Moderate | Likely | Medium | Moderate | Ground investigations have confirmed elevated concentrations of heavy metals (including manganese, nickel, zinc and lead), inorganic compounds (cyanide and ammoniacal nitrogen) and PAH (benzopyrene and fluoranthene) across superficial and bedrock aquifers. As such, contaminant linkages exist, and the baseline conditions pose a risk to controlled waters.<br>No controlled waters improvements are to be completed as the Application 2 remediation works. |
| | | Controlled waters – Bedrock Aquifers (Secondary B and Principal Aquifers) | Medium | Likely | Medium | Moderate | Likely | Medium | Moderate | |
| | Lateral migration of contaminated groundwater with discharge to surface watercourses as base flow.<br>Discharge of contaminants entrained in surface water run-off followed by overland flow and discharge. | Controlled waters – Surface waters (River Irk) | High | Low | Medium | Low / Moderate | Low | Medium | Low / Moderate | The River Irk has an overall 'moderate' WFD classification. Elevated concentrations of heavy metals (mercury and zinc) and PAH (fluoranthene) have been identified at the River Irk (upstream, central and downstream) during ground investigations. No increase in reported concentration downstream of the site was identified, indicating that the site does not currently represent a source of surface water contamination. No controlled waters improvements are to be completed as the Application 2 remediation works. |
| **Application 4 (excluding Travis Island)**<br>Hazardous ground gases and vapours | Inhalation of ground gas / vapours associated with volatile contaminants. | Groundworkers & construction workers | Medium | Receptor is not present as no construction work is underway. | | | Receptor is not present as Application 2 (HIF site) is complete / Travis Island not started. | | | These receptors are relevant to the Construction phase assessment. |

| Conceptual Site Model | | | | Baseline Assessment | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Current site condition | | | Following completion of Application 2 remediation | | | Comments |
| Source | Pathway | Receptor | Sensitivity | Probability of Complete Linkage | Consequence if Linkage Present | Current Baseline Risk Level | Probability of Complete Linkage | Consequence if Linkage Present | Future Baseline Risk Level | |
| associated with chemical substances of concern in soil / Made Ground / organic soils | | Existing site occupiers | Medium | Low | Medium | Low / Moderate | Receptor no longer present | | | It is assumed that the units which are currently occupied in the southern area of Application 4 will be vacated prior to completion of the Application 2 HIF works. |
| | | Third-party neighbours | Medium | Low | Medium | Low / Moderate | Low | Medium | Low / Moderate | Reported ground gas conditions are unlikely to affect off-site receptors in the current site condition; the Application 2 remediation is not designed to address potential ground gas issues and therefore additional assessment / design mitigation will be carried out. |

## Embedded Mitigation (Application 4)

9.55 Pre-demolition and construction embedded mitigation is the completion of the Application 2 HIF works which will create suitable development platforms through remediation at Application 4 (excluding Plots RB16 and RB17 i.e., Travis Island). It is noted that the Remediation Strategy does not specifically target risks associated with ground gas and impacted groundwater. As such, these risks will remain at the Construction Phase.

### Demolition and Construction

9.56 No embedded mitigation is assumed because Application 2 will deal with the contamination / remediation and further work to produce a construction-phase remediation strategy for ground gas will be required (as detailed in paragraph 9.54).

### The Completed and Operational Development

9.57 The Completed and Operational Development phase has been scoped out of this assessment.

## Assessment of Likely Significant Effects (Application 4)

9.58 **Table 9.7** to **Table 9.11** summarise the potential effects, additional mitigation, residual effects and monitoring required associated with the Proposed Development. The tables below refer to the Construction Environmental Management Plan (CEMP), which will include the following requirements with respect to Ground Conditions and contamination during the Construction Phase:

- Details of how materials are to be stored prior to re-use or disposal, e.g. on impermeable membrane, with a temporary cover if necessary to prevent surface water infiltration / runoff or dust migration;
- Additional measures to be implemented to protect third parties from nuisance or harm during the works (in addition to the Health and Safety requirements for protection of the site workforce); and,
- Outline of key management measures and details for monitoring requirements, e.g. vapour monitoring at the site boundary.

### Demolition and Construction (see Appendix 9.2)

***Table 9.7**: Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on construction / groundworkers – Red Bank Neighbourhood (Outline Application 4)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Construction / Groundworkers | Effect on groundworkers from contamination in soils which is as a result of previous site activities.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level. | Adherence to Construction Environmental Management Plan (CEMP) and requirements of Health |

| | | |
|---|---|---|
| | | & Safety Act 1974 |

***Table 9.8**: Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on third party neighbours – Red Bank Neighbourhood (Outline Application 4)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Third Party Neighbours & On-site Users of Completed Adjacent Developments | Effect on third party neighbours from contamination in soils which is as a result of previous site activities.<br><br>Medium receptor sensitivity and medium magnitude of impact = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level. | Adherence to Construction Environmental Management Plan (CEMP) |

***Table 9.9**: Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in superficial aquifers – Red Bank Neighbourhood (Outline Application 4)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Groundwater in Superficial Aquifer | Contamination of groundwater receptors via leaching through soils from contamination present at the site from previous land uses.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (short term, reversible) at a local level during the course of the works, reducing to **minor beneficial** effect (**not significant**) (long term) on completion of enabling works and associated remediation (source removal). | Adherence to Construction Environmental Management Plan (CEMP) |

***Table 9.10**: Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in bedrock aquifers – Red Bank Neighbourhood (Outline Application 4)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Groundwater in Bedrock Aquifer | Contamination of groundwater receptors via leaching through soils from contamination present at the site from previous land uses.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (short term, reversible) at a local level during the course of the works, reducing to **minor beneficial** effect (**not significant**) (long term) on completion of enabling works and associated remediation (source removal). | Adherence to Construction Environmental Management Plan (CEMP) |

***Table 9.11**: Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in surface waters – Red Bank Neighbourhood (Outline Application 4)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Surface water (River Irk) | Contamination of surface water receptor via leaching and run-off through soils and / preferential drainage pathways such as drains, from contamination present at the site from previous land uses.<br><br>Medium magnitude and high sensitivity = **minor adverse** effect (**not significant**) (short term, reversible) at a local level during course of the works, reducing to **minor beneficial** effect (**not significant**) (long term) on completion of enabling works and associated remediation. | Adherence to Construction Environmental Management Plan (CEMP) |

### The Completed and Operational Development

9.59 The Completed and Operational Development phase has been scoped out of this assessment.

## Additional Mitigation / Enhancement Measures (Application 4)

9.60 This section describes the measures which are required to mitigate any significant environmental effects with regards to Ground Conditions considerations.

### Demolition and Construction

9.61 It is anticipated that the additional mitigation measures will be delivered during the Construction Phase via the Construction Environmental Management Plan (CEMP), which will be secured as part of the planning application conditions. Items included within the CEMP will include but not be limited to the following:

- Earthworks should be completed in accordance with DEFRA's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites[1] and SEPA Regulatory Guidance, Promoting the Sustainable reuse of Greenfield Soils in Construction[2] to ensure re-used material does not present a risk to human health or the environment and complies with UK waste legislation regulations. An earthworks specification should be produced and include protocols for testing and limiting values to ensure that imported materials are suitable for their intended use in terms of their chemical quality
- Incorporation of a temporary surface water drainage strategy to limit any contaminated run-off entering surrounding surface watercourses;
- Appropriate measures to limit contamination to the ground from construction related plant / machinery and storage of materials to be incorporated within the CEMP;

[1] DEFRA (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites
[2] SEPA Regulatory Guidance, Promoting the Sustainable reuse of Greenfield Soils in Construction

- Handling and temporary storage of excavated materials in accordance with DEFRA's Construction Code of Practice, the Institute of Quarrying's (IoQ) Soil Handling Guide[3] and IEMA's (2022) EIA Guidance on Land and Soils;
- Any unexpected below ground tanks, structures and / or pipework encountered during construction will be appropriately decommissioned and removed (where necessary) to ensure that contaminants do not enter the ground; and,
- Disused services would be decommissioned appropriately to ensure that no preferential pathways for contamination remain.

9.62 A Piling Risk Assessment will be produced to prevent contamination migration during piling (if required).

9.63 A UXO desk study will be produced in order to zone or de-risk the Site.

### The Completed and Operational Development

9.64 The Completed and Operational Development phase has been scoped out of this assessment.

## Likely Residual Effects of the Development and their Significance (Application 4)

9.65 The residual effects are as reported in **Tables 9.7 – 9.11** above. No likely significant residual effects of the Construction Phase of the scheme have been identified.

## Conclusions (Application 4)

9.66 The assessment of potential effects on Ground Conditions has been undertaken in accordance with LCRM. The identified impacts can be mitigated against through mitigation, good working practices and the use of an appropriate CEMP.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 4)

9.67 A list of development sites within 250m of Application 4 which have been considered in the assessment of scheme which have the potential to result in cumulative effects are presented in **Table 9.12**.

9.68 All identified development sites comprise brownfield land, presenting the potential for sources of contamination associated with former land uses that could interact with Application 4 cumulatively and affect sensitive receptors. As such, all the identified development sites have been scoped into the cumulative effects assessment.

[3] IoQ (2021) Soil Handling Guide

***Table 9.12**: Cumulative Schemes adjacent to Red Bank Neighbourhood (Outline Application 4)*

| Planning Ref. | Cumulative Scheme Reference | Approx. Distance and Direction | Proposed End Use | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 128248/FO/2020 | 3 | 140m south | Mixed residential and commercial | Application approved: 03 June 2021. Construction not yet started. | In | Former industrial land use - Rochdale Road Gas Works. Potential for land contamination that could have cumulative effects in conjunction with Application 4. |
| 116366/FO/2017 | 4 | 60m south | Mixed residential and commercial | Application approved: 25 August 2017. Under construction, with three of the Scheme's four buildings complete and occupied. | In | Former residential, commercial and industrial land uses – cotton mill, breakers yard etc. Potential for land contamination that could have cumulative effects in conjunction with Application 4. |
| 124973/FO/2019 | 6 | 240m south | Commercial | Application approved: 12 February 2020. Construction not yet started. | In | Former industrial land use – cotton mill, iron foundry, sawmill etc. Potential for land contamination that could have cumulative effects in conjunction with Application 4. |
| 126944/FO/2020 | 7 | Immediately south (of Dantzic Street) | Mixed residential and commercial | Application approved: 24 September 2020. Under construction. | In | Former industrial land use – rubber works. Potential for land contamination that could have cumulative effects in conjunction with Application 4. |
| 113914/FO/2016 | 21 | 150m west | Mixed residential and commercial | Application approved: 30 July 2021. Construction not | In | Former residential and commercial land uses. Potential for land contamination that could have |

| Planning Ref. | Cumulative Scheme Reference | Approx. Distance and Direction | Proposed End Use | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | yet started. | | cumulative effects in conjunction with Application 4. |

## Approach

9.69 An assessment of potential cumulative effects with the surrounding schemes listed in **Table 9.12** has been completed in relation to Ground Conditions. The assessment of potential cumulative effects has considered the proximity of the neighbouring development sites to Application 4 and a high-level assessment of the existing and former land uses of the development sites.

## Likely Residual Cumulative Effects and their Significance

9.70 An assessment of potential cumulative effects has been completed in relation to Ground Conditions. The assessment of potential cumulative effects has considered all the potential receptors identified at Application 4.

### Demolition and Construction (See Appendix 9.3)

9.71 A summary of the likely residual cumulative effects and their significance during Demolition and Construction Phase are provided in **Table 9.13**.

***Table 9.13**: Cumulative Effects and their Significance – Demolition and Construction – Red Bank Neighbourhood (Outline Application 4)*

| Receptor | Cumulative Effects | Significance |
|---|---|---|
| Construction Workers | Potential for sources of contamination on other sites proposed for redevelopment. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |
| Controlled waters – River Irk | Potential for mobilisation of contaminants from other sites proposed for redevelopment.<br><br>Development sites are located within 1km of the River Irk but are located downstream of Application 4. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |

| Receptor | Cumulative Effects | Significance |
|---|---|---|
| Controlled waters – Bedrock and Superficial Aquifers | Potential for mobilisation of contaminants from other sites proposed for redevelopment. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |

### The Completed and Operational Development

9.72 Assessment of cumulative effects related to the Completed and Operational Development of Application 4 and neighbouring development sites is not considered as part of this ES and have therefore been scoped out.

### Conclusions

9.73 No additional residual cumulative effects have been identified for Ground Conditions as a result of concurrent development of Application 4 and the Cumulative Developments.

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 4)

### Approach

9.74 The Cumulative Effects Assessment for Application 4 of the Proposed Development, the Cumulative Schemes (identified in **Table 9.12**) and the Victoria North SRF has been carried out using the same methodology as described for Application 4. See **Appendix 9.4** for details of the assessment.

### Likely Residual Cumulative Effects and their Significance (+ SRF)

### Demolition and Construction

9.75 A summary of the likely residual cumulative effects and their significance during Demolition and Construction Phase are provided in **Table 9.14**.

***Table 9.14**: Cumulative Effects and their Significance – Demolition and Construction – Red Bank Neighbourhood (Outline Application 4), Cumulative Schemes and Victoria North SRF*

| Receptor | Cumulative Effects | Significance |
|---|---|---|
| Construction Workers | Potential for sources of contamination on other sites proposed for redevelopment. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |

| Receptor | Cumulative Effects | Significance |
|---|---|---|
| Controlled waters – River Irk | Potential for mobilisation of contaminants from other sites proposed for redevelopment both up- and down-stream of the Proposed Development. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |
| Controlled waters – Bedrock and Superficial Aquifers | Potential for mobilisation of contaminants from other sites proposed for redevelopment.<br><br>SRF contains mudstone, siltstone and sandstone bedrock – Principal, Secondary A and B Aquifers; alluvium and glacial till superficial deposits – Secondary A and undifferentiated Aquifers. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |

### The Completed and Operational Development

9.76 Assessment of cumulative effects related to the Completed and Operational Development of Application 4 Proposed Development, the Cumulative Schemes and the Victoria North SRF is not considered as part of this ES and have therefore been scoped out of this ES chapter.

## Conclusions

9.77 No additional residual cumulative effects have been identified for Ground Conditions as a result of concurrent development of Application 4, the Cumulative Developments and the SRF.

# NT02-NT04 (Full Application 5)

## Baseline Conditions (Application 5)

### Baseline Information

9.78 Application 5 is located approximately 570m to the northeast of Manchester Victoria Station, within the Lower Irk Valley and is centred at National Grid Reference SJ 84690 99463. The Site is bound to the north by Dantzic Street; to the east by Dalton Street; to the south by the Network Rail viaduct; and to the west by Victoria Riverside development. The River Irk is located offsite, approximately 20m north (at its closest point) and flows from north-east to south-west.

9.79 Historically Application 5 has been divided into three plots of land for planning purposes: Plots NT02, NT03 and NT04 moving west to east. This ES Chapter will continue to use this format for risk assessment purposes.

### Desk Study (Phase 1)

9.80 The topography of Application 5 is relatively flat, with elevations of between 31 and 35m AOD in the west (Plots NT02 and NT03), increasing to 40m AOD in the east (Plot NT04). In March 2022, a large topsoil stockpile managed by the occupiers of Plot NT03, Ryan Topsoil Ltd, was encountered with a peak elevation of 50m AOD. It is to WSP's understanding that the topsoil stockpile remains present at NT03 at the time of writing.

9.81 Application 5 is a brownfield site and has been occupied historically by various industrial uses;

- NT02 – Victoria Screw and Bolt Works, Victoria Paint Works, Collyhurst Foundry, Asphalt Works, Tripe Works, Rubber Works and most recently by a sign manufacturing company (Astra Signs Ltd) and a skip hire and waste handling company (Farlam Waste Management).
- NT03 - Unspecified works, a scrap metal works and most recently by a topsoil supplier (Ryan Topsoil Ltd).
- NT04 - Dalton Works (a print works).

9.82 At present, the Application 5 site is largely disused, with vacant light industrial buildings at Plot NT02 (once occupied by Astra Signs Ltd), two large stockpiles at Plot NT03 (one of which comprises topsoil managed by Ryan Topsoil Ltd and the other comprising vegetated Made Ground potentially existing as support to the offsite viaduct) and semi-vegetated land at Plot NT04. Ground cover comprises a mix of hardstanding (across the entirety of Plot NT02, northernmost area of NT03 and southernmost area of NT04) and soft ground cover (majority of Plot NT04).

9.83 Published geology indicates that the Application 5 site is within an area of 'artificial ground' underlain by superficial deposits of Glacial Till. Underlying bedrock geology from east to west comprises mudstone of the Manchester Marls Formation and sandstone of the Chester Formation. A fault, trending NNW-SSE, cuts across the east of Application 5 (within Plot NT04), within the Manchester Marl Formation.

9.84 The Environment Agency classifies the Glacial Till as a secondary (Undifferentiated) Aquifer, the Manchester Marls Formation as a Secondary (B) Aquifer and the Chester Sandstone Formation as a Principal Aquifer.

9.85 A review of the Coal Authority Mining Risk GIS System indicates that the Application 5 site is located within a Coal Mining Reporting Area though is not located within a Development High Risk zone.

9.86 There are no groundwater Source Protection Zones within 500m of the Application 5 site. No licenced groundwater or surface water abstractions are located within the Application 5 site boundary, however, there are three recorded active abstraction licences located within 500m for cooling and process water associated with an offsite brewery.

9.87 The offsite River Irk is classed as a heavily modified water body (HMWB) in recognition of physical modifications by human activity. The Irk currently has an overall status of 'moderate' with an ecological potential of 'moderate' and a chemical status of 'fail'. The reasons for not achieving 'good' status within the Irk catchment include ammonia due to continuous sewage discharges and diffuse sources including land contamination and landfill leachate, and phosphate due to sewage discharges and urban development.

## Intrusive Ground Investigation Data and Interpretation (Phase 2)

9.88 Encountered ground conditions during previous ground investigations at the Application 5 site are consistent with published geology, identifying Made Ground to 3.0m bgl (increasing in depth to the east from 1.7 to 3.0m bgl) over Glacial Till to 10m bgl (increasing in depth to the east from 3.0 to 10m bgl).

9.89 Rockhead of the Chester Sandstone Formation was met between 2.0 to 7.65m bgl at plots NT02 and NT03, over rockhead of Manchester Marl Formation between 7.5 to and 15.07m bgl. Note at NT02, the Chester Sandstone Formation directly overlies the Manchester Marl Formation, whilst at NT03, the Manchester Marl Formation is also found directly beneath the Glacial Till. At NT04, bedrock is exclusively of the Manchester Marl Formation and rockhead was met beneath the Glacial Till between 6 to 10m bgl.

9.90 Descriptions of the encountered stratum follow:

- Made Ground is encountered as a surface layer of topsoil, asphalt, concrete or exposed demolition fill type material (in areas which have been previously excavated during previous phases of Geo-Environmental and Archaeological investigation). Underlying the surface layer, the demolition fill type material extends to depth, as a gravelly sand or sandy gravel, containing whole and half bricks and concrete cobbles. The gravel fraction predominately comprises brick fragments, slate, clinker and slag. Two large stockpiles of topsoil and Made Ground noted by ROC Consulting to be present in NT03 were removed from site in December 2022. The assessment of the stockpiled material was beyond the scope of the ROC Consulting ground investigation and further investigation is imminent.

- Glacial Till deposits are identified as very soft to stiff, becoming stiff with depth, sandy gravelly clay with interbedded sand and silt lenses.
- Bedrock is generally weathered across all formations; Chester Sandstone Formation is described as very weak to weak fine to medium grained sandstone; and the Manchester Marl Formation is extremely weak to weak mudstone, which is completely weathered to clay in places, with bands of siltstone and sandstone.

9.91 During the ROC Consulting ground investigation, no groundwater strikes were encountered in the Made Ground or underlying Glacial Till deposits. Subsequent groundwater monitoring indicates a groundwater table within the Chester Formation and Manchester Marls Formation at depths ranging between 4.60 and 13.84m bgl, with an anticipated flow direction to the northwest and towards the River Irk. Furthermore, relatively consistent groundwater levels encountered across the site and bedrock formations suggests that groundwater in the underlying bedrock aquifers may be in continuity.

9.92 Visual and olfactory evidence of contamination was encountered at plots NT02 and NT03. Field evidence was reported in the Made Ground, Glacial Till and Chester Sandstone Formation at NT02 and included solvent and hydrocarbon odours. Whilst, at NT03 during removal of the vegetated Made Ground stockpile, a pungent smell was noted and runoff from the stockpile appeared discoloured with a slight oily sheen. No visual or olfactory evidence of contamination was encountered on Plot NT04.

9.93 Several remnant structures were encountered within the Made Ground at plots NT02 and NT04, to maximum depths of 1.5 and 2.8m bgl (respectively), associated with historic industrial works and infrastructure. Obstructions included concrete structures, masonry walls / floors / arch structures, cobblestone block, metal pipe and asphalt infill. In addition, at NT04 material suggestive of an informal domestic waste landfill was locally encountered (food containers, plastic, clothing, rubber, rebar, and sheet metal). No remnant structures were encountered at plot NT03.

9.94 Risk assessments based on laboratory analysis of soil and groundwater and subsequent gas monitoring completed at Application 5 conclude that at present, the existing baseline poses a risk to human health and controlled waters;

- Asbestos within Made Ground has been identified at Plots NT02 and NT04, generally present as fibres, with both chrysotile and amosite identified.
- Made Ground contains contaminants at concentrations which exceed residential screening criteria for heavy metals (NT02-NT04), PAHs (NT02 and NT04), VOCs and TPH (NT02). In addition, underlying Glacial Till at Plot NT02 contains contaminants at concentrations which exceed residential screening criteria for VOCs/SVOCs.
- Photoionization Detection (PID) readings of between 4.3ppm and 207ppm in the southwest of Plot NT02 indicate the presence of volatile contamination.

- Leachate testing indicates that lead concentrations within Made Ground are potentially leachable, although this potential is not supported by direct testing of the groundwater.
- Underlying bedrock aquifers report elevated concentrations of contaminants which exceed drinking water standards for VOCs and TPH (Chester Sandstone Formation at NT02) and heavy metals (Manchester Marls Formation at NT04).
- Completed gas monitoring by LK Consult at Plot NT02 indicates CS1 conditions. However, ongoing ground gas monitoring at Plots NT02 and NT04 by ROC Consulting indicate CS2 conditions at NT02 and CS1 conditions at NT04. Note. no gas monitoring wells were installed on Plot NT03 by ROC Consulting due to the presence of the two stockpiles occupying the majority of the plot during the ground investigation.

9.95 In addition, groundwater monitoring conducted at the Application 5 site indicates flow direction to the northwest, towards the River Irk and water sampling completed at the Application 4 site identified elevated concentrations of heavy metals (mercury and zinc) and PAH (fluoranthene) at the River Irk (upstream, central and downstream).

## Conceptual Site Model

9.96 **Table 9.15** provides an evaluation of the potential contaminant linkages associated with current Site use and future redevelopment on the basis of the information currently available using the CIRIA risk definitions and risk matrix method.

***Table 9.15**: Baseline Conceptual Site Model – New Town Neighbourhood (Full Application 5)*

| Conceptual Site Model | | | | Baseline Assessment (Existing ground conditions, prior to any required remediation) | | | |
|---|---|---|---|---|---|---|---|
| Source | Pathway | Receptor | Sensitivity | Probability of Complete Linkage | Consequence if Linkage Present | Baseline Risk Level | Comments |
| Asbestos (if present) within existing Made Ground / fill materials / buried obstructions / substructure<br>Chemicals of concern associated with existing Made Ground / fill materials<br>Chemicals of concern from spills / leaks from historical uses on site / off site. | Dermal contact with and ingestion of contaminants in soil-derived dust and water.<br>Inhalation of contaminants in soil-derived dust and ground gas / volatile vapours.<br>Inhalation of asbestos fibres. | On-site users | Medium | Unlikely | Medium | Low | Temporary events space operates at the former warehouse at NT02. Owing to the short duration of use and the provision of hard standing across the majority of NT02, this is not considered to pose a significant risk to existing site users. In addition, at present, no ground works or activities involving the disturbance of Made Ground or removal of hardstanding are taking place. As such, identified sources of contamination are either concealed (e.g., beneath topsoil or hardstanding) or in a condition where exposure is limited. |
| | | Groundworkers & construction workers | Medium | Receptor not applicable to baseline assessment | | | |
| | | Third-party neighbours, including industrial units on plot NT02 (Love Factory) | Medium | Unlikely | Medium | Low | Ground investigation has identified visual and olfactory evidence of contamination (solvent odour), positive asbestos identification and concentrations of heavy metals, PAH, TPH and VOCs/SVOCs within soils which exceeds residential end use (without gardens). Identified contaminants are considered reflective of previous historical land uses including paint works and foundry. At present, no ground works or activities involving the disturbance of Made Ground or removal of hardstanding are taking place. As such, identified sources of contamination are either concealed (e.g., beneath topsoil or hardstanding) or in a condition where exposure is limited. |
| | Leaching of contaminants in the unsaturated zone to groundwater in underlying aquifers.<br>Migration of contaminated water through preferential pathways such as underground services, pipes and granular material to groundwater in underlying aquifers. | Controlled waters – Superficial Aquifers (Secondary Undifferentiated Aquifer) | Medium | Likely | Medium | Moderate | Ground investigations have identified leachable concentrations of heavy metals and PAH in excess of water quality standards and concentrations of heavy metals, PAH, VOC and TPH within groundwater which exceed controlled waters assessment. Identified contaminants are considered reflective of previous historical land uses including paint works and foundry. At present, the ground cover at Application 5 comprises hardstanding and soft landscaping, and as such probability of a complete linkage is likely. |
| | | Controlled waters – Bedrock Aquifers (Secondary B and Principal Aquifers) | Medium | Likely | Medium | Moderate | |
| | Lateral migration of contaminated groundwater with discharge to surface watercourses as base flow.<br>Discharge of contaminants entrained in surface water run-off followed by overland | Controlled waters – Surface waters (River Irk) | High | Low | Medium | Low / Moderate | The River Irk has an overall 'moderate' WFD classification. Elevated concentrations of heavy metals (mercury and zinc) and PAH (fluoranthene) have been identified at the River Irk (upstream, central and downstream) during ground investigations. No increase in reported concentration downstream of Application 5 was identified, indicating that Application 5 does not currently represent a source of surface water contamination. In addition, the River Irk is located offsite and as such, probability of a complete linkage is low. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | flow and discharge. | | | | | | |
| Hazardous ground gases and vapours associated with chemical substances of concern in soil / Made Ground / organic soils | Lateral and vertical migration through unsaturated pore space or fractures and accumulation in confined spaces and inhalation | Groundworkers & construction workers | Medium | Receptor not applicable to baseline assessment | | | |
| | | Third-party neighbours, including industrial units on plot NT02 (Love Factory) | Medium | Unlikely | Medium | Low | Ground conditions of CS1 and CS2 have been identified at Application 5.<br>At present, no ground works or activities involving the disturbance of Made Ground or removal of hardstanding are taking place. As such, any existing hazardous ground gases or vapours are confined (e.g., beneath topsoil or hardstanding) at present. |

## Embedded Mitigation (Application 5)

### Demolition and Construction

9.97 No embedded mitigation has been assumed in preparation of this ES chapter.

### The Completed and Operational Development

9.98 The Completed and Operational Development phase has been scoped out of this assessment.

## Assessment of Likely Significant Effects (Application 5)

9.99 **Table 9.16** to **Table 9.20** summarise the potential effects, additional mitigation, residual effects and monitoring required associated with the Proposed Development. See **Appendix 9.5** for assessment details.

### Demolition and Construction

***Table 9.16**: Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on construction / groundworkers - New Town Neighbourhood (Full Application 5)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Construction / Groundworkers | Effect on groundworkers from contamination in soils which is as a result of previous site activities.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level. | Adherence to Construction Environmental Management Plan (CEMP), as detailed in **paragraph 9.58** |

***Table 9.17:** Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on third party neighbours - New Town Neighbourhood (Full Application 5)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Third Party Neighbours | Effect on third party neighbours from contamination in soils which is as a result of previous site activities.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level. | Adherence to Construction Environmental Management Plan (CEMP), as detailed in **paragraph 9.58** |

***Table 9.18:** Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in superficial aquifers - New Town Neighbourhood (Full Application 5)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Groundwater in | Contamination of groundwater receptors via leaching through soils from contamination present at the site from | Adherence to Construction |

| | | |
|---|---|---|
| Superficial Aquifer | previous land uses.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (**short term, reversible**) at a local level during the course of the works, reducing to **minor beneficial** effect (**not significant**) (**long term**) on completion of enabling works and associated remediation prior to / during construction works. | Environmental Management Plan (CEMP), as detailed in **paragraph 9.58** |

***Table 9.19:*** *Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in bedrock aquifers - New Town Neighbourhood (Full Application 5)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Groundwater in Bedrock Aquifer | Contamination of groundwater receptors via leaching through soils from contamination present at the site from previous land uses.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level during the course of the works, reducing to **minor beneficial** effect (**not significant**) (long term) on completion of enabling works and associated remediation prior to / during construction works. | Adherence to Construction Environmental Management Plan (CEMP), as detailed in **paragraph 9.58** |

***Table 9.20:*** *Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in surface waters - New Town Neighbourhood (Full Application 5)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Surface water (River Irk) | Contamination of surface water receptor via leaching and run-off through soils and / preferential drainage pathways such as drains, from contamination present at the site from previous land uses.<br><br>Medium magnitude and high sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level during course of the works, reducing to **minor beneficial** effect (not significant) (long term) on completion of enabling works and associated remediation prior to / during construction works. | Adherence to Construction Environmental Management Plan (CEMP), as detailed in **paragraph 9.58** |

### The Completed and Operational Development

9.100 The Completed and Operational Development phase has been scoped out of this assessment.

## Additional Mitigation / Enhancement Measures (Application 5)

9.101 This section describes the measures which are required to mitigate any significant environmental effects with regards to Ground Conditions considerations.

## Demolition and Construction

9.102 It is anticipated that the additional mitigation measures will be delivered during the Construction Phase via the Construction Environmental Management Plan (CEMP), which will be secured as part of the planning application conditions. Items included within the CEMP will include but not be limited to the following:

- Earthworks should be completed in accordance with DEFRA's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites[4] and SEPA Regulatory Guidance, Promoting the Sustainable reuse of Greenfield Soils in Construction[5] to ensure re-used material does not present a risk to human health or the environment and complies with UK waste legislation regulations. An earthworks specification should be produced and include protocols for testing and limiting values to ensure that imported materials are suitable for their intended use in terms of their chemical quality
- Incorporation of a temporary surface water drainage strategy to limit any contaminated run-off entering surrounding surface watercourses;
- Appropriate measures to limit contamination to the ground from construction related plant / machinery and storage of materials to be incorporated within the CEMP;
- Handling and temporary storage of excavated materials in accordance with DEFRA's Construction Code of Practice, the Institute of Quarrying's (IoQ) Soil Handling Guide[6] and IEMA's (2022) EIA Guidance on Land and Soils;
- Any unexpected below ground tanks, structures and / or pipework encountered during construction will be appropriately decommissioned and removed (where necessary) to ensure that contaminants do not enter the ground; and
- Disused services would be decommissioned appropriately to ensure that no preferential pathways for contamination remain.

9.103 A Piling Risk Assessment will be produced to prevent contamination migration during piling (if required).

9.104 A UXO desk study will be produced in order to zone or de-risk the Site.

## The Completed and Operational Development

9.105 The Completed and Operational Development phase has been scoped out of this assessment.

[4] DEFRA (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites
[5] SEPA Regulatory Guidance, Promoting the Sustainable reuse of Greenfield Soils in Construction
[6] IoQ (2021) Soil Handling Guide

## Likely Residual Effects of the Development and their Significance (Application 5)

9.106 The residual effects are as reported in **Tables 9.16 – 9.20** above. No likely significant residual effects of the Construction Phase of the scheme have been identified.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 5)

9.107 A list of development sites within 250m of Application 5 which have been considered in the assessment of schemes that have the potential to result in cumulative effects on sensitive receptors are presented in **Table 9.21**.

9.108 All identified development sites comprise brownfield land, presenting the potential for sources of contamination associated with former land uses that could interact with Application 5 cumulatively and affect sensitive receptors. As such, all the identified development sites have been scoped into the cumulative effects assessment.

***Table 9.21**: Cumulative Schemes adjacent to New Town Neighbourhood (Full Application 5)*

| Planning Ref. | Cumulative Scheme Reference | Approx. Distance and Direction | Proposed End Use | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 128248/FO/2020 | 3 | 40m south | Mixed residential and commercial | Application approved: 03 June 2021. Construction not yet started. | In | Former industrial land use - Rochdale Road Gas Works. Potential for land contamination that could affect Application 5 cumulatively. |
| 116366/FO/2017 | 4 | 170m southwest | Mixed residential and commercial | Application approved: 25 August 2017. Under construction, with three of the Scheme's four buildings now complete and occupied. | In | Former residential, commercial and industrial land uses – cotton mill, breakers yard etc. Potential for land contamination that could affect Application 5 cumulatively. |

| Planning Ref. | Cumulative Scheme Reference | Approx. Distance and Direction | Proposed End Use | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 126944/FO/2020 | 7 | Immediately west | Mixed residential and commercial. | Application approved: 24 September 2020.<br>Under construction. | In | Former industrial land use – rubber works. Potential for land contamination that could affect Application 5 cumulatively. |
| 131708/FO/2021 | 8 | 220m south | Mixed residential and commercial. | Application approved: 24 October 2019. Construction not yet started. | In | Former rail / tramway infrastructure, residential, commercial, and industrial land uses - Rochdale Road Gas works. Potential for land contamination that could affect Application 5 cumulatively. |

## Approach

9.109 An assessment of potential cumulative effects with the surrounding schemes listed in **Table 9.21** has been completed in relation to Ground Conditions. The assessment of potential cumulative effects has considered the proximity of the neighbouring development sites to Application 5 and a high-level assessment of the existing and former land uses of the development sites. See **Appendix 9.6**.

## Likely Residual Cumulative Effects and their Significance

9.110 An assessment of potential cumulative effects has been completed in relation to Ground Conditions. The assessment of potential cumulative effects has considered all the potential receptors identified at Application 5.

### Demolition and Construction

9.111 A summary of the likely residual cumulative effects and their significance during Construction Phase are provided in **Table 9.22**.

***Table 9.22:*** *Cumulative Effects and their Significance – Demolition and Construction - New Town Neighbourhood (Full Application 5)*

| Receptor | Cumulative Effects | Significance |
|---|---|---|
| Construction Workers | Potential for sources of contamination on other sites proposed for redevelopment. | Mitigation will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |
| Controlled waters – River Irk | Potential for mobilisation of contaminants from other sites proposed for redevelopment. | Embedded mitigation will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |
| Controlled waters – Bedrock and Superficial Aquifers | Potential for mobilisation of contaminants from other sites proposed for redevelopment. | Embedded mitigation will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |

### The Completed and Operational Development

9.112 Assessment of cumulative effects related to the Completed and Operational Development of Application 5 and neighbouring development sites is not considered as part of this ES.

### Conclusions

9.113 The assessment of potential effects on Ground Conditions has been undertaken in accordance with LCRM. The identified impacts can be mitigated against through embedded mitigation, good working practices and the use of an appropriate CEMP.

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 5)

### Approach

9.114 The Cumulative Effects Assessment for the Application 5 Proposed Development, the Cumulative Schemes (identified in **Table 9.21**) and the Victoria North SRF has been carried out using the same methodology as described above. See **Appendix 9.7**.

## Likely Residual Cumulative Effects and their Significance (+ SRF)

### Demolition and Construction

9.115 A summary of the likely residual cumulative effects and their significance during Demolition and Construction Phase are provided in **Table 9.23**.

***Table 9.23:*** *Cumulative Effects and their Significance – Demolition and Construction – Red Bank Neighbourhood (Outline Application 5), Cumulative Schemes and Victoria North SRF*

| Receptor | Cumulative Effects | Significance |
|---|---|---|
| Construction Workers | Potential for sources of contamination on other sites proposed for redevelopment.<br><br>The sites that have potential for land contamination but are generally greater than 100m from Application 5 or under construction at present. The SRF is mostly >100m from Application 5. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |
| Controlled waters – River Irk | Potential for mobilisation of contaminants from other sites proposed for redevelopment both up- and down-stream of the Proposed Development. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |
| Controlled waters – Bedrock and Superficial Aquifers | Potential for mobilisation of contaminants from other sites proposed for redevelopment.<br><br>SRF contains mudstone, siltstone and sandstone bedrock – Principal, Secondary A and B Aquifers; alluvium and glacial till superficial deposits – Secondary A and undifferentiated Aquifers. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |

### The Completed and Operational Development

9.116 Assessment of cumulative effects related to the Completed and Operational Development of Application 5 Proposed Development, the Cumulative Schemes and the Victoria North SRF is not considered as part of this ES.

## Conclusions

9.117 No additional residual cumulative effects have been identified for Ground Conditions as a result of concurrent development of Application 5, the Cumulative Developments and the SRF.

# In Combination Effects of Applications 4 and 5

9.118 Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 has been set out previously in this chapter.

## Assessment of Likely Significant Effects (Applications 4 and 5)

### Demolition and Construction

9.119 No likely significant effects of in-combination effects of Applications 4 and 5 have been identified, as summarised in the tables below and **Appendix 9.8** (Scenario 3a).

***Table 9.24:*** *Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on construction / groundworkers – Redbank & New Town Neighbourhood (Applications 4 & 5)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Construction / Groundworkers | Effect on groundworkers from contamination in soils which is as a result of previous site activities.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level. | Adherence to Construction Environmental Management Plan (CEMP) |

***Table 9.25:*** *Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on third party neighbours - Redbank & New Town Neighbourhood (Applications 4 & 5)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Third Party Neighbours | Effect on third party neighbours from contamination in soils which is as a result of previous site activities.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level. | Adherence to Construction Environmental Management Plan (CEMP) |

***Table 9.26:*** *Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in superficial aquifers - Redbank & New Town Neighbourhood (Applications 4 & 5)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Groundwater in Superficial Aquifer | Contamination of groundwater receptors via leaching through soils from contamination present at the site from previous land uses.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (**short term, reversible**) at a local level during the course of the works, reducing to **minor beneficial** effect (**not significant**) (**long term**) on | Adherence to Construction Environmental Management Plan (CEMP) |

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| | completion of enabling works and associated remediation prior to / during construction works. | |

***Table 9.27:*** *Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in bedrock aquifers - Redbank & New Town Neighbourhood (Applications 4 & 5)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Groundwater in Bedrock Aquifer | Contamination of groundwater receptors via leaching through soils from contamination present at the site from previous land uses.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level during the course of the works, reducing to **minor beneficial** effect (**not significant**) (long term) on completion of enabling works and associated remediation prior to / during construction works. | Adherence to Construction Environmental Management Plan (CEMP) |

***Table 9.28:*** *Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in surface waters - Redbank & New Town Neighbourhood (Applications 4 & 5)*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Surface water (River Irk) | Contamination of surface water receptor via leaching and run-off through soils and / preferential drainage pathways such as drains, from contamination present at the site from previous land uses.<br><br>Medium magnitude and high sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level during course of the works, reducing to **minor beneficial** effect (not significant) (long term) on completion of enabling works and associated remediation prior to / during construction works. | Adherence to Construction Environmental Management Plan (CEMP) |

### The Completed and Operational Development

9.120 The Completed and Operational Development phase has been scoped out of this assessment.

## Phasing Effects (Applications 4 and 5)

9.121 In line with **Volume 2: Main Text, Chapter 5: The Proposed Development**, assumptions in regard to the phased delivery of the works at Applications 4 and 5 will be followed; the Construction Phase will be completed at Plots NT02-04, RB01-05 and RB12b by Q4 of 2029 and at Plots RB16 / 17 / 06 / 07 / 10 by Q4 of 2032.

9.122 It is assumed that shortly after the completion of the Construction Phase, the plots will be occupied with residents. Consequently, as a result of the phased delivery, there will be a temporary introduction of human health receptors at Plots NT02-04 and RB01-05 and RB12b during the latter Construction Phase at Plots RB16 / 17 / 06 / 07 / 10. This phasing effect is reflected in the CSMs, presented in **Appendix 9.2** and **Appendix 9.5**.

9.123 Mitigation measures will be employed during the ongoing Construction Phase at Plots RB16 / 17 / 06 / 07 / 10 to control / reduce any Construction Phase related effects on Ground Conditions impacting adjacent residents at Plots NT02-04 and RB01-05 and RB12b.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5)

### Demolition and Construction

9.124 No additional mitigation measures to those already identified in the assessments of Application 4 and Application 5 have been identified as necessary.

### The Completed and Operational Development

9.125 The Completed and Operational Development phase has been scoped out of this assessment.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5)

9.126 No likely residual effects of the Construction Phase of the scheme have been identified.

## Assessment of Cumulative Effects with Identified Committed Schemes (Applications 4 and 5)

9.127 A list of development sites within 250m of Applications 4 and 5, which have been considered in the assessment of schemes which have the potential to contribute cumulatively to impact on sensitive receptors, are presented in **Tables 9.12** and **9.21** respectively.

9.128 All identified development sites comprise brownfield land, presenting the potential for sources of contamination associated with former land uses that could interact with Applications 4 and 5 cumulatively and affect sensitive receptors. As such, all identified development sites have been scoped into the cumulative effects assessment.

### Approach

9.129 An assessment of potential cumulative effects with the surrounding schemes listed in **Tables 9.12** and **9.20** has been completed in relation to Ground Conditions. The assessment of potential cumulative effects has considered the proximity of the neighbouring development sites to Application 4 and 5, and a high-level assessment of the existing and former land uses of the development sites.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

9.130 A summary of the likely residual cumulative effects and their significance during Demolition and Construction Phase are provided in **Table 9.29**.

***Table 9.29:*** *Cumulative Effects and their Significance – Demolition and Construction – Red Bank Neighbourhood (Outline Application 4) and New Town Neighbourhood (Full Application 5) combined*

| Receptor | Cumulative Effects | Significance |
|---|---|---|
| Construction Workers | Potential for sources of contamination on other sites proposed for redevelopment.<br><br>The sites that have potential for land contamination but are generally greater than 100m from Applications 4 and 5 or under construction at present. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |
| Controlled waters – River Irk | Potential for mobilisation of contaminants from other sites proposed for redevelopment.<br><br>Development sites are located within 1km of the River Irk but are located downstream of Applications 4 and 5. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |
| Controlled waters – Bedrock and Superficial Aquifers | Potential for mobilisation of contaminants from other sites proposed for redevelopment. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |

### The Completed and Operational Development

9.131 Assessment of cumulative effects related to the Completed and Operational Development of Applications 4 and 5 and neighbouring development sites is not considered as part of this ES.

## Conclusions

9.132 The assessment of potential effects on Ground Conditions has been undertaken in accordance with LCRM. The identified impacts can be mitigated against through embedded mitigation, good working practices and the use of an appropriate CEMP.

## In-Combination Climate Impacts

9.133 No in-combination climate impacts have been identified.

# In Combination Effects of Applications 4 and 5 and SRF

9.134 Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 has been set out previously in this chapter.

## Assessment of Likely Significant Effects (Applications 4 and 5 and SRF)

### Demolition and Construction

9.135 No likely significant effects of a combined Construction Phase for Applications 4, 5 and Victoria North SRF have been identified; these are summarised and detailed in **Appendix 9.10**.

***Table 9.30:*** *Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on construction / groundworkers – Redbank & New Town Neighbourhood (Applications 4 & 5) & SRF.*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Construction / Groundworkers | Effect on groundworkers from contamination in soils which is as a result of previous site activities.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level. | Adherence to Construction Environmental Management Plan (CEMP) |

***Table 9.31:*** *Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on third party neighbours - Redbank & New Town Neighbourhood (Applications 4 & 5) & SRF.*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Third Party Neighbours | Effect on third party neighbours from contamination in soils which is as a result of previous site activities.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level. | Adherence to Construction Environmental Management Plan (CEMP) |

***Table 9.32:*** *Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in superficial aquifers - Redbank & New Town Neighbourhood (Applications 4 & 5) & SRF.*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Groundwater in | Contamination of groundwater receptors via leaching through soils from contamination present at the site from | Adherence to Construction |

| | | |
|---|---|---|
| Superficial Aquifer | previous land uses.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (**short term, reversible**) at a local level during the course of the works, reducing to **minor beneficial** effect (**not significant**) (**long term**) on completion of enabling works and associated remediation prior to / during construction works. | Environmental Management Plan (CEMP) |

***Table 9.33:*** *Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in bedrock aquifers - Redbank & New Town Neighbourhood (Applications 4 & 5) & SRF.*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Groundwater in Bedrock Aquifer | Contamination of groundwater receptors via leaching through soils from contamination present at the site from previous land uses.<br><br>Medium magnitude and medium sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level during the course of the works, reducing to **minor beneficial** effect (**not significant**) (long term) on completion of enabling works and associated remediation prior to / during construction works. | Adherence to Construction Environmental Management Plan (CEMP) |

***Table 9.34:*** *Assessment of potential effects, additional mitigation, residual effects and monitoring during construction on groundwater in surface waters - Redbank & New Town Neighbourhood (Applications 4 & 5) & SRF.*

| Sensitive Receptor | Potential Effect(s) | Additional Mitigation |
|---|---|---|
| Surface water (River Irk) | Contamination of surface water receptor via leaching and run-off through soils and / preferential drainage pathways such as drains, from contamination present at the site from previous land uses.<br><br>Medium magnitude and high sensitivity = **minor adverse** effect (**not significant**) (short term, irreversible) at a local level during course of the works, reducing to **minor beneficial** effect (not significant) (long term) on completion of enabling works and associated remediation prior to / during construction works. | Adherence to Construction Environmental Management Plan (CEMP) |

## The Completed and Operational Development

9.136 The Completed and Operational Development phase has been scoped out of this assessment.

## Phasing Effects (Applications 4 and 5 and SRF)

9.137 In line with **Volume 2: Main Text, Chapter 5: The Proposed Development**, assumptions in regard to the phased delivery of the works at Applications 4 and 5 will be followed; the Construction Phase will be completed at Plots NT02-04, RB01-05 and RB12b by Q4 of 2029 and at Plots RB16 / 17 / 06 / 07 / 10 by Q4 of 2032.

9.138 It is assumed that shortly after the completion of the Construction Phase, the plots will be occupied with residents. Consequently, as a result of the phase delivery, there will be a temporary introduction of human health receptors at Plots NT02-04 and RB01-05 and RB12b during the latter Construction Phase at Plots RB16 / 17 / 06 / 07 / 10. This phasing effect is reflected in the CSMS, presented in **Appendices 9.2** to **Appendix 9.11**.

9.139 Mitigation measures will be employed via the CEMP during the ongoing Construction Phase at Plots RB16 / 17 / 06 / 07 / 10 to control / reduce any Construction Phase related effects on Ground Conditions impacting adjacent residents at Plots NT02-04 and RB01-05 and RB12b.

9.140 At present, delivery dates for the remaining Plots of the SRF are unknown. As such, phasing effects related to the delivery of Applications 4 and 5 and SRF cannot be assessed at this stage.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5 and SRF)

### Demolition and Construction

9.141 No additional mitigation measures to those already identified in the assessments of Application 4 and Application 5 have been identified as necessary.

### The Completed and Operational Development

9.142 The Completed and Operational Development phase has been scoped out of this assessment.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5 and SRF)

9.143 No likely significant residual effects of the Construction Phase of the scheme have been identified.

## Assessment of Cumulative Effects with Identified Committed Schemes (Applications 4 and 5 and SRF)

9.144 A list of development sites within 250m of Applications 4, 5 and the Northern Gateway Strategic Regeneration Framework (SRF) which have been considered in the assessment of schemes which have the potential to result in cumulative effects are presented in **Table 9.35**. Note the approximate distances and directions have been reported relative to the closest points of the development sites to Applications 4, 5 and the SRF.

9.145 All identified development sites comprise brownfield land, presenting the potential for sources of contamination associated with former land uses that could interact with Applications 4, 5 and the SRF cumulatively and affect sensitive receptors. As such, all the identified development sites have been scoped into the cumulative effects assessment.

***Table 9.35:*** *Cumulative Schemes adjacent to Red Bank Neighbourhood (Outline Application4), New Town Neighbourhood (Full Application 5) and the SRF*

| Planning Ref. | Cumulative Scheme Reference | Approx. Distance and Direction | Proposed End Use | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 129393/VO/2021 | 1 | Onsite (SRF – Collyhurst Village) | Mixed residential and commercial | Application approved: 21 June 2021. Groundworks started | In | Former residential and institutional (care home) land uses. Potential for land contamination that could affect Applications 4, 5 and SRF cumulatively. |
| 127971/FO/2020 | 2 | 120m southeast (SRF – South Collyhurst) | Residential | Application approved: 07 May 2021. Construction not yet started. | In | Former residential and commercial land uses. Potential for land contamination that could affect Applications 4, 5 and SRF cumulatively. |
| 128248/FO/2020 | 3 | 40m south (App 5) | Mixed residential and commercial | Application approved: 03 June 2021. Construction not yet started. | In | Former industrial land use - Rochdale Road Gas Works. Potential for land contamination that could affect Applications 4, 5 and SRF cumulatively |
| 116366/FO/2017 | 4 | 60m south (App 4) | Mixed residential and commercial | Application approved: 25 August 2017. Under construction, with three of the Scheme's four buildings now complete and occupied. | In | Former residential, commercial and industrial land uses – cotton mill, breakers yard etc. Potential for land contamination that could affect Applications 4, 5 and SRF cumulatively. |
| 127537/FO | 5 | Immediately | Commercial | Application | In | Former residential and |

| Planning Ref. | Cumulative Scheme Reference | Approx. Distance and Direction | Proposed End Use | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| /2020 | | north (SRF – New Cross) | | approved: 19 October 2020. Construction not yet started. | | commercial land uses including petrol filling station. Potential for land contamination that could affect Applications 4, 5 and SRF cumulatively. |
| 124973/FO /2019 | 6 | 240m south (App 4) | Commercial | Application approved: 12 February 2020. Construction not yet started. | In | Former industrial land use – cotton mill, iron foundry, sawmill etc. Potential for land contamination that could affect Applications 4, 5 and SRF cumulatively. |
| 131708/FO /2021 | 8 | 220m south (App 5) | Mixed residential and commercial. | Application approved: 24 October 2019. Construction not yet started. | In | Former rail / tramway infrastructure, residential, commercial, and industrial land uses - Rochdale Road Gas works. Potential for land contamination that could affect Applications 4, 5 and SRF cumulatively. |
| 128997/FO /2020 | 9 | Onsite (SRF – New Cross) | Mixed residential and commercial. | Application approved: 22 September 2021. Construction not yet started. | In | Former residential, commercial and industrial land uses – tobacco manufacturer. Potential for land contamination that could affect Applications 4, 5 and SRF cumulatively. |
| 124888/FO /2019 | 11 | Onsite (SRF – New Cross) | Residential | Application approved: 16 January 2020. Under construction | In | Former residential land uses. Potential for land contamination that could affect Applications 4, 5 and SRF cumulatively. |
| 125678/FO | 13 | Onsite (SRF – New | Mixed residential | Application approved: 18 | In | Former commercial land uses. Potential for land |

| Planning Ref. | Cumulative Scheme Reference | Approx. Distance and Direction | Proposed End Use | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| /2019 | | Cross) | and commercial | December 2020. Under construction. | | contamination that could affect Applications 4, 5 and SRF cumulatively. |
| 130354/FO /2021 | 19 | 250m south (SRF – New Cross) | Mixed residential and commercial | Application approved: 30 July 2021. Construction not yet started. | In | Former industrial land use – factory. Potential for land contamination that could affect Applications 4, 5 and SRF cumulatively. |
| 130627/FO /2021 | 20 | 160m south (SRF – New Cross) | Commercial | Application approved: 30 July 2021. Ground works started, currently in the early stages of construction. | In | Former residential and commercial land uses. Potential for land contamination that could affect Applications 4, 5 and SRF cumulatively. |
| 113914/FO /2016 | 21 | 150m west (App 4) | Mixed residential and commercial | Application approved: 30 July 2021. Construction not yet started. | In | Former residential and commercial land uses. Potential for land contamination that could affect Applications 4, 5 and SRF cumulatively. |

## Approach

9.146 An assessment of potential cumulative effects with the surrounding schemes listed in **Table 9.35** has been completed in relation to Ground Conditions. The assessment of potential cumulative effects has considered the proximity of the neighbouring development sites to Applications 4, 5 and the SRF, and a high-level assessment of the existing and former land uses of the development sites.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

9.147 A summary of the likely residual cumulative effects and their significance during Demolition and Construction Phase are provided in **Table 9.36**.

***Table 9.36:*** *Cumulative Effects and their Significance – Demolition and Construction – Red Bank Neighbourhood (Outline Application 4), New Town Neighbourhood (Full Application 5) and the SRF*

| Receptor | Cumulative Effects | Significance |
|---|---|---|
| Construction Workers | Potential for sources of contamination on other sites proposed for redevelopment.<br><br>The sites that have potential for land contamination but are generally greater than 100m from Applications 4 and 5 and the SRF or under construction at present. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |
| Controlled waters – River Irk | Potential for mobilisation of contaminants from other sites proposed for redevelopment both up- and down-stream of the Proposed Development. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |
| Controlled waters – Bedrock and Superficial Aquifers | Potential for mobilisation of contaminants from other sites proposed for redevelopment.<br><br>SRF contains mudstone, siltstone and sandstone bedrock – Principal, Secondary A and B Aquifers; alluvium and glacial till superficial deposits – Secondary A and undifferentiated Aquifers. | Additional mitigation, e.g. CEMP, will be adopted through the application of the planning regime and contaminated land regime (if applicable).<br><br>The residual cumulative effect will be **negligible** (**not significant**). |

### The Completed and Operational Development

9.148 Assessment of cumulative effects related to the Completed and Operational Development of Applications 4 and 5, the SRF and the Cumulative Schemes is not considered as part of this ES.

## Conclusions

9.149 No additional residual cumulative effects have been identified for Ground Conditions as a result of concurrent development of Applications 4 and 5, the SRF and the Cumulative Developments.

## In-Combination Climate Impacts

9.150 No in-combination climate impacts have been identified.

# 10. Drainage and Flood Risk

## Introduction

10.1. This chapter assesses the effects of the Proposed Development (applications 4 and 5) on drainage and flood risk. In particular, it considers effects that may arise as a result of the Proposed Development on surface water features, groundwater resources and flood risk.

10.2. This chapter describes the methods used to assess the likely significant effects, the baseline conditions currently existing at the Site (within the boundaries of Applications 4 and 5 (the Proposed Development)), the site wide Housing Infrastructure Fund (HIF) drainage system (Part of Application 2 and 3) and surroundings, the potential direct and indirect effects of the Proposed Development arising in terms of drainage and flood risk, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects.

10.3. This assessment assumes that 'embedded mitigation' will be undertaken (i.e., mitigation required to prevent adverse effects that is already embedded into the Proposed Development and the development process).

10.4. This chapter has been written by WSP.

10.5. This chapter is supported by figures which are in **Volume 2a: Main Text Figures**.

10.6. This Chapter is also supported by a Flood Risk Assessment (FRA) and Drainage Strategy (**Appendix 10.1**), a Water Framework Directive (WFD) Screening and Scoping Note for Application 4 (**Appendix 10.2**) and a full Water Framework Directive assessment (WFDa) for Application 5 (**Appendix 10.3**). These form appendices to the ES (Volume 3: Appendices) and have been completed by WSP.

## Assessment Methodology and Significance Criteria

10.7. The section sets out the methodology that has been used to assess the environmental effects and the significance of those effects on the baseline conditions of surface water features, groundwater resources and flood risk, during both demolition and construction and operational phases. Baseline conditions consider the site wide HIF drainage system (Part of Application 2 and 3).

10.8. In accordance with the Drainage and Flood Risk ES Scoping Chapter, the following Study Areas have been adopted for both Applications 4 and 5:

- Application 4 Boundary plus a 0.5 km buffer for the surface water assessment;
- Application 5 Boundary plus a 0.5 km buffer for the surface water assessment;

- Application 4 Boundary plus a 1 km buffer in relation to surface water protected sites, flood risk and groundwater receptors;
- Application 5 Boundary plus a 1 km buffer in relation to surface water protected sites, flood risk and groundwater receptors; and
- Any surface or groundwater water bodies or water dependent conservation sites (surface water and groundwater) located up to 5 km downstream of the Proposed Development (both Application 4 and 5) which are directly hydrologically connected to the Proposed Development.

10.9. The assessment of potential effects that may arise during the demolition and construction (post- HIF works) and operational phases is a qualitative assessment that considers risks to the hydrology, hydromorphology and physio-chemical quality of surface water and groundwater resources and flood risk. A quantitative assessment of impacts to water quality associated with site drainage is not proposed as the traffic volumes predicted at the Proposed Development during the operational phase are considered to be below the threshold for use of the Highways England Water Risk Assessment Tool and sufficiently low for the risk of a spillage event to be negligible.

10.10. A qualitative assessment of the potential impacts of the Proposed Development on groundwater quality and quantity with respect to identified licensed groundwater abstractions and other groundwater-dependent receptors has been undertaken. The qualitative assessment assumes that no soakaway or unlined drainage systems are proposed. No quantitative assessments have been undertaken.

10.11. The potential impacts on groundwater quality from contamination have been assessed in **Chapter 9: Ground Conditions** and are therefore not discussed in this chapter.

10.12. A standalone FRA (see **Appendix 10.1**) has been prepared to support the ES in accordance with the National Planning Policy Framework (NPFF) and Planning Practice Guidance (PPG)[1],[2]. The FRA assesses the potential implications of the Proposed Development on flood risk (fluvial, surface water, groundwater, sewer, reservoir, and canal flooding) to people and property, as well as the potential risk of flooding to the Proposed Development.

10.13. As the Proposed Development is located in Flood Zones 1, 2 and 3, a fluvial hydraulic modelling exercise has been completed to determine fluvial flood risk both pre- and post-development. The FRA includes a qualitative assessment of impacts to surface water flood risk at the Proposed Development (informed by the Environment Agency's Map for Surface Water Flooding[3] and the proposed drainage strategy).

10.14. A WFD screening and scoping exercise has been completed to determine the necessity and scope for a full WFD assessment (see **Appendix 10.2**). Conclusions of the screening and scoping exercise were presented to the

[1] Ministry of Housing, Communities & Local Government (2016). *Planning practice guidance*. [online] GOV.UK. Available at: https://www.gov.uk/government/collections/planning-practice-guidance.

[2] Gov.uk (2012). *National Planning Policy Framework - Guidance - GOV.UK*. [online] Www.gov.uk. Available at: https://www.gov.uk/guidance/national-planning-policy-framework.

[3] GOV.UK (n.d.). *Check the long term flood risk for an area in England*. [online] GOV.UK. Available at: https://www.gov.uk/check-long-term-flood-risk.

Fisheries, Biodiversity and Geomorphological Officers at the Environment Agency on 16 February 2023. The officers agreed that for outline planning (Application 4) a summary of the WFD screening and scoping exercise is sufficient and a full WFDa can be provided later when detailed design is complete. For full planning (Application 5) a full WFDa assessment is required for planning (**Appendix 10.3**).

## Determining the Sensitivity of Receptors

10.15. **Table 10.1** details the assessment framework used to determine the sensitivity of water resources. These criteria are based on those provided in Table 3.70 of the Design Manual for Roads and Bridges (DMRB) LA 113[4].

[4] standardsforhighways.co.uk. (2020). *LA 113 - Road drainage and the water environment - DMRB*. [online] Available at: https://standardsforhighways.co.uk/dmrb/search/d6388f5f-2694-4986-ac46-b17b62c21727.

***Table 10.1:*** *Determining the sensitivity of receptors*

| Sensitivity of receptor | Definition of magnitude | Typical examples |
|---|---|---|
| **Very High** | Nationally significant attribute of high importance. | • Watercourse having a WFD classification shown in a River Basin management Plan (RBMP) and with Q95 > 1 $m^3/s$.<br>• Site protected / designated under EU or UK habitat legislation (Special Area of Conservation (SAC), Special Protection Area (SPA), Sites of Special Scientific Interest (SSSI), Ramsar site, salmonid water), or species protected by EC Legislation Ecology and Nature Conservation.<br>• Groundwater Source Protection Zone (SPZ) 1.<br>• Groundwater locally supports a Groundwater Dependent Terrestrial Ecosystem (GWDTE) or any other very significant feature.<br>• Principal aquifer providing a regionally important resource or protected site.<br>• Essential infrastructure or highly vulnerable development. |
| **High** | Locally significant attribute of high importance. | • Watercourse having a WFD classification shown in a RBMP and with Q95 < 1 $m^3/s$.<br>• Species protected under EC or UK Legislation Ecology and Nature Conservation.<br>• Groundwater SPZ 2.<br>• Groundwater supports a GWDTE or any other significant feature.<br>• Principal aquifer providing locally important resource or supporting a river ecosystem.<br>• More vulnerable development. |
| **Medium** | Moderate quality and rarity. | • Watercourse not having a WFD classification shown in a RBMP and with Q95 > 0.001 $m^3/s$.<br>• Aquifer providing water for agriculture or industrial use with limited connection to surface water.<br>• Groundwater SPZ 3.<br>• Less vulnerable development. |
| **Low** | Lower quality. | • Watercourse not having a WFD classification shown in a RBMP and with Q95 < 0.001 $m^3/s$.<br>• Unproductive strata.<br>• Water compatible development. |

## Determining the Magnitude of Impact

10.16. **Table 10.2** details the assessment framework used to determine the magnitude of impact upon water resources. These criteria are based on those provided in Table 3.71 of DMRB LA 11[3,4] and tailored to the proposed assessment methodology.

***Table 10.2:*** *Determining the magnitude of impact*

| Sensitivity of receptor | Definition of magnitude | Typical examples |
|---|---|---|
| **Major Adverse** | Results in loss of attribute and / or quality and integrity of the attribute. | • High likelihood of pollution from soluble pollutants and sedimentation.<br>• Risk of pollution from spillage >2% annually.<br>• Loss or extensive change to a fishery.<br>• Loss of regionally important public water supply.<br>• Loss or extensive change to a designated nature conservation site.<br>• Reduction in WFD classification.<br>• Loss of, or extensive change to, an aquifer.<br>• Potential high risk of pollution to groundwater from routine runoff.<br>• Loss of, or extensive change to GWDTE or baseflow contribution to protected surface water bodies.<br>• Loss or significant damage to major structures through subsidence or similar effects.<br>• Increase in peak flood level (>100 mm). |
| **Moderate Adverse** | Results in effect on integrity of attribute, or loss of part of attribute. | • Moderate likelihood of pollution from soluble pollutants and sedimentation.<br>• Risk of pollution from spillage <2% annually.<br>• Partial loss in productivity of a fishery.<br>• Degradation of regionally important public water supply or loss of major commercial / industrial / agricultural supplies.<br>• Contribution to reduction in WFD classification.<br>• Partial loss or change to an aquifer.<br>• Potential medium risk of pollution to groundwater from routine runoff.<br>• Partial loss of the integrity of GWDTE.<br>• Damage to major structures through subsidence or similar effects or loss of minor structures. |

| Sensitivity of receptor | Definition of magnitude | Typical examples |
|---|---|---|
| | | • Increase in peak flood level (>50 mm). |
| **Minor Adverse** | Results in some measurable change in attribute's quality or vulnerability. | • Moderate likelihood of pollution from either soluble pollutants or sedimentation.<br>• Risk of pollution from spillage <1% annually.<br>• Minor effects on water supplies.<br>• Potential low risk of pollution to groundwater from routine runoff.<br>• Minor effects on an aquifer, GWDTEs, abstractions and structures.<br>• Increase in peak flood level (>10 mm). |
| **Negligible** | Results in effect on attribute, but of insufficient magnitude to affect the use or integrity. | • The proposed project is unlikely to affect the integrity of the water environment.<br>• No risk to water quality from soluble pollutants or sedimentation.<br>• Risk of pollution from spillage <0.5% annually.<br>• No measurable impact upon an aquifer and / or groundwater receptors.<br>• Negligible change to peak flood levels (< +/- 10 mm). |
| **Minor Beneficial** | Results in some beneficial effect on attribute or a reduced risk of negative effect occurring. | • Reduction in baseline pollution from either soluble pollutants or sedimentation.<br>• Reduction in existing spillage risk by 50% or more (when existing spillage risk is <1% annually).<br>• Reduction of groundwater hazards to existing structures.<br>• Reductions in waterlogging and groundwater flooding.<br>• Creation of flood storage and decrease in peak flood level (>10 mm). |
| **Moderate Beneficial** | Results in moderate improvement of attribute quality. | • Reduction in baseline pollution from both soluble pollutants and sedimentation.<br>• Reduction in existing spillage risk by 50% or more (when existing spillage risk is >1% annually).<br>• Contribution to improvement in WFD classification.<br>• Improvement in water body catchment abstraction management strategy classification. |

| Sensitivity of receptor | Definition of magnitude | Typical examples |
|---|---|---|
| | | • Support to significant improvements in damaged GWDTE.<br>• Creation of flood storage and decrease in peak flood level (>50 mm). |
| **Major Beneficial** | Results in major improvement of attribute quality. | • Removal of existing pollution from soluble pollutants and sedimentation.<br>• Improvement in WFD classification.<br>• Recharge of an aquifer.<br>• Creation of flood storage and decrease in peak flood level (>100 mm). |

## Determining the significance of effect

10.17. The combination of sensitivity of receptors and magnitude of impact is used to determine the significance of each effect by using the matrix in **Table 10.3**. This matrix is based on that provided in Table 3.8.1 of the DMRB LA 104[5]. Effects which are moderate or above are considered to be significant.

***Table 10.3:*** *Significance matrix*

| Sensitivity of receptor | Magnitude of impact | | | | |
|---|---|---|---|---|---|
| | **Major** | **Moderate** | **Minor** | **Negligible** | **No Change** |
| Very High | Very Large | Large | Moderate | Slight | Neutral |
| High | Large | Moderate | Slight | Slight | Neutral |
| Medium | Moderate | Moderate | Slight | Neutral | Neutral |
| Low | Slight | Slight | Neutral | Neutral | Neutral |

# Planning Policy Context

## National Planning Policy[2]

10.18. The NPPF states that planning should adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. The NPPF and PPG specify that a sequential, risk-based approach should be taken to the location of development to avoid where possible, flood risk to people and property. It states that the planning system should contribute to and enhance the natural environment, by preventing both new and existing development from contributing to or being put at unacceptable risk from or being adversely affected by unacceptable levels of water. The NPPF promotes the use of risk-based sequential tests, recognising that risk is a function of probability and consequence, in which new development is preferentially steered towards the areas at lowest probability of flooding.

[5] www.standardsforhighways.co.uk. (2020). *LA 104 - Environmental assessment and monitoring - DMRB*. [online] Available at: https://www.standardsforhighways.co.uk/dmrb/search/0f6e0b6a-d08e-4673-8691-cab564d4a60a

### The Water Environment (Water Framework Directive) (England and Wales) regulations 2017 6 and the Groundwater (Water Framework Directive) (England) Direction 2016 7

10.19. The overall objective of the WFD is to bring about the effective co-ordination of water environment policy and regulation across Europe. The main aims of the legislation are to ensure that all surface water and groundwater reaches 'good' status (in terms of ecological and chemical quality and water quantity, as appropriate), promote sustainable water use, reduce pollution, and contribute to the mitigation of flood and droughts.

### Land Drainage Act 1991[8]

10.20. Local Authorities and Internal Drainage Boards have additional duties and powers associated with the management of flood risk under the Land Drainage Act. As Land Drainage Authorities consent must be given for any permanent or temporary works that could affect the flow within an ordinary watercourse under their jurisdiction to ensure that local flood risk is not increased.

### The Water Resources Act 1991[9]

10.21. The Act governs the quality and quantity of water by outlining the functions of the Environment Agency (EA). The Act sets out offences relating to water and discharge consents. The EA has the power to bring criminal charges against people or companies responsible for crimes concerning water.

### The Water Act 2003 (as amended)[10]

10.22. This Act is an update to the Water Recourses Act 1991 and aims to provide a modern, efficient, and robust legislative framework to facilitate both sustainable water resources management and economic growth through the new provisions it contains.

### Flood and Water Management Act 2010[11]

10.23. The Flood and Water Management Act extended the role of the Lead Local Flood Authority (LLFA), in this area Manchester City Council (MCC), as set out in the Flood Risk Regulations to take responsibility for leading the co-ordination of local flood risk management in their area. In accordance with the Flood and Water Management Act, the EA is responsible for the management of risks associated with main rivers, the sea and reservoirs. LLFAs are

[6] Legislation.gov.uk. (2017). *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017*. [online] Available at: https://www.legislation.gov.uk/uksi/2017/407/contents/made

[7] Legislation.gov.uk. (2016). *The Groundwater (Water Framework Directive) (England) Direction 2016*. [online] GOV.UK. Available at:

[8] Legislation.gov.uk. (2011). *Land Drainage Act 1991*. [online] Available at: https://www.legislation.gov.uk/ukpga/1991/59/contents.

[9] Legislation.gov.uk. (2020). *Water Resources Act 1991*. [online] Available at:

[10] Legislation.gov.uk. (2022). *Water Act 2003*. [online] Available at: https://www.legislation.gov.uk/ukpga/2003/37/contents.

[11] Legislation.gov.uk. (2017). *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017*. [online] Available at:

https://www.legislation.gov.uk/uksi/2017/407/contents/made.

responsible for the management of risks associated with local sources of flooding such as ordinary watercourses, surface water and groundwater.

### Flood Risk Regulations 2009[12]

10.24. The Flood Risk Regulations provide a framework for managing flood risk over a 6-year cycle, which requires: Production of a Preliminary Flood Risk Assessment; Identification of potential significant risk, referred to as flood risk areas; Mapping of flood hazard and risk; and, Flood Risk Management Plans, setting out measures and actions to reduce the risk. The Regulations require that each of the four elements identified above be reviewed and updated where necessary, at least every six years.

### Environmental Permitting (England and Wales) Regulations 2016[13]

10.25. This is the key legislation for water pollution in the UK. Under the Environmental Permitting Regulations, it is an offence to cause or knowingly permit a water discharge activity, including the discharge of polluting materials to freshwater, coastal waters, relevant territorial waters, or groundwater, unless complying with an exemption or an environmental permit. An environmental permit is obtained from the EA.

### The Groundwater (England and Wales) Regulations 2009[14]

10.26. These Regulations implement in England and Wales Community legislation on pollution of groundwater. They provide rules for the granting by the EA of a permit under these Regulations, consent under Section 91(8) of the Water Resources Act 1991 and (with exceptions) an environmental permit under the Environmental Permitting (England and Wales) Regulations. In addition, the Regulations create an offence of discharge of a hazardous substance or non-hazardous pollutant without a permit.

### The Control of Pollution (Oil Storage) (England) Regulations 2001[15]

10.27. These Regulations require anyone in England who stores more than 200 litres of oil, to provide more secure containment facilities for tanks, drums, Intermediate Bulk Containers (IBCs) and mobile bowsers. This is to prevent oil escaping into the environment.

### The Environmental Damage (Prevention and Remediation) Regulations 2009[16]

10.28. These regulations oblige those who create environmental damage, whether by water pollution, adversely affecting protected species or SSSI, or by land pollution that causes risks to human health, to not only cease the damage, but also to implement a wide variety of remedial measures to restore affected areas.

[12] Legislation.gov.uk. (2022). *The Flood Risk Regulations 2009*. [online] Available at: https://www.legislation.gov.uk/uksi/2009/3042/contents/made
[13] Legislation.gov.uk. (2016). *The Environmental Permitting (England and Wales) Regulations 2016*. [online] Available at: v https://www.legislation.gov.uk/uksi/2016/1154/contents/made.
[14] Legislation.gov.uk. (2023). *The Groundwater (England and Wales) Regulations 2009*. [online] Available at: https://www.legislation.gov.uk/ukdsi/2009/9780111480816/contents [Accessed 24 Mar. 2023].
[15] Legislation.gov.uk. (2022). *The Control of Pollution (Oil Storage) (England) Regulations 2001*. [online] Available at: https://www.legislation.gov.uk/uksi/2001/2954/contents/made.

[16] Legislation.gov.uk. (2023). *The Environmental Damage (Prevention and Remediation) Regulations 2009*. [online] Available at: https://www.legislation.gov.uk/uksi/2009/153/contents/made [Accessed 24 Mar. 2023].

## Local Planning Policy

### Manchester's Local Development Framework, Core Strategy Development Plan Document (adopted 2012)[17]

#### Objective 6 Environment: Policy EN 14 Flood Risk

*" In line with the risk-based sequential approach contained within PPS25, development should be directed away from sites at the greatest risk of flooding, and towards sites with little or no risk of flooding; this should take account of all sources of flooding identified in the Manchester-Salford-Trafford Strategic Flood Risk Assessment (SFRA).*

*In addition to the requirements for site-specific Flood Risk Assessments (FRAs) set out in PPS25, an appropriate FRA will also be required for all development proposals, including changes of use, on sites greater than 0.5ha within Critical Drainage Areas (CDAs) and Canal Hazard Zones identified in the SFRA.*

*All new development should minimise surface water run-off, including through Sustainable Drainage Systems (SUDS) and the appropriate use of Green Infrastructure. Developers should have regard to the surface water run-off rates in the SFRA User Guide. In CDAs, evidence to justify the surface water run-off approach / rates will be required.*

*The City of Manchester contains many sections of rivers which are culverted or 'hidden'; where these are indicated in the SFRA beneath the proposed development site, further investigation will be required and the development proposal should take this into account; where feasible and appropriate development should seek to open up culverted / hidden rivers to reduce the associated flood risk and danger of collapse, taking advantage of opportunities to enhance biodiversity and Green Infrastructure." (p.197)*

#### Objective 6 Environment: Policy EN15 Biodiversity and Geological Conservation

*" The Council will seek to maintain or enhance sites of biodiversity and geological value throughout the City. Particular consideration will be given to:*

- *Sites with international or national designations for their biodiversity value. Manchester contains one Site of Special Scientific Interest (SSSI) (Cotteril Clough); there is a Special Area of Conservation (SAC) and an SSSI just over the border in Oldham (both on the Rochdale Canal within Oldham);*
- *Other sites of biodiversity value, including Sites of Biological Importance (SBIs) and Local Nature Reserves (LNRs); Manchester currently has 35 SBIs (including the Rochdale and Ashton Canals) and 7 LNRs; priority habitats found within Manchester, as listed in the Manchester Biodiversity Strategy, and included in the Greater Manchester Biodiversity Action Plan (GM BAP);*

[17] www.manchester.gov.uk. (2012). *Core Strategy | Core Strategy | Manchester City Council*. [online] Available at: https://www.manchester.gov.uk/info/200074/planning/3301/core_strategy.

- *Protected and priority species, as listed in the Manchester Biodiversity Strategy and included in the Greater Manchester Biodiversity Action Plan (GM BAP);*
- *Sites that are recognised for their geological importance;*
- *The Council's objective to protect and conserve the City's existing trees and woodlands and the aim for a net increase in trees across the City.*

*Developers will be expected to identify and implement reasonable opportunities to enhance, restore or create new biodiversity, either on-site or adjacent to the site, contributing to linkages between valuable or potentially valuable habitat areas where appropriate, with reference to:*

- *The Manchester Biodiversity Strategy, which provides further details of priority habitats within Manchester and opportunities for biodiversity enhancement including corridors such as the Mersey, Medlock and Irk river valleys, the canals and disused railway lines and areas of managed greenspace particularly in parks;*
- *The Green Infrastructure Framework for Greater Manchester, which encompasses an ecological framework that seeks to guide and inform habitat creation and repair, including identifying large 'biodiversity opportunity areas' including the Moston Brook Corridor and Nutsford Vale;*
- *The Open Space, Sport, and Recreation Study, which identifies areas where there is a deficit of natural and semi-natural greenspace, opportunities for green corridors and other linkages;*
- *Manchester's Climate Change Action Plan;*
- *The Strategic Flood Risk Assessment (SFRA) for Manchester;*
- *The Habitats Regulations Assessment (HRA) for Manchester, which considers Special Areas of Conservation (SACs), including the Rochdale Canal SAC just outside the district boundary;*
- *The River Basin Management Plan for the Northwest;*
- *The Manchester Tree Strategy.*

*Any adverse impacts on biodiversity will need to be justified against the wider benefits of the proposal, assessed against other LDF policies. Where adverse impacts are unavoidable, developers will be required to provide appropriate mitigation and/or compensation. Development should wherever possible seek to maintain, enhance, or restore existing geology." (p.200-201)*

## Objective 6 Environment: Policy EN 17 Water Quality

*" With reference to the Manchester-Salford-Trafford SFRA and other relevant documents:*

- *Development should avoid any adverse impact on water quality, including during the construction phase, and wherever possible should seek to enhance water quality, both chemical and ecological;*
- *Development should minimise surface water run-off from development and associated roads, and maximise the use of appropriate sustainable drainage systems, to minimise groundwater contamination, and to avoid pollutants reaching watercourses;*

- *Development close to a watercourse should also ensure that waste or litter cannot enter the watercourse from the site;*
- *Development should, where feasible and appropriate, seek to open up any culverted or hidden watercourse beneath the site to improve the ecological status of that watercourse.*

*The EU Water Framework Directive (WFD) requires that further deterioration in the ecological status of inland waters is prevented, and that all surface water bodies must reach at least 'good' ecological status or 'good' ecological potential (the latter recognises the constraints on achieving good ecological status in heavily urbanised areas like Manchester) by 2027 in the Northwest. The Environment Agency is responsible for its implementation, working with relevant partners including United Utilities and Local Authorities. The EA have identified significant water management issues in the Northwest including:*

- *Diffuse pollution from roads and urban areas;*
- *Pollution caused by discharges from industry;*
- *Pollution caused by discharges from sewerage systems;*
- *Physical modifications of rivers and other water bodies.*

*The continued growth and regeneration of Greater Manchester should not be allowed to exacerbate the water quality problems currently experienced, particularly pollution from surface water run-off, discharges from industry and discharges from sewerage systems. Water quality impacts on wildlife in and around water, public health, and the appearance and amenity of watercourses.*

*The main ways in which Local Authorities can influence water quality are by:*

- *Encouraging the use of sustainable drainage systems (SUDS) as a way to reduce water run-off;*
- *Ensuring that development adjacent to water resources, including the storage and disposal of waste, transport, commercial and residential (in the context of a growing population) is carefully controlled to prevent water pollution from wastewater, land contaminants, industrial and construction processes, and litter / fly tipping; the discharge of effluent or leachates may pose a threat to surface or underground water resources directly or indirectly through surrounding soils;*
- *Consulting and working together with all agencies concerned including United Utilities and the Environment Agency to reduce surface water run-off rates and remove surface water from public combined sewers whenever possible;*
- *Ensuring that the physical modification of water bodies including rivers does not cause deterioration in the ecological and chemical status of those water bodies, unless this is unavoidable and the benefits to human health, human safety and/or sustainable development over-ride this, such as may be the case for a flood defence/alleviation scheme.*

*The opening up and rehabilitation of existing degraded watercourse systems will help to ensure that the requirements of the Water Framework Directive are met by 2027, whilst also providing additional green infrastructure that contributes to flood risk alleviation, climate change adaptation, open space and biodiversity." (p.205-206)*

Spatial Objectives S06 Environment

*"Protect and enhance both the natural and built environment of the City and ensure the sustainable use of natural resources, in order to mitigate and adapt to climate change, support biodiversity and wildlife, improve air, water and land quality, recreational opportunities and provide networks of high quality green infrastructure, ensuring that the City is inclusive and attractive to residents, workers, investors and visitors.*

*The development of networks of green infrastructure across the City and City Region, together with protecting and enhancing townscape character and securing a high standard of design in all development proposals, will promote healthy, low-carbon lifestyles, contribute to a sense of wellbeing, and help to facilitate the sustainable and inclusive growth of the City." (p.30)*

## Site Specific Policies

10.29. The Red Bank site is part of the Strategic Regeneration Framework (SRF) for the Northern Gateway, prepared by MCC in 2019.

10.30. The geographic extent of the SRF is defined as:

*"The SRF area ("study area") covers approximately 155 hectares (ha) to the north of Manchester City Centre between Victoria Station, NOMA and the Northern Quarter in the south-west, and Queens Park and the intermediate ring road (Queens Road) to the north-east. The Northern Gateway is surrounded by the established neighbourhoods of Ancoats and New Islington, Miles Platting, Monsall, Cheetham Hill and the Strangeways commercial district, and is the single largest opportunity for residential-led growth and transformational redevelopment in Manchester." (p.1)*

*"Development will take account of environmental issues, including contamination, former mine workings, sunlight and orientation, prevailing wind direction, noise, air quality and topography. These factors will also influence issues, such as surface water run-off, public realm, landscape, heritage, views, and routes. Creative solutions to building form will be sought, for example, building form and siting should respond positively to address issues such as noise and air quality." (p.51)*

*"Providing and improving green and blue infrastructure is a critical component of any sustainable regeneration scheme and the Northern Gateway has significant potential to do this. The regeneration of the Northern Gateway provides a significant opportunity to enhance the environmental quality of the area and reinvigorate the Irk Valley in accordance with the Manchester Green and Blue Infrastructure Strategy (2015)." (p.53)*

*"A successful new Green-blue Infrastructure network will be achieved by:*

- *Harnessing the natural assets of the River Irk and the Irk Valley through improvements in ecology and the creation of a restored green corridor that provides river linkages from the city centre through to Queen's Park, Heaton Park and Moston Brook. Regard should be had to the objectives of the MCC Green Blue Infrastructure Strategy, Policy EN7 of the Core Strategy and the wider Northwest River Basin Management Plan. River edges will be naturalised where possible to improve habitat value, eradicate invasive species and provide potential for new planting to establish and help improve water flow, attenuation, and water quality. (p.56)*

- *Creating functional landscapes throughout the Northern Gateway to support flood alleviation and promote SuDS where possible. Existing low-lying areas should be promoted as potential wetland parks that can contribute to a site-wide flood and drainage strategy, as well as providing distinctive new public spaces. These spaces offer the opportunity for increased flood storage, whilst also reducing the volume and speed of the water flow that will help the city better mitigate its flood risk. Improvements should be delivered to both the in-stream habitat and adjacent bankside habitats, with treatments linked to adjacent green spaces and parkland. Within the residential streets, parks and private plots, development should explore options for localised SuDS through treatments such as rain gardens and permeable paving solutions." (p.57)*

*"The City River Park will deliver a new corridor for recreation and leisure, contribute to improving ground conditions, increase flood resilience, and enhance the ecology and biodiversity of the Northern Gateway, injecting new life into the area and remediating areas of contaminated land. The existing green assets of the low-lying river basin, steep wooded embankments, and a narrow watercourse along the River Irk will be utilised and reinvented to provide a range of attractive, green, safe, and enjoyable recreational areas, which together will become a new 'City River Park'. Existing and proposed green spaces should be linked together to create a comprehensive green space network, thereby improving access to the river edge, and creating a new River Walk along the full length of the site, that links the city centre through to upper sections of the Irk Valley and Heaton Park." (p.54)*

10.31. The SRF is a material consideration in the determination of all planning applications relevant to the Study Area. It does not form part of the Development Plan; it has been prepared to be consistent with the policies of the Council's adopted Development Plan. The principles contained within the SRF are intended to guide new development towards achieving the objectives and vision of this strategic plan.

## Other Relevant Policy, Standards and Guidance

### Manchester Residential Quality Guidance (2016)[18]

10.32. The Manchester Residential Quality Guidance was developed by MCC to provide a baseline minimum requirements and mandatory standards that all new residential proposals will be required to satisfy or exceed in order to be considered sustainable development, and to deliver high-quality housing. The 2019 SRF states that developers bringing forward sites for residential development in the Northern Gateway will be required to accord with the guidance through the planning and development process and demonstrate that the very highest standards of design are being achieved as part of new developments.

[18] Council, M.C. (2017). *Manchester City Council download - Residential Quality Guide | Planning and regeneration | Planning*. [online] www.manchester.gov.uk. Available at: https://www.manchester.gov.uk/downloads/download/6682/residential_quality_guide

### Guide to Development in Manchester SPD (2007)[19]

10.33. The Guide to Development in Manchester is a hybrid Supplementary Planning Guidance / Supplementary Planning Documents (SPD) that underpins the 2012 adopted Core Strategy, although it was originally produced to inform the Manchester Unitary Development Plan (UPD).

10.34. Part One of the document has SPD status. The fourth section of part one of the document provides additional guidance on the environmental standards of Manchester's development, relating to the water environment. This section identifies key characteristics and highlighting important development issues and priorities within those different areas.

10.35. Underpinning Environmental standards, specific to the water environment are as followed:

- *"UDP Part 1 Policy E1.3 states that the Council will promote measures to decrease the level of pollution in the City's watercourses, and groundwater sources. UDP Development Control Policy DC21.1 refers to development not normally being permitted where it would be at risk from flooding or increase the risk of flooding elsewhere. The environmental standards statement should therefore show how water is to be managed in the most environmentally effective way.*
- New developments and the conversion of existing properties can both result in the removal of areas of soakaway, which can result in high volumes of surface water runoff, burdening the local sewer system and increasing pollution and the risk of flooding. Sustainable drainage systems (SUDS) should be included, and the amount of hard surfacing minimised, for example by providing on site capture and soakaway of all rainwater on site. Examples of SUDS options would include, rainwater harvesting systems, pervious surfaces, green New developments, and the conversion of existing properties can both result in the removal of areas of soakaway, which can result in high volumes of surface water runoff, burdening the local sewer system and increasing pollution and the risk of flooding. SUDS should be included, and the amount of hard surfacing minimised, for example by providing on site capture and soakaway of all rainwater on site. Examples of SUDS options would include, rainwater harvesting systems, pervious surfaces, green *roofs, filter drains, filter strips, swales, infiltration devices, bio-retention areas, basins, ponds and wetland. The use of gardens as a surface water management resource should not be underestimated*.
- *Localised flooding incidents are becoming increasingly frequent and problematic as we see the effects of climate change taking hold across the UK. Developers will be expected to prepare a Flood Risk Assessment for proposals in an area of identified flood risk.*
- *New developments should seek to use water efficiently, through specification of water efficient devices and through the use of rainwater harvesting and grey water recycling." (p.21-22)*

[19] Council, M.C. (2007). *Manchester City Council download - Guide to Development in Manchester - Supplementary Planning Document and Planning Guidance (SPD) | Planning and regeneration | Planning*. [online] www.manchester.gov.uk. Available at: https://www.manchester.gov.uk/downloads/download/644/guide_to_development_in_manchester_-_supplementary_planning_document_and_planning_guidance_spd.

- *"The waterways are a major asset for the City and provide significant opportunities to raise perceptions and economic values through links to regeneration, the environment and transportation. This is recognised in UDP Part 1 Policies E1.3 which seeks to promote measures to reduce pollution in the City's watercourses and E3.4 which sees the waterways as an important part of a recreational network where measures will be taken to improve access and protect and enhance wildlife. Developers working in close proximity to the City's waterways should demonstrate, in line with the above mentioned UDP Policies and Manchester's Waterways Strategy, how public access, environment and management will be enhanced. Developers should landscape to ensure that site run-off and blown waste does not enter watercourses, even during extreme weather conditions." (p.23-24)*

### Places for Everyone, Joint Development Plan[20]

10.36. The emerging Places for Everyone Plan is a joint Development Plan Document of nine of the ten Greater Manchester districts, which sets out the approach to housing and employment land across Greater Manchester for the next 20 years.

10.37. Policy JP-P 1: Sustainable Places is the overarching strategic policy that defines the attributes that all development, wherever appropriate, should be consistent with, including (inter alia):

*"1. Distinctive, with a clear identity that:*

*A. Responds to the natural environment, landscape features, historic environment and local history and culture;*

*B. Enables a clear understanding of how the place has developed; and*

*C. Respects and acknowledges the character and identify of the locality in terms of design, siting, size, scale, and materials used…*

*2. Visually stimulating, creating interesting and imaginative environments which raise the human spirit through the use of green space, public art, and quality design…*

*6. Durable, being built to last and using robust materials that reflect local character, weather well and are easily maintained…*

*12. Legible, being easy to understand and navigate, with the protection and enhancement of key views and new development well-integrated into the place…*

*16. Incorporating high quality and well managed green infrastructure and quality public realm…" (p.175)*

[20] Authority, G.M.C. (n.d.). *Places For Everyone*. [online] Greater Manchester Combined Authority. Available at: https://www.greatermanchester-ca.gov.uk/what-we-do/planning-and-housing/places-for-everyone/.

# Methodology

## Study Area

10.38. As outlined in Chapters 2 and 3 of this ES, the Victoria North initiative (formerly referred to as the 'Northern Gateway') covers approximately 155 hectares (ha) of land to the north of Manchester City Centre between Victoria Station, NOMA and the Northern Quarter in the south-west, and Queens Park and the intermediate ring road (Queens Road) to the north-east. The initiative proposes residential-led redevelopment through the construction of seven 'neighbourhoods', identified as Red Bank, New Town, New Cross, South Collyhurst, Vauxhall Garden, Collyhurst Village and Smedley Dip and Eggington Street.

10.39. Separate planning applications have been created for each neighbourhood and this ES Chapter focuses on effects to drainage and flood risk exclusively to Red Bank (Outline planning - Application 4) and New Town (full application - Application 5).

10.40. The Proposed Development comprises of three development areas, which in turn are divided into a number of Development Plots.

10.41. Red Bank (Outline planning - Application 4) comprises:

- **Red Bank Plateau**: this area is north of Dantzic Street and includes Development Plots RB01, RB02, RB03, RB04, RB05A, RB05B, RB05C and RB12B;
- **Red Bank Viaduct**: this area surrounds the Red Bank Viaduct, west of Dantzic Street, and includes Development Plots RB06, RB07 and RB10.; and
- **Travis Island**: this area is south of the River Irk and includes Development Plots RB16, RB17.

10.42. The Red Bank Neighbourhood is located in the Lower Irk Valley. The River Irk runs through the Proposed Development, south of plots RB01-RB05A, B, C and flows in a north-east to south-west direction. At present, the area is occupied by commercial and industrial units to the south-west and an area of dense woodland to the north-east.

10.43. The New Town Neighbourhood (Full application - Application 5) comprises land south of the River Irk and includes Development Plots NT02, NT03 and NT04.

10.44. The New Town Neighbourhood is also located in the Lower Irk Valley, to the south of the aforementioned Red Bank Neighbourhood, with the River Irk running north of the application boundary. At present the area is occupied by industrial units to the west and semi vegetated disused land to the east.

10.45. The Study Area has been defined as the Proposed Development and a buffer of 0.5 km for the surface water assessment and a buffer of 1 km for the groundwater assessment and assessment of impacts to flood risk.

10.46. The Study Area also includes any surface or groundwater water bodies or water dependent conservation sites (surface water and groundwater) located up to 5 km downstream of the Proposed Development which are directly hydrologically connected to the Proposed Development.

10.47. For Application 4, the Study Area for the Water Framework Directive (WFD) Screening and Scoping Note is any WFD waterbody within 1 km of the Proposed Development. The Study Area for assessment of flood risk is all potential receptors (land and property) that could be at risk of increased flood risk as a result of the Proposed Development.

10.48. For Application 5, the Study Area for the WFDa assessment is any WFD waterbody within 1 km of the Proposed Development. The Study Area for assessment of flood risk is all potential receptors (land and property) that could be at risk of increased flood risk as a result of the Proposed Development.

10.49. The Study Area has been determined based on professional judgement and experience. The Study Area has been presented to the EA in the WFD Screening and Scoping outcomes.

## Survey and Data Sources

10.50. The baseline surface water and flood risk conditions for the Study Area have been established through a desktop study of publicly available data, collated from the following sources:

- Environment Agency's online Flood Map for Planning[21];
- Environment Agency's online Flood Risk from Surface Water map[22];
- Environment Agency's online Flood Risk from Reservoirs map[23];
- Environment Agency's Recorded Flood Outlines map[24];
- Environment Agency's online Catchment Data Explorer[25];
- Environment Agency's Northwest River Basin Management Plan [26];
- Ordnance Survey Mapping [27];
- Defra 'Magic Map' online GIS portal[28];

[21] check-long-term-flood-risk.service.gov.uk. (n.d.). *Learn more about flood risk*. [online] Available at: https://check-long-term-flood-risk.service.gov.uk/map.

[22] Environment Agency (2023). Recorded Flood Outlines. [online] www.data.gov.uk. Available at: https://www.data.gov.uk/dataset/16e32c53-35a6-4d54-a111-ca09031eaaaf/recorded-flood-outlines [Accessed 24 Mar. 2023]

[23] check-long-term-flood-risk.service.gov.uk. (n.d.). *Learn more about flood risk*. [online] Available at: https://check-long-term-flood-risk.service.gov.uk/map.

[24] Environment Agency (2023). *Recorded Flood Outlines*. [online] www.data.gov.uk. Available at: https://www.data.gov.uk/dataset/16e32c53-35a6-4d54-a111-ca09031eaaaf/recorded-flood-outlines [Accessed 24 Mar. 2023]

[25] environment.data.gov.uk. (n.d.). *Irwell / Manchester Ship Canal (Irk to confluence with Upper Mersey) | Catchment Data Explorer | Catchment Data Explorer*. [online] Available at: https://environment.data.gov.uk/catchment-planning/WaterBody/GB112069061452 [Accessed 24 Mar. 2023].

[26] GOV.UK. (2016). *Northwest river basin district river basin management plan*. [online] Available at: https://www.gov.uk/government/publications/north-west-river-basin-district-river-basin-management-plan [Accessed 24 Mar. 2023].

[27] explore.osmaps.com. (n.d.). *Detailed maps & routes to explore across the UK | OS Maps*. [online] Available at: https://explore.osmaps.com/?lat=51.776100&lon=-1.894300&zoom=7.0000&overlays=&style=Standard&type=2d&placesCategory=.

[28] DEFRA (2019). *MAGIC*. [online] Defra.gov.uk. Available at: https://magic.defra.gov.uk/.

- British Geological Survey (BGS) Geology of Britain Viewer[29];
- BGS GeoIndex online database[30];
- National Library of Scotland, historic OS maps[31];
- National River Flow Archive[32];
- Manchester, Salford, and Trafford Strategic Flood Risk Assessment[33]; and
- Manchester and Salford Council Planning Portal[34].

10.51. A Site walkover was completed in September 2022 within the Proposed Development's Application Boundary for Applications 4 and 5. The walkover involved walking upstream on the left bank of the River Irk. This gave a general overview of the Proposed Development's setting in the Lower Irk valley, as well as the condition of the River Irk.

10.52. Extended Phase 1 Habitat Surveys and UKHab Condition Assessment were undertaken initially by TEP on the 22nd and 29th March 2021 and updated on 25th May 2022. Aquatic ecology surveys were undertaken by ARUP and RSK in 2021 which included detailed fish surveys. Further information on these methods can be found in the Ecology chapter of the ES (refer to **Chapter 7: Ecology and Nature Conservation**).

10.53. Ground investigations (GI) were undertaken by Ove Arup & Partners Ltd (Arup) between 2019 and 2022 for the Red Bank (Outline – Application 4) area, which includes: plots RB01 – RB05; RB12B; part of plots RB06 and RB07; but does not include RB10 or plots RB16 and RB17 (i.e., Travis Island). The final GI and Interpretative Report was published in November 202235, which summarises all three GIs undertaken between 2019 and 2022. The findings of this report have been used to characterise the hydrogeological setting and baseline groundwater conditions.

10.54. A Controlled Waters Detailed Quantitative Risk Assessment Report was completed by Arup in November 202236, which includes plots RB01 – RB05 and RB12B, part of plots RB06 and RB07 but does not include RB10 or plots RB16 and RB17 (i.e., Travis Island). This report has been used to establish the baseline groundwater conditions.

10.55. A Phase 2 Site Investigation Report for Plots NT02, NT03 and NT04 Dantzic Street was completed by RoC Consulting in October 202237. This report has been used to establish the groundwater conditions for the full Application 5 Study Area based on intrusive site investigations. It is understood, at the time of writing this chapter, that the Phase 2 Site Investigation Report is currently being used to inform supplementary investigation works at Plot NT02 to

[29] British Geological Survey. (2023). *BGS Geology Viewer*. [online] Available at: https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/.

[30] British Geological Survey. (2023). *GeoIndex (onshore)*. [online] Available at: https://www.bgs.ac.uk/map-viewers/geoindex-onshore
[31] maps.nls.uk. (n.d.). *Ordnance Survey Maps - National Library of Scotland*. [online] Available at: https://maps.nls.uk/os/.

[32] Centre for Ecology & Hydrology > National River Flow Archive (2019). *National River Flow Archive*. [online] National River Flow Archive. Available at: https://nrfa.ceh.ac.uk/.
[33] www.manchester.gov.uk. (2011). *Manchester, Salford, and Trafford Strategic Flood Risk Assessment | Strategic Flood Risk Assessment | Manchester City Council*. [online] Available at: https://www.manchester.gov.uk/info/500207/planning_and_regeneration/4700/strategic_flood_risk_assessment [Accessed 24 Mar. 2023].
[34] Council, S.C. (2014). *Salford City Council - Planning applications*. [online] www.data.gov.uk. Available at: https://www.data.gov.uk/dataset/61f7eda9-b456-47ab-bba8-b27217dd15a7/salford-city-council-planning-applications [Accessed 24 Mar. 2023].

[35] Arup (2022). Victoria North Infrastructure Works: Ground Investigation Interpretative Report.
[36] Arup (2022) Victoria North HIF Infrastructure Works: Controlled Waters Detailed Quantitative Risk Assessment Report.
[37] RoC Consultants (2022) Phase 2 Site Investigation: Plots NT02, NT03 & NT04 Dantzic Street

delineate identified contamination and to identify whether a Detailed Quantitative Risk Assessment will be required.

### Demolition and Construction Phase

10.56. The assessment of potential effects of the Proposed Development to the quality of surface water features that may arise during the demolition and construction phase is a qualitative assessment. This considers risks to the chemical and physico-chemical quality of surface water receptors associated with pollutants typically encountered during demolition and construction. It also considers risks to hydromorphological quality associated with changes to flow dynamics and changes to sediment load, transport, deposition and erosion and groundwater quality and quantity risks with regard to changes in levels, flow, and quality as a result of demolition and construction activities. The risks to groundwater quality from contamination has been further assessed in Chapter 9: Ground Conditions. The assessment criteria matrix used is presented in **Table 10.1 to 10.3** above.

### Operational Phase

10.57. The assessment of potential effects of the Proposed Development to the water environment stemming from the operational phase is a qualitative assessment. This considers risks to channel morphology, flooding, and water quality as a result of new structures and activities implemented within the operational phase, and risks to groundwater quantity and quality (i.e., changes to groundwater levels and flow and quality) as a result of the proposed permanent below-ground structures. The assessment criteria matrix used is presented in **Table 10.1 to 10.3** above.

## Identification of Sensitive Receptors

10.58. The significance level attributed to each effect has been assessed based on the sensitivity of the affected receptor(s) and the magnitude of impact (degree of change) arising from the Proposed Development. The sensitivity of the affected receptor is assessed on a scale of Very High, High, Medium, and Low, and the magnitude of impact is assessed on a scale of Major Adverse, Moderate Adverse, Minor Adverse, Negligible, Minor Beneficial, Moderate Beneficial, and Major Beneficial. The significance of potential effects is described as Very Large, Large, Moderate, Slight and Neutral. Any effect which is Moderate or above (both adverse and beneficial) is considered to be significant. All other effects are considered to not be significant.

10.59. The sensitive receptors presented in **Table 10.4** have been assessed for the demolition and construction and operational phases.

***Table 10.4:*** *Identification of receptors and assessment of sensitivity of receptor*

| Potential receptor | Sensitivity of receptor | Justification |
|---|---|---|
| River Irk | High | Monitored WFD water body and Q95 is 0.408 $m^3/s$. |
| River Irwell | Very High | Monitored WFD water body and Q95 is 5 $m^3/s$. |
| Glacial Till and Alluvium superficial Secondary A and undifferentiated aquifers | Low | Low productivity aquifers with limited or local potential. Alluvium is not shown on the published geological map but has been recorded during the GI. Alluvium was found with limited areal extent and where present, it is likely to be in hydraulic connection with the River Irk. GI groundwater monitoring investigations suggest that groundwater present within the Glacial Till is likely discontinuous with the underlying bedrock aquifers. |
| Manchester Marls Formation Secondary B Bedrock Aquifer | Medium | Low permeability mudstones with Secondary B aquifer designation. Minor aquifer with lower permeability strata that may store and yield limited amounts of groundwater. Forms part of the Manchester and East Cheshire Permo-Triassic Sandstone Aquifer WFD Water Body. |
| Chester Formation and Collyhurst Sandstone Formation Principal Bedrock Aquifers | High | Principal aquifers targeted by local licensed abstractions and in hydraulic connection with the River Irk. Aquifers form part of the Manchester and East Cheshire Permo-Triassic Sandstone Aquifer WFD Water Body. |
| Groundwater licensed abstractions and historic local boreholes | High | Local groundwater abstractions that target the Permo-Triassic sandstone aquifers may be impacted by the Proposed Development through mobilisation of contaminants to the source of supply and / or dewatering during the demolition and construction phase and potential reduction of flow to the source during the operational phase. Within a combined 1 km radius for the Application 4 and Application 5 Study Areas, there are three licensed groundwater abstractions and 33 historic boreholes targeting the sandstone aquifers. There are no Source Protection Zones (SPZs) within the Study Area. |
| Water utilities infrastructure | High | Locally significant Infrastructure. |
| Nitrate Vulnerable Zone | Very High | Site designated as area of special protection under UK legislation. |
| Less vulnerable development | Medium | Less vulnerable development according to the flood risk vulnerability classification. Proposed Development to contain the following: |

| Potential receptor | Sensitivity of receptor | Justification |
|---|---|---|
| | | • Retail (food and non-food) (Class E(a));<br>• Eating and drinking establishments (Class E(b));<br>• Financial services (Class E C);<br>• Professional services (E C II);<br>• Commercial, business or services (Class E C III); and<br>• Indoor sport, recreation, and fitness (Class E d). |
| More vulnerable development | High | More vulnerable development according to the flood risk vulnerability classification. Proposed Development to contain the following:<br>• Residential dwellings (Class C3); and<br>• 'Swing plot' Primary School use (Class F1(a)) or Residential dwellings (Class C3). |
| Construction workers | Very High | Human life. |

## Assumptions and Limitations

10.60. To ensure transparency within the EIA process, the following limitations and assumptions have been identified for both Application 4 and 5:

- The assessment assumes embedded mitigation will be undertaken (i.e., mitigation required to prevent adverse effects that is already embedded in the Proposed Development and the development process);
- This assessment has relied upon the accuracy and level of detail of the documented data sources reviewed as part of the desktop assessment and walkover site visits. The assessment has been informed by information sourced from statutory authorities including the EA and utility providers and as such to some extent is dependent on the accuracy of this information; and
- This environmental assessment is based on the current layout design as shown on the planning application drawings, proposed surface water drainage system and Flood Risk Assessment. As there are two planning applications, one in outline (Application 4) and one in full (Application 5) the outline element much of the Proposed Development is a set of development parameters. If there are any changes to these elements of the design further modelling or assessment may be required.

## Consultation

10.61. **Table 10.5** lists the statutory and non-statutory consultation that has been undertaken to date in relation to both Application 4 (outline planning) and Application 5 (Full planning); please note that responses have not been received from all consultees.

10.62. For all consultation responses with regards to flood risk, refer to the FRA (**Appendix 10.1**) for comments from the LLFA and EA.

10.63. For all consultation responses with regards to drainage, refer to the Drainage Strategy (**Appendix 10.1**).

***Table 10.5**: Consultation*

| Consultee | Application | Date and Time | Comments | Action |
|---|---|---|---|---|
| **EA** | Outline / Full | 16/02/2023 | **Meeting:** WFD Screening and Scoping presentation delivered to the EA. | Updates made by WSP to WFD Screening and Scoping presentation. Await response / approval from the EA. |
| **EA** | Outline / Full | 22/02/2023 | **Email:** WFD Screening and Scoping updates sent to the EA regarding updated presentation, based on the actions after meeting (16/02/2023). | Await on approval / response from the EA. WSP awaiting EA to send mitigation measures for WFD water bodies. |
| **EA** | Outline / Full | 01/03/2023 | **Email:** Red Bank flood outlines for WFD sent to establish definition of 'infrastructure within the floodplain'. | Response received from EA. |
| **EA** | Outline / Full | 03/03/2023 | **Email:** Comments provided by the EA regarding flood outline as well as mitigation measures for WFD water bodies provided. | All queries above approved by the EA. WSP to write a WFD Screening and Scoping note for Application 4 and a full WFD assessment for Application 5. |
| **EA** | Outline / Full | 9/08/2022 | **Email:** FOI Data request for:<br>• Watercourse structures;<br>• Previous flooding records;<br>• Groundwater baseline information;<br>• Surface water and groundwater abstractions / discharge; and<br>• Mitigation and restoration methods for WFD waterbodies. | Data requested and received. |
| **EA** | Outline / Full | 17/08/2023 | **Email:** Information requested received. | Information used for ES chapter and WFD. |

| Consultee | Application | Date and Time | Comments | Action |
|---|---|---|---|---|
| **MCC** | Outline / Full | 16/03/2023 | **Email:** Scoping request for Red Bank Neighbourhood. | Comments provided by MCC on EIA Scoping Report. Comments considered in final EIA. |
| **MCC** | Outline / Full | 01/02/2023 | **Email:** Requesting information for groundwater private abstraction. Reference number: FOI9123. | Information not provided. Therefore, private abstraction has not been included as a sensitive receptor, but overall consideration of aquifer receptor covers protection of potentially existing or future supplies. |

# Red Bank (Outline Application 4)

## Baseline Conditions (Application 4)

10.64. Baseline information for both the surface water and groundwater environment is presented in the following sections. The baseline conditions relating to flood risk are presented in the accompanying FRA (**Appendix 10.1**).

### Surface Water Features

#### Water bodies within the Proposed Development

10.65. The River Irk is a heavily modified watercourse and is the only main river that flows through the Site. The River Irk is a partially confined watercourse and while sinuous in form it has in part been straightened as it passes through the Proposed Development. Brick walls are present on either side of the riverbank throughout the Site. As the riverbank is mostly artificial, vegetation is only present in the overgrowth of brick walls. Several features have been identified along the watercourse, including a weir and footbridge, both upstream of the Site.

10.66. Catchment hydrology is reflective of an urbanised lower catchment and moorland upper catchment. Irk at Collyhurst Weir (69043) is gauged above QMED (the mean annual maxima flood) and flows in this range are consistent with those at Irk at Scotland Weir. The median low flow for the catchment is estimated at 1.948 m3/s with Q95 (is defined as the flow equalled or exceeded for 95% of the flow record and is a low flow parameter) estimated to be 0.916 m3/s[38]. Annual average rainfall for 1941-1970 and 1961-1990 is 1049 mm and 1026 mm respectively38.

10.67. This watercourse is monitored under the WFD. The Proposed Development interacts with the monitored 'Irk' (Wince to Irwell; GB112069061131) water body, which lies within the Rock Irk Medlock Operational Catchment and the Irwell Management Catchment[39]. Within Cycle 3 (2019) (Cycle 3 defined as the period in which boundaries and baseline classifications were undertaken for WFD status), this water body had a 'Moderate' ecological status and a 'Fail' chemical status. The River Irk failed on chemical status due to pollution from Mercury and its compounds and priority hazardous compounds including Perfluorooctane sulphonate (PFOS), Polybrominated diphenyl ethers (PBDE) and Cypermethrin. Review of OS mapping shows that there are no ordinary watercourses that flow through the Proposed Development31. The criteria constraining ecological status to 'Moderate' is reported to be attributable to invertebrates and elevated phosphate levels under the physio-chemical quality elements. The water body is targeted to achieve 'Good' ecological status by 2027 and 'Good' chemical status by 2063.

[38] National River Flow Archive. (2023). *https://nrfa.ceh.ac.uk/data/station/info/69043*. [online] Available at: https://nrfa.ceh.ac.uk/data/station/info/69043 [Accessed 27 Mar. 2023].
[39] environment.data.gov.uk. (n.d.). *Irk (Wince to Irwell) | Catchment Data Explorer | Catchment Data Explorer*. [online] Available at: https://environment.data.gov.uk/catchment-planning/WaterBody/GB112069061131 [Accessed 24 Mar. 2023].

### Water bodies within the Study Area

10.68. There are other main rivers and ordinary watercourses within the Study Area, but outside of the Application Boundary.

10.69. The River Irwell is a main river located approximately 520 m downstream of the Proposed Development. The River Irk connects to the Irwell, immediately downstream of the culverted reach under Manchester Victoria Station (0.5 km downstream from the Proposed Development). Irwell at Adelphi Weir (69002) gauging station is 2 km upstream from the confluence between the River Irk and River Irwell. The median low flow for the catchment is estimated to be 17.658 m3/s with Q95 estimated to be 5 m3/s.

10.70. Near the Proposed Development, the River Irwell is split into two WFD monitored waterbodies: Irwell (Croal to Irk; GB112069061451) located upstream of the confluence with the River Irk and the Irwell / Manchester Ship Canal (Irk to confluence with Upper Mersey; GB112069061452) located downstream of the confluence with the River Irk. Both are located within the Irwell Management Catchment25. The Irwell (Croal to Irk) WFD surface water body is achieving 'Moderate' ecological status and 'Fail' chemical status in 2019. The Irwell / Manchester Ship Canal (Irk to confluence with Upper Mersey) WFD surface water body is achieving 'Moderate' ecological status and 'Fail' chemical status in 201925.

10.71. Moss Brook is an ordinary watercourse located approximately 340 m upstream of the Proposed Development. Adjacent to Collyhurst Road, Moss Brook discharges into the River Irk through a culvert. Historic maps reveal that the culverted section of the channel has remained the same since 1885 (National Library of Scotland, 1885-1900)31. Moss Brook is not monitored under WFD and has a catchment of approximately 0.88 km2.

10.72. Rochdale Canal (Rochdale Canal, Western Section Water Body; GB71210517) is a monitored WFD water body and its confluence with the River Irwell is located approximately 1 km downstream of the Proposed Development40. It lies within the Northwest Artificial Water Body (AWB) Management Catchment41. The Canal itself is not hydrologically connected to the River Irk.

10.73. There are no protected areas or ponds located within the Study Area.

## Protected Areas

10.74. No Source Protection Zones or Drinking Water Protected Areas are located within the Study Area42.

[40] environment.data.gov.uk. (2023). *Rochdale Canal, western section | Catchment Data Explorer | Catchment Data Explorer*. [online] Available at: https://environment.data.gov.uk/catchment-planning/WaterBody/GB71210517 [Accessed 27 Mar. 2023].
[41] environment.data.gov.uk. (2023). *Northwest AWB Management Catchment | Catchment Data Explorer*. [online] Available at: https://environment.data.gov.uk/catchment-planning/ManagementCatchment/2002 [Accessed 27 Mar. 2023].

10.75. Three protected areas have been identified within 5 km of the Proposed Development: one SSSI; one SAC; and one NVZ. **Table 10.6** lists protected areas within a 5 km buffer of the Proposed Development [42].

***Table 10.6:*** *Identification of Protected Areas within 5 km of the Proposed Development*

| Protected areas | Designation | Distance from Proposed Development |
|---|---|---|
| Rochdale Canal | Site of Special Scientific Interest | 5 km of the Proposed Development |
| Rochdale Canal | Special Area of Conservation | 4.3 km north-east of the Proposed Development |
| Nitrate vulnerable Zone | Nitrate Vulnerable Zone | Directly lies within the Proposed Development |

## Surface Water Abstraction

10.76. A summary of surface water abstraction points within the Proposed Development and any within 5 km of the Proposed Development which are hydrologically connected are presented in **Table 10.7**.

***Table 10.7:*** *Surface water abstraction licences within 5 km of the Proposed Development*

| Abstraction type | Northing | Easting | Use | Distance from Proposed Development |
|---|---|---|---|---|
| Surface water abstraction | 384100 | 399700 | Industrial and commercial use | 1.5 km east of the Proposed Development |
| Surface water abstraction | 385000 | 400100 | Industrial and commercial use | 1.75 km upstream of the Proposed Development and on the River Irk |

## Surface Water Discharge

10.77. Several storm tank discharge points and combined sewer overflows (CSOs) have been identified within close proximity to the Proposed Development. **Table 10.8** highlights the discharge type and the proximity to the Proposed Development.

[42] Magic Map Application (defra.gov.uk)

***Table 10.8:*** *Surface water discharge locations within 1 km of the Proposed Development*

| Discharge Type | Northing | Easting | Distance from Proposed Development |
|---|---|---|---|
| Storm Tank / CSO on sewerage network (Water company) | 399220 | 384210 | Approximately 6 m downstream of the Proposed Development on the River Irk |
| Storm Tank / CSO on sewerage network (Water company) | 399170 | 384120 | 113 m downstream of the Proposed Development on the River Irk |
| Storm Tank / CSO on sewerage network (Water company) | 400020 | 385330 | 500 m upstream of the Proposed Development, adjacent to the River Irk (near Fitz George Street) |
| Storm Tank / CSO on sewerage network (Water company) | 400350 | 385240 | 210 m upstream of the Proposed Development, on the River Irk |
| Storm Tank / CSO on sewerage network (Water company) | 399630 | 384860 | Within the Proposed Development on the River Irk, opposite RB05b |
| Storm Tank / CSO on sewerage network (Water company) | 399540 | 384600 | Within the Proposed Development on the River Irk, in front of RB16-17 |
| Storm Tank / CSO on sewerage network (Water company) | 399060 | 384140 | 200 m downstream of the Proposed Development, on the River Irk |
| Storm Tank / CSO on sewerage network (Water company) | 399240 | 383570 | 650 m downstream of the Proposed Development. Located at the confluence of the River Irwell and River Irk |
| Storm Tank / CSO on sewerage network (Water company) | 399400 | 384490 | Within the Proposed Development on the River Irk, in between plots RB06-RB16 |
| Storm Tank / CSO on sewerage network (Water company) | 399560 | 384650 | Within the Proposed Development on the River Irk, in front of RB16-17 |

## Surface Water Quality

10.78. During the site walkover it was noted that the River Irk channel had a high turbidity, suggesting a substantial number of pollutants within the river. Litter and debris were also noted within the channel and alongside the channel banks.

10.79. A fish habitat survey was undertaken by Arup in May 2021 and a detailed fish survey was undertaken by RSK in September 2021 to establish baseline conditions for fish populations along the River Irk. In situ probe readings at both sites revealed high concentrations of dissolved oxygen (average of 8.94 mg/L), reasonably low conductivity (average of 208.7 us/cm) and pH (average of 7.75). For further information refer to Chapter 7: Ecology and Nature Conservation.

10.80. During the habitat survey Arup surveyors noted sewage litter (e.g., wet wipes) at both of the survey locations which is indicative of raw untreated sewage discharge, that is likely to be attributed to CSO discharge or a storm water discharge from a wastewater treatment works (WWTW).

10.81. Based on the evidence observed within the site walkover, habitat survey, and the current water body status, it is expected that water quality within the study reach is (due to periodic influxes of raw untreated sewage and other impacts e.g., road runoff) likely to contribute to poor water quality.

10.82. In 2019 (Cycle 3), the chemical status of the River Irk (Wince to Irwell; GB112069061131) water body was classified as 'Fail', due to the presence of three priority hazardous substances, mercury, and its compounds, Perfluorooctane sulphonate (PFOS), and polybrominated diphenyl ethers (PBDE7)[39]. The 2019 (Cycle 3) physio-chemical status of the River Irk (Wince to Irwell) water body was classified as 'Moderate' overall[39]. Five physio-chemical components were classified as 'High', these were acid neutralising capacity, dissolved oxygen, biochemical oxygen demand, temperature, and pH. The reason for physio-chemical elements not achieving 'Good' status was stated by the EA as pollution from wastewater and physical modifications to the channel.

## Existing Site Drainage

10.83. Surface water from part of the Application 4 site is to be discharged to the River Irk via the adoptable site wide HIF drainage system (Consented as part of Application 2 and 3; see section 10.2 for definition). The HIF works are considered as baseline conditions in this assessment. The HIF works are designed to accommodate flows from Plots RB1, RB2, RB3, RB4, RB5A, RB5B, RB5C, RB6, RB7 and RB12B. As part of the HIF works any existing surface water connections will be diverted from the combined sewer and into the newly installed surface water system. There will be three new outfalls to the River Irk as part of the HIF works.

## Fluvial and Surface Water Flooding

10.84. The potential risk of flooding for Application 4 from all current and future sources has been assessed in accordance with the National Planning Policy Framework.

10.85. The overall long-term flood risk from surface water is between Low risk to High risk for Application 4.

10.86. The overall long-term flood risk from canal flooding is no risk for Application 4.

10.87. The overall long-term flood risk from reservoirs is medium risk for Application 4, the Environment Agency's Reservoir Flood Risk map indicates that the site is at risk of flooding in the event of reservoir failure [23].

10.88. Further information relating to the baseline fluvial and surface water flooding can be found in the accompanying FRA (See **Appendix 10.1**).

## Groundwater

### Geology

10.89. The published geological map of the region indicates that Made Ground is present above the superficial deposits across the entire Study Area. The GI (2019, 2021, and 2022)35 undertaken for the Proposed Development indicates that the depth of Made Ground varies from 16.5 metres below ground level (mbgl) at Red Bank Plateau falling to

10 mbgl adjacent to the Red Bank Viaduct. A detailed description of the Made Ground is presented in Chapter 9: Ground Conditions.

**10.90.** The superficial deposits underlying the Made Ground comprises Glacial Till and Alluvium deposits. The GI (2019, 2021, and 2022)[35] undertaken for the Proposed Development indicates that Glacial Till was encountered to a depth of 13.2 mbgl at the Red Bank Plateau and to 9.3 mbgl adjacent to the Red Bank Viaduct. Alluvium was encountered to a depth of 6.7 mbgl towards the River Irk. A detailed description of the superficial deposits is presented in **Chapter 9: Ground Conditions.**

10.91. The bedrock geology underlying the superficial deposits comprises the Chester Formation (sandstone), Manchester Marls Formation (mudstone) and the Collyhurst Sandstone Formation. Bedrock was encountered between 10 to 16 mbgl at Red Bank Plateau and between 2 to 4 mbgl towards the River Irk. A fault, trending NNW-SSE, runs through the centre of the Study Area, which uplifts the Manchester Marl Formation. A detailed description of the bedrock strata is presented in **Chapter 9: Ground Conditions**.

## Aquifer Designations

10.92. Glacial Till and Alluvium are designated by the EA as a Secondary (undifferentiated) aquifer and a Secondary A aquifer, respectively. Secondary A aquifers comprise of permeable layers that can support local water supplies and may form an important source of baseflow to rivers. Secondary (undifferentiated) aquifers are typically low permeability aquifers that rarely support small supplies or baseflow to rivers.

10.93. The Chester Formation and Collyhurst Sandstone Formation are designated as Principal aquifers, which are aquifers that provides significant quantities of drinking water and may also support baseflow to rivers, lakes, and wetlands. The Manchester Marls Formation is designated as a Secondary B aquifer, which is a designation given to aquifers with mainly lower permeability layers that may store and yield limited amounts of groundwater. The Permo-Triassic sandstone aquifers are expected to be in hydraulic connection with the River Irk and therefore, likely support baseflow to the river.

## WFD Groundwater Body

10.94. The bedrock aquifers (Chester, Manchester Marls, and Collyhurst Sandstone Formations) underlying the Study Area are within the Manchester and East Cheshire Permo-Triassic Sandstone Aquifers groundwater body (GB41201G101100) under the WFD. The groundwater body covers a surface catchment area of 367 $km^2$. The Overall, Quantitative, and Chemical status of the groundwater body is classified as 'Poor' (2019 Cycle 3) with an objective of achieving 'Good' Overall, Quantitative, and Chemical status by 2021. The reasons for not achieving 'Good' status include saline intrusion (Quantitative and Chemical from natural and other pressures) and an unknown activity under investigation.

### Groundwater Levels and Flow

10.95. Groundwater flow within the Made Ground and Glacial Till is expected to be variable and limited in lateral and vertical extent with flow occurring within the higher permeability lenses (i.e., sand and gravel). The groundwater flow direction within the bedrock aquifers is considered to be towards the River Irk, based on the results of the GI. Groundwater flow within the sandstone aquifers occurs as a combination of intergranular and fracture flow.

10.96. Due to the thick coverage of Made Ground and Glacial Till, recharge to the sandstone aquifers within the Study Area is considered relatively low and may occur more where these overlying deposits are thinner and the depth to the sandstone is shallower (i.e., closer to the River Irk).

10.97. Where Made Ground and Glacial Till are present, the sandstone aquifers are likely confined. However, where Glacial Till is absent and Made Ground directly overlies Alluvium or bedrock, the groundwater in these strata is likely to be in continuity with the river.

10.98. The 2019, 2021, and 2022 GIs[35] indicate that perched discontinuous groundwater is present within the Made Ground and Glacial Till across the Site which is expected to be hydraulically separated from groundwater within the sandstone aquifers. This is based on water strikes encountered during drilling and groundwater level monitoring data.

10.99. The 2019, 2021, and 2022 GIs recorded water strikes between 0.4 mbgl (42.2 metres above Ordnance Datum (mAOD)) and 13 mbgl (25 mAOD) in the Made Ground, 3.5 mbgl (39.6 mAOD) and 4.2 mbgl (25.2 mAOD) in the Alluvium deposits, and 2.4 mbgl (40.6 mAOD) and 3.7 mbgl (39.4 mAOD) in the Glacial Till. Groundwater monitoring was undertaken in 43 exploratory holes during the 2019, 2021, and 2022 GIs. The results of the groundwater monitoring presented in the Arup report (dated November 2022)[35] records groundwater levels between 4.7 and 6.42 mbgl (36 and 39 mAOD) in the Manchester Marls Formation, 4.15 and 12.32 mbgl (approximately 30 mAOD) in the Collyhurst Sandstone Formation, and 2.69 and 12.47 mbgl (27 mAOD to 32 mAOD) in the Chester Formation.

### Groundwater Vulnerability

10.100. The EA's 2017 groundwater vulnerability map shows the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties (EA, 2023)[43]. The groundwater vulnerability map indicates that the Application 4 Study Area is classified as a Medium-Low to Low groundwater vulnerability zone. This is likely attributed to the coverage of the low permeability Glacial Till and Made Ground artificial deposits.

### GWDTEs and Source Protection Zones (SPZs)

10.101. There are no known identified GWDTEs within the Application 4 Study Area.

[43] Agency, E. (2020). *Groundwater Vulnerability Maps (2017) on MAGIC*. [online] www.data.gov.uk. Available at: https://www.data.gov.uk/dataset/42d7d021-538c-46e2-abbb-644e01c63551/groundwater-vulnerability-maps-2017-on-magic.

10.102. Groundwater SPZs are defined around public water supply groundwater abstractions to provide additional protection from pollution sources. There are no SPZs or drinking water protected areas within the Application 4 Study Area.

## Licensed Groundwater Abstractions

10.103. Licensed groundwater abstraction data has been requested from the EA (see **Table 10.5**). The data indicates that there are no licensed groundwater abstractions within the Proposed Development and there are three licensed abstractions within the Study Area. Details of the licensed abstractions are provided in **Table 10.9**.

***Table 10.9:*** *Licensed Groundwater Abstractions within the Study Area*

| Licence holder | Easting | Northing | Purpose of abstraction | Source of abstraction | Proximity to Proposed Development |
|---|---|---|---|---|---|
| Packaging Products (Coatings) Ltd | 385000 | 400100 | General cooling (low loss) | Permo-Triassic Sandstone | 340 m northeast |
| Joseph Holt Ltd | 384100 | 399700 | General cooling (low loss) | Permo-Triassic Sandstone | 342 m northwest |
| Joseph Holt Ltd | 384100 | 399700 | Process water | Permo-Triassic Sandstone | 342 m northwest |
| British Telecommunications Plc | 383700 | 398700 | General cooling (high loss) | Permo-Triassic Sandstone | 740 m southwest |

10.104. Given that the land use within the Proposed Development and Study Area is industrialised and urbanised, it is considered likely that smaller properties that may have historically been supplied by groundwater sources are likely to have since been connected to mains water supply.

10.105. BGS historical borehole data is publicly available and has been obtained to identify potential receptors. There are five BGS borehole records within the Site and 33 total borehole records within the Study Area. However, only boreholes located within the Proposed Development are expected to be potentially impacted and these are summarised in **Table 10.10**.

***Table 10.10: British Geological Survey Borehole Records within the Site***

| BGS Ref. | Name | Easting | Northing | Depth (m) | Year |
|---|---|---|---|---|---|
| SJ89/18A | W CLEMSON & CO RED BANK HORROCKS | 384340 | 399340 | 115.4 | 1875 |
| SJ89/18B | W CLEMSON & CO RED BANK HORROCKS | 384340 | 399340 | 106.7 | 1884 |
| SJ89/18C | W CLEMSON & CO RED BANK HORROCKS | 384340 | 399340 | 82.3 | 1841 |

| BGS Ref. | Name | Easting | Northing | Depth (m) | Year |
|---|---|---|---|---|---|
| SJ89/213 | RED BANK MANCHESTER OB | 384310 | 399440 | n/a | n/a |
| SJ89/22 | CHARLES SMITH RED BANK | 384400 | 399400 | 28.4 | n/a |

10.106. The identified BGS boreholes indicate the presence of historic or smaller abstractions targeting the sandstone aquifers within the Study Area. It has been assumed that through the protection of the aquifers, protection of potential smaller and unidentified abstractions or future abstractions will also have sufficient protection.

10.107. Contamination within the soils and within the shallow groundwater in the Made Ground was recorded during the 2019, 2021 and 2022 GI. The impacts of potential contamination of groundwater on the aquifers is assessed in **Chapter 9: Ground Conditions** and therefore, has not been assessed in this chapter.

### Groundwater Flooding

10.108. The Flood Risk Assessment (see **Appendix 10.1)** indicates that the Proposed Development is not located within an area at risk of groundwater flooding (based on the Manchester, Salford, and Trafford Strategic Flood Risk Assessment, 2011)[44]. Groundwater within the superficial deposits and the sandstone aquifers is expected to be in hydraulic connection with the River Irk and therefore groundwater levels are expected to be shallower in areas closest to the river. Where intrusive works (i.e., excavations) are proposed close to the river, these areas may be prone to groundwater inflow, which will require dewatering.

## Embedded Mitigation (Application 4)

10.109. This section describes the embedded mitigation incorporated into the Proposed Development in terms of drainage and flood risk.

### Demolition and Construction Phase

10.110. There is no embedded mitigation for drainage and flood risk during the demolition and construction phase.

### Operational Phase

10.111. The following embedded mitigation measures are proposed as part of the completed development with further information contained within the Flood Risk Assessment (see **Appendix 10.1**):

- The built development will sit outside of the flood extent for the 1 in 100 year flood event due to the creation of compensatory flood storage;

[44] www.manchester.gov.uk. (2011). *SFRA details | Strategic Flood Risk Assessment | Manchester City Council*. [online] Available at: https://www.manchester.gov.uk/info/500207/planning_and_regeneration/4700/strategic_flood_risk_assessment/2 [Accessed 24 Mar. 2023].

- Less vulnerable development such as commercial units will be located on the lower ground level and will be constructed using flood resilient design with a waterproof external construction to a level of the 1 in 100 year flood event plus 45% climate change, plus 150 mm freeboard;
- More vulnerable developments such as a school or residential buildings located on the lower ground level will be constructed using flood resilient design with a waterproof external construction to a level of the 1 in 100 year flood event plus 45% climate change, plus 150mm freeboard;
- No residential development will have a finished floor level lower than the 1 in 100 year flood event plus 45% climate change plus 300mm freeboard;
- The surface water drainage will be designed such that the rate of surface run-off from the Site is no greater than the existing scenario and as such will not result in an increase of flooding elsewhere;
- New private and adoptable surface water system which is designed to accommodate 100 year plus 45% climate change rainfall event;
- All surface water runoff from within the wider boundary will be collected into new separate private and adoptable surface water drainage systems prior to discharge to the River Irk at greenfield runoff rates;
- A reduction in surface water runoff into the combined sewerage system is likely to have the potential to reduce the occurrence of spills into the River Irk from CSO's;
- Overland flows will be safely routed away from buildings and ultimately be conveyed across the site surface towards the River Irk in the event of failure or design exceedance of the proposed site drainage system; and
- Terracing to occur on both banks of the River Irk, adjacent to plots RB16 and RB17. Terracing will provide flood compensatory storage and betterment for biodiversity gain.

## Assessment of Likely Significant Effects (Application 4)

### Demolition and Construction Phase

10.112. Potential impacts on the water environment stemming from the demolition and construction phase of the Proposed Development include the following which are assessed separately below:

- Impact to water quality and hydromorphology by entrainment of materials;
- Impact to water quality by spillage of pollutants;
- Impact to hydrological and hydromorphological processes in and over the River Irk;
- Impacts to Flood Risk; and
- Impacts to groundwater during demolition and construction.

### Impact to water quality and hydromorphology by entrainment of materials

10.113. The entrainment of loose sediment either exposed through excavation or stockpiled on site could make its way to the River Irk and subsequently to the River Irwell. The likelihood of this process increases where there are proposed works within the channel (i.e., installation of a new outfall and terracing works). This can increase the turbidity within the watercourse and have detrimental impacts to both water quality and aquatic ecology. If fine sediment is deposited, it can smother aquatic habitats and impact the oxygen levels in the water body. It can also impact the hydromorphological processes by altering bedforms within the watercourse through sediment deposition and consequently altering the cross-sectional profile and variation. Changes to the sediment dynamics could also potentially alter erosion and deposition processes operating. The potential for fine sediment accumulations could result in a change in marginal and in-channel vegetation which could trigger a feedback loop resulting in further morphological adjustment of the watercourse at the reach-scale.

10.114. Any entrainment of pollutants and direct overland flow, as a result of the demolition and construction phase, have the potential to enter the River Irk via the drainage network. The watercourse could also be impacted via additional sediment washing into existing drainage networks which outfall into the River Irk. This will affect water quality and hydromorphological quality of the River Irk. This may temporarily affect the ecological and chemical quality of the watercourse.

10.115. This potential impact could affect the River Irk and River Irwell. Potential effects to hydrological and hydromorphological processes of these watercourses associated with demolition and the construction of elements such as new outfalls and are assessed below in **Table 10.11**. In addition, it could also affect the water utilities infrastructure.

***Table 10.11:*** *Assessment of effects to water quality and hydromorphology by entrainment of materials*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance prior to mitigation |
|---|---|---|---|---|
| River Irk | High | Moderate Adverse | Works adjacent to and within the channel have the potential to result in additional sediment discharging to the watercourse. | **Moderate Adverse**<br>Reversible / Local / Short term / Direct |
| River Irwell | Very High | Minor Adverse | Works adjacent to and within the River Irk have the potential to result in additional sediment discharging to the River Irwell. | **Moderate Adverse**<br>Reversible / Local / Short term / Indirect |
| Water Utilities Infrastructure | High | Moderate Adverse | Excess sediments washing into the existing drainage network have the potential to reduce the networks capacity. | **Moderate Adverse**<br>Reversible / Local / Short term / Direct |

### Impacts to water quality by spillage of pollutants

10.116. Poor management of harmful chemicals can result in spillages or leakages of contaminants that could impact the water quality of nearby watercourses and NVZ. Hydrocarbons form a film on the surface of the water body and deplete oxygen levels. Where a spilled liquid is sufficiently toxic above certain concentrations it can result in the death of organisms over a relatively short period of time. In addition, if there are sensitive or valuable surface water abstraction points on receiving watercourses, these can be impacted through increased costs in water treatment and cleaning equipment. There is an increased risk of spillage events affecting watercourses from demolition and construction activities which are located in or adjacent to watercourses, for example, construction of outfalls within the River Irk.

10.117. The most common source of pollution is from leaks and spillages of hydrocarbons from mechanical plant or storage vessels. Concrete and cement products can also pose a significant risk to the water environment and are highly alkaline and corrosive. Fish may be physically damaged, and their gills blocked, and both vegetation and the bed of the receiving water body may be smothered. For the most part, it is only when large quantities of hazardous substances are spilled, or the spillage is directly into the water body, that a significant risk of acute toxicity will arise in the receiving water.

10.118. Treatment will be provided through the temporary drainage systems which are proposed to be adopted during the construction phase. The works on site will be managed in accordance with the CIRIA guidance 'C532 control of water pollution from construction sites'[45].

10.119. This potential impact could affect the River Irk, River Irwell and NVZ. Potential effects to water quality by spillage of pollutants are assessed below in **Table 10.12.**

***Table 10.12:*** *Assessment of effects to water quality by spillage of pollutants*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance prior to mitigation |
|---|---|---|---|---|
| River Irk | High | Moderate Adverse | Works occurring adjacent to and within the River Irk. | **Moderate Adverse** Reversible / Local / Short term / Direct |
| River Irwell | Very High | Minor Adverse | Works occurring adjacent to and within the River Irk immediately upstream of the River Irwell. | **Moderate Adverse** Reversible / Local / Short term / Indirect |
| Nitrate Vulnerable Zone | Very High | Negligible | Pollutants used during construction are not expected to affect nitrate levels. | **Slight Adverse** Reversible / Local / Short term / Direct |

[45] Masters-Williams, H., Heap, A., Kitts, H., Greenshaw, L., Davis, S., Fisher, P., Hendrie, M., Owens, D. (2001) CIRIA C532 Control of water pollution from construction sites. Guidance for consultants and contractors

### Impact to hydrological and Hydromorphological processes from works in the River Irk channel

10.120. Whilst new outfalls and the river terracing works are undertaken, a dry working area within the channel will be required. During these works, the cross-sectional area of the River Irk will be reduced, therefore potentially increasing velocities, increasing scour and causing a backup of water upstream of the dry working areas. This could have an influence on flow conditions in the downstream River Irwell. If velocities through the reach are higher, there is potential for more sediment to be carried through the reach and transported to the River Irwell.

10.121. The channel at this location is heavily modified and therefore expected to be tolerant to any increased shear stresses in the channel. Hydrological connectivity of the watercourse will be maintained as the dry working areas will not extend across the whole channel.

10.122. The assessment of effects from this potential impact are presented in **Table 10.13**.

***Table 10.13**: Assessment of effects for hydrological and hydromorphological processes from works in the River Irk channel*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance prior to mitigation |
|---|---|---|---|---|
| River Irk | High | Moderate Adverse | Works directly in the channel. Hydraulic connectivity will be maintained throughout construction. Condition of the watercourse is likely to be tolerant to small changes in shear stress and velocity. | **Moderate Adverse** Reversible / Local / Short term / Direct |
| River Irwell | Very High | Minor Adverse | Works occurring in the watercourse upstream. Any potential significant effects are likely to dissipate before reaching the River Irwell which is 0.4 km downstream of the River Irk. | **Moderate Adverse** Reversible / Local / Short term / Indirect |

### Impacts to Flood Risk

10.123. Flood risk to surrounding development can be impacted by the following activities:

- Change in surface water runoff due to the creation of temporary impermeable surfaces as part of the works (such as site compounds);
- Change in surface water flooding from works affecting local topography or existing overland flow routes (such as storage or materials or equipment); and
- Increase in fluvial flood risk from works within the watercourse or the floodplain, or increased runoff to watercourses.

10.124. Construction workers are also at risk of flooding during any works within the watercourse or the floodplain.

10.125. The assessment of effects from flood risk during the demolition and construction phase are presented in **Table 10.14**.

***Table 10.14:*** *Assessment of effects to flood risk*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance prior to mitigation |
|---|---|---|---|---|
| Land classed as 'less vulnerable' regarding flood risk | Medium | Moderate Adverse | Potential for flooding. | **Moderate Adverse** Reversible / Local / Short term / Direct |
| Land classed as 'more vulnerable' regarding flood risk | High | Moderate Adverse | Potential for flooding. | **Moderate Adverse** Reversible / Local / Short term / Direct |
| Construction Workers | Very High | Major Adverse | Potential for loss of life for workers in the channel and the floodplain during a high flow event. | **Very Large Adverse** Permanent / Local / Long term / Direct |

## Impacts to Groundwater during Demolition and Construction

10.126. Activities during the demolition and construction phase may impact on groundwater quantity (levels and flow) and quality and therefore, groundwater impacts have been assessed separately based on these two elements. The magnitude of impact on groundwater quantity (levels and flow) and quality is summarised in **Table 10.15**.

### Groundwater Quantity

10.127. Excavations are proposed in areas across the Proposed Development (see drawing no. VNIF-ARP-00-YYY-DR-CE-0003, in **Appendix 10.5**) to remove existing structures and to create development platforms. The Ground Investigation and Interpretative Report (November 2022)[35] indicates that most of the material excavated will be Made Ground, which is present to depths between 2.0 m and 16.5 mbgl across the Site. Perched groundwater within permeable lenses of the Made Ground and Glacial Till was encountered during the 2019, 2021, and 2022 GIs and therefore, it is likely that shallow groundwater within the Made Ground and superficial deposits will be encountered during the demolition and construction phase. Where Made Ground is thinner and Glacial Till is absent, shallow groundwater may in continuity with water levels in the sandstone aquifers. Any dewatering of shallow perched groundwater or shallow groundwater in continuity with the bedrock aquifers may cause localised impacts on groundwater levels and flow; however, any dewatering works are expected to be temporary.

10.128. Below-ground structures may locally alter groundwater levels and the flow direction within the aquifers where they intercept the groundwater table. The Ground Investigation and Interpretative Report (November 2022)

recommends the use of bored piles socketed into the underlying bedrock for building foundations. If pilings were to be incorporated into the design, then it is expected that a Piling Risk Assessment will be undertaken which will stipulate required mitigation measures to remove any potential risk to groundwater. A retaining wall is proposed between the Red Bank Plateau and Red Bank Terrace areas. The maximum depth below ground level of the retaining wall has not been specified at this stage and therefore, as a conservative approach, it has been assumed that the structure may intercept bedrock. The implementation of a well-developed Construction Environmental Management Plan (CEMP), Demolition Plan and a Remediation Strategy will mitigate the risk to groundwater during the demolition and construction phase.

10.129. The bedrock aquifers (Chester, Manchester Marls, and Collyhurst Sandstone Formations) underlying the Proposed Development are within the WFD Manchester and East Cheshire Permo-Triassic Sandstone Aquifers Groundwater Water Body (GB41201G101100). The overall status of the WFD groundwater water body is 'Poor'. No significant or long-term dewatering is expected and therefore, no change to the quantitative status of the WFD is expected.

### Groundwater Quality

10.130. Groundwater quality may be impacted by the spillage of pollutants released at surface into the aquifer(s) during the earthwork excavations and construction of below-ground structures. There could also be an increase in suspended sediments (turbidity). The potential impacts of contaminants present within the Made Ground and soils is not assessed in this chapter and is discussed in **Chapter 9: Ground Conditions**.

***Table 10.15:*** *Impacts on Groundwater during demolition and construction*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance prior to mitigation |
|---|---|---|---|---|
| **Quantity – Groundwater Levels & Flow** | | | | |
| Glacial Till and Alluvium superficial aquifers (Secondary (undifferentiated) and Secondary A aquifers) | Low | Negligible | Low permeability aquifers that do not support local abstractions nor provide significant baseflow to the River Irk. No significant change expected to groundwater levels and flow. | **Neutral**<br>Permanent / Local / Short term / Direct |
| Bedrock aquifer (Manchester Marls Formation – Secondary B aquifer) | Medium | Negligible | Low permeability aquifer that does not support local abstractions or baseflow to the River Irk. No significant change expected to groundwater levels and flow. | **Neutral**<br>Permanent / Local / Short term / Direct |
| Bedrock aquifers (Collyhurst Sandstone Formation and Chester Formation – Principal aquifers) | High | Negligible | Below-ground structures (i.e., building foundations and retaining walls) may cause localised impacts to groundwater within the bedrock sandstone aquifers. No significant change is expected to groundwater levels and flow or to the WFD status of the aquifer. | **Slight Adverse**<br>Permanent / Regional / Short term / Direct |
| Licensed groundwater abstractions and historic local boreholes | High | Negligible | There are no licensed abstractions or historic boreholes targeting the superficial aquifers within the Study Area. Potential dewatering during the construction of below-ground structures will be temporary and therefore, not expected to impact water supplies within the Study Area. | **Slight Adverse**<br>Permanent / Regional / Short term / Direct |

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance prior to mitigation |
|---|---|---|---|---|
| **Quality** | | | | |
| Glacial Till and Alluvium superficial aquifers (Secondary (undifferentiated) and Secondary A aquifers) | Low | Minor Adverse | Groundwater quality may be impacted by the spillage of pollutants released at surface into the aquifer(s) during the earthwork excavations and construction of below-ground structures. There may also be an increase in suspended sediments (turbidity). | **Neutral**<br>Permanent / Local / Short term / Direct |
| Bedrock aquifer (Manchester Marls Formation – Secondary B aquifer) | Medium | Minor Adverse | Groundwater quality may be impacted by the spillage of pollutants released at surface into the aquifer(s) during the earthwork excavations and construction of below-ground structures. There may also be an increase in suspended sediments (turbidity). | **Slight Adverse**<br>Permanent / Regional / Short term / Direct |
| Bedrock aquifers (Collyhurst Sandstone Formation and Chester Formation – Principal aquifers) | High | Minor Adverse | Groundwater quality may be impacted by the spillage of pollutants released at surface into the aquifer(s) during the earthwork excavations and construction of below-ground structures. There could also be an increase in suspended sediments (turbidity). | **Slight Adverse**<br>Permanent / Regional / Short term / Direct |
| Licensed groundwater abstractions and historic local boreholes | High | Minor Adverse | Groundwater quality may be impacted by the spillage of pollutants released at surface into the aquifer(s) during the earthwork excavations and construction of below-ground structures. There could also be an increase in suspended sediments (turbidity). | **Slight Adverse**<br>Permanent / Regional / Short term / Direct |

## Operational Phase

10.131. Potential impacts to the water environment stemming from the operational phase of the Proposed Development include the following which are assessed separately below:

- Impacts to water quality from site drainage;
- Impacts to channel morphology from new structures within the channel / floodplain;
- Impact to fluvial flood risk as a result of new structures over and in the channel and other construction within the floodplain; and
- Impacts to groundwater from the Proposed Development.

### Impacts to water quality from site drainage

10.132. Routine runoff from the drainage of Application 4 could impact the water quality of the River Irk and River Irwell. Impacts to water quality could arise from a spillage within the development reaching the drainage network, or the routine entrainment of sediments or soluble pollutants in runoff which discharges to the River Irk via the drainage network.

10.133. The Drainage Strategy (See **Appendix 10.1**) provides a detailed explanation on how Application 4 will manage and treat pollutants on site prior to discharge to the River Irk. The risk of a spillage is considered very low due to the low volumes of traffic expected within the Application 4.

10.134. The assessment of effects from this potential impact are presented in **Table 10.16**.

***Table 10.16:*** *Assessment of impacts to water quality from site drainage*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance (prior to mitigation) |
|---|---|---|---|---|
| River Irk | High | Negligible | Surface water runoff treated via site drainage. Very low risk of spillage. | **Slight Adverse** Permanent / Local / Long term / Indirect |
| River Irwell | Very High | Negligible | Surface water runoff treated via site drainage. Very low risk of spillage. | **Slight Adverse** Permanent / Local / Long term / Indirect |

### Impacts to channel morphology from new structures within the channel / floodplain

10.135. Application 4 will include terracing on the left bank of the River Irk, adjacent to plots RB06-07 and further upstream adjacent to plots RB16-17. The Proposed Development will also include at least one new outfall to the River Irk to discharge surface water runoff from the site drainage network.

10.136. Any new outfalls will be constructed above the 1 in 30 year flood level, will be angled in the direction of flow and have appropriate bed protection to minimise disruption to flow dynamics and minimise scour.

10.137. Terracing of the riverbank is proposed to provide compensatory flood storage. This will change the cross section of the channel which could change flow dynamics. The channel is already heavily modified and any potential change to flow dynamics and subsequently shear stress, will likely be tolerated by the existing construction of the channel. No terracing is to occur downstream of the Application Boundary; therefore, no direct impacts are to occur in the River Irwell. Modelling results show negligible change in flow conditions between the baseline and Proposed Development scenario. The difference in flow change between baseline flow data and modelling for Application 4 ranges between -1.58 and 0.35 $m^3/s$. The terracing works will improve the riparian corridor by implementing riparian vegetation and removing artificial channel sides. Therefore, the terracing works are considered to provide a betterment to the River Irk.

10.138. The assessment of effects from this potential impact are presented in **Table 10.17**.

***Table 10.17:*** *Assessment of channel morphology from new structures within the channel / floodplain*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance (prior to mitigation) |
|---|---|---|---|---|
| River Irk | High | Negligible | Terracing works will be a betterment to the existing conditions of the channel. Modelling shows no significant change to flow dynamics. Outfall design will minimise impact. | **Slight Beneficial** Permanent / Local / Long term / Direct |
| River Irwell | Very High | No change | There are no physical changes proposed for the River Irwell. Changes to the River Irk are not anticipated to impact the River Irwell. | **Neutral** Permanent / Local / Long term / Indirect |

## Impact to infrastructure capacity

10.139. As part of the proposed works, the capacity to existing infrastructure may be impacted.

10.140. Network capacity has specifically been designed for Application 4 within the HIF drainage scheme. Any existing surface water connections will be diverted from the combined sewer and into the newly installed surface water system, reducing the use of CSOs.

10.141. The assessment of likely significant effects are summarised in **Table 10.18.**

***Table 10.18:*** *Assessment of likely significant effects to infrastructure capacity*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance (prior to mitigation) |
|---|---|---|---|---|
| Water Utilities Infrastructure | High | Minor Beneficial | Existing Infrastructure will not receive drainage from the Proposed Development, | **Slight Beneficial** |

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance (prior to mitigation) |
|---|---|---|---|---|
| | | | and some will have the catchment reduced as the Proposed Development will discharge via a new network. Therefore, a minor increase in capacity of existing infrastructure is anticipated. | Permanent / Local / Long term / Direct |

## Impact to flood risk

10.142. The masterplan ambition for Travis Island is to create terraced wetlands along the river which have been designed to provide flood storage and offset the impact of the buildings within the floodplain at this location. The baseline model shows flooding mainly to the eastern side of Travis Island. The buildings on plots RB16 and RB17 will displace floodplain volume. There is betterment at the RB10 plot with the terracing applied at RB16 / RB17 and RB06 / RB07. Therefore, mitigation measures at the RB10 plot itself are not required as part of the outline masterplan.

10.143. As part of the proposed works, the riverbank along Travis Island is to be lowered to allow water onto the floodplain earlier on during a flood event.

10.144. Terracing will provide flood compensatory storage to the River Irk. In addition, terracing provides betterment towards biodiversity at the local scale. This will ensure that WFD water quality and biological elements are either maintained or bettered.

10.145. The assessment of likely significant effects are summarised in **Table 10.19**.

***Table 10.19:*** *Assessment of likely significant effects to flood risk*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance (prior to mitigation) |
|---|---|---|---|---|
| Land classed as 'Less Vulnerable' regarding flood risk | Medium | Negligible | Flood model shows no significant change in flood risk. The change in water level between the baseline and Proposed Development is between the range of 0.65-1.14 mm. | **Neutral** Permanent / Local / Long term / Direct |
| Land classed as 'More Vulnerable' regarding flood risk | High | Negligible | Flood model shows no significant change in flood risk. The change in water level between baseline and Proposed Development is between the range of 0.65-1.14 mm. | **Slight Adverse** Permanent / Local / Long term / Direct |

### Impacts to groundwater during operational phase

10.146. Activities during the operational phase may impact on groundwater quantity (levels and flow) and quality and therefore, groundwater impacts have been assessed separately based on these two elements. The quantitative and qualitative magnitude of impact is summarised in **Table 10.20**.

### Groundwater Quantity

10.147. Permanent below-ground structures (i.e., building foundations and retaining walls) constructed into the bedrock may alter local groundwater levels and flow. The maximum depth of below-ground structures has not been specified at this stage and it has, therefore, been assumed that below-ground structures are expected to intercept groundwater (see Arup, 2022 GI report[35]). However, the sandstone is a high permeability aquifer and due to the limited horizontal extent of the below-ground structures, groundwater will likely flow around the structures towards the River Irk, which is the natural receptor of groundwater flow.

10.148. The new hardstanding areas will permanently reduce the surface area for infiltration of rainfall. However, due to the coverage of low permeability Made Ground and Glacial Till, direct infiltration of rainfall into the aquifers within the Proposed Development footprint is already expected to be limited. Additionally, no significant increase in permanent hardstanding areas is expected compared to the existing land use within the Site. Infiltration of rainfall to the aquifers may occur in areas where the deposits are thin or where the depth to bedrock is shallow (i.e., closer towards the River Irk). Any reduction of surface area in these areas is not considered to be significant relative to the wider groundwater catchment area. No significant change is therefore expected to groundwater recharge.

10.149. No infiltration or attenuation ponds are proposed as part of the drainage strategy and therefore, no impact is expected to groundwater flow or levels.

***Table 10.20:*** *Impacts on groundwater during operational phase*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance prior to mitigation |
|---|---|---|---|---|
| **Quantity – Groundwater Levels & Flow** | | | | |
| Glacial Till and Alluvium superficial aquifers (Secondary (undifferentiated) and Secondary A aquifers) | Low | Negligible | Permanent below-ground structures may cause localised impacts to groundwater levels and flow within the superficial aquifers. However, no significant impact is expected. | **Neutral**<br>Permanent / Local / Short term / Direct |

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance prior to mitigation |
|---|---|---|---|---|
| Bedrock aquifer (Manchester Marls Formation – Secondary B aquifer) | Medium | Negligible | Permanent below-ground structures may cause localised impacts to groundwater levels and flow within the Manchester Marls Formation. However, no significant impact to the overall water balance is expected. | **Neutral** Permanent / Local / Short term / Direct |
| Bedrock aquifers (Collyhurst Sandstone Formation and Chester Formation – Principal aquifers) | High | Negligible | Permanent below-ground structures may cause localised impacts to groundwater levels and flow within the Manchester Marls Formation. However, no significant impact to the overall water balance is expected. | **Slight Adverse** Permanent / Regional / Short term / Direct |
| Licensed groundwater abstractions and historic local boreholes | High | Negligible | No permanent dewatering is expected and therefore, no impact to local abstractions is expected. | **Slight Adverse** Permanent / Local / Short term / Direct |

### Groundwater Quality

10.150. No risks to groundwater quality are expected during the operational phase. The drainage design is expected to mitigate any potential risks resulting from surface-derived pollutant sources. Discharge to ground is also not proposed as part of the drainage design, and therefore, no change to flow is expected and the risk to saline intrusion remains unchanged.

## Additional Mitigation and Enhancement Measures (Application 4)

### Demolition and Construction Phase

10.151. The following measures are recommended for inclusion in the CEMP, to be considered sufficient to minimise the risk of potential impacts to the water environment to a tolerable level. Any works within the channel or within 8 m of the River Irk will require a Flood Risk Activity Permit from the EA. The permitting process should ensure that suitable measures are in place during the demolition and construction phase to manage flood risk and environmental impact.

10.152. The potential risk to groundwater quality is expected to be mitigated by the implementation of a Demolition Plan, Remediation Strategy, CEMP, and, if required, a Piling Risk Assessment through sediment and pollution control measures outlined in the Additional Mitigation Section.

10.153. The following mitigation measures, which are not exhaustive, are recommended to be included within the CEMP:

### Sediment and Pollution Control

- Avoid the positioning of stockpiles near to watercourses and ensure they are located outside of the flood zone;
- Stockpiles should be located a minimum of 10 m from the top of bank of any watercourse;
- Cover stockpiles when not in use;
- Contain stockpiles with bunds or sediment fences;
- Control of runoff during construction. This may include creating temporary drainage systems to both alleviate flood risk and help to prevent sediment laden runoff entering the watercourse;
- Compliance with the relevant Sections of BS6031:2009 Code of Practice for Earthworks[46] with respect to protection of water quality and control of site drainage including washings, dewatering, abstractions, and surface water;
- Fuels and potentially hazardous construction materials should be stored in bunded areas with external cut-off drainage, and fuel should be stored in double skinned tanks with 110% capacity;
- Waste fuels and other fluid contaminants should be collected in leak-proof containers prior to removal from site to an approved processing facility;
- Fuelling and lubrication of construction vehicles and plant should be done on hard standing or on haul roads, where reasonably practical, with appropriate cut-off drainage and located away from watercourses. In the event of plant breakdown drip trays should be used during any emergency maintenance and spill kits will be available on site;
- Provide sediment barriers between earth works and the construction zone and the watercourse to prevent sediment from washing into the river. An exclusion zone of 8 m from the watercourse should be maintained as far as practicable;
- Use of silt fences, silt traps, filter bunds, settlement basins and / or proprietary units to treat sediment laden water generated on site before discharge;
- Use of in-channel silt management systems such as silt curtains within the River Irk during in-channel works or works adjacent to the channel;
- Availability of oil absorbent booms on site to be deployed in the event of a significant spillage;

[46] British Standards Institute (2009) BS 6031:2009 Code of practice for earthworks

- Regular inspection of control and treatment measures to ensure they are working effectively;
- Regular checking of construction plant for oil and fuel leaks, particularly when construction works are undertaken in or near the existing site water bodies;
- Collection of waste fuels and other fluid contaminants in leak-proof containers prior to removal from construction site to an approved recycling processing facility;
- Concrete mixing and washing areas should be located more than 10 m from any watercourse; have settlement and re-circulation systems for water reuse; have a contained area for washing out of concrete batching plant or ready-mix lorries; and collect wash-waters and, where necessary, contain wash-water for authorised off-site disposal. Wash-water from concrete should not be discharged into the watercourse;
- Avoiding vehicle cleaning near to existing watercourses;
- Dewatering working areas to maintain a dry construction area and passing any water generated by the dewatering process through silt busters or sediment tanks prior to returning this water to the watercourses;
- Lining any temporary excavations to prevent infiltration of contaminants to the groundwater;
- The creation of a dry-working area for terracing construction is within the floodplain; temporary measures to prevent inundation during out of bank flow will reduce the risk of silt laden runoff from draining from the excavation site;
- Foul drainage from site welfare facilities should be disposed of appropriately. This may be by discharge to the foul sewer or by collection in a septic tank for disposal off site; and
- Deploying appropriate measures / methods in areas where contamination has been identified (or is suspected).

### Vegetation clearance

- Limit the clearance of vegetation on the channel banks and riparian zone. Where practicable, maintain a vegetated buffer strip between the construction zone and the watercourse. Ideally, a minimum buffer strip of 8 m should be retained where possible;
- Where works are required on the watercourse banks, or in-channel, vegetation clearance should be restricted to the working area and should be undertaken only immediately prior to the commencement of those works, except for other circumstances where earlier clearance may be required due to the presence of protected species. Vegetation should be re-established as soon as practicable;
- Appropriate management and disposal of invasive non-native species; and

### Timing of works

- River works including wall demolition will be timed to avoid disturbance of spawning fish. For the species encountered during detailed fish surveys this period is April- July;

- Undertaking the construction works during the late-spring and summer period typically coincides with lower flow conditions, less precipitation and reduced risk of high flow events, thus reducing the risk of the impacts listed above; and
- Avoid construction activities during high flow events and heavy rainfall. Monitoring of flows and rainfall within the upstream catchment should be undertaken and action taken to halt works should high flows be anticipated due to prevailing weather conditions.

### Managing flood risk

- Adoption and implementation of a Flood Action Plan by the Principal Contractor;
- Sign up for flood warnings and check online warnings regularly;
- Avoid works in the floodplain or watercourses during high flow events, intense rainfall events or when a flood warning is issued;
- Avoid long term works in the floodplain during winter when fluvial flooding is more likely;
- Site compound(s) should be located outside of the floodplain;
- Materials and mobile machinery should be stored outside the floodplain;
- If a flood warning is received from the EA, all machinery and equipment should be moved out of the floodplain. If this cannot be completed in a safe time, equipment should be secured to prevent it being washed away; and
- All relevant consents should be sought as required from the EA for any temporary works or permanent structures within 8 m of a 'main river' watercourse.

### Operational Development

10.154. No additional mitigation is required as all mitigation is embedded in the design of the Proposed Development.

## Likely Residual Effects of the Development and their Significance (Application 4)

### Purpose

10.155. Residual effects are those effects of the Proposed Development which result after mitigation measures have been implemented.

### Likely residual effects of the development and their significance

10.156. **Table 10.21** assesses the residual effects of the Proposed Development and their significance.

***Table 10.21:*** *Residual effects summary for Application 4*

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| **Demolition and Construction Phase** | | | | |
| River Irk | Impact to water quality and hydromorphology by entrainment of materials | **Moderate Adverse (significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP. | **Slight Adverse (Not significant)** |
| River Irwell | | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Indirect | Implementation of measures and controls within the CEMP. | **Slight Adverse (Not significant)** |
| Water Utilities Infrastructure | | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP. | **Neutral (Not significant)** |
| River Irk | Impacts to water quality by spillage of pollutants | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP. | **Slight Adverse (Not significant)** |
| River Irwell | | **Large Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term | Implementation of measures and controls within the CEMP. | **Slight Adverse (Not significant)** |

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| | | - Indirect | | |
| Nitrate Vulnerable Zone | | **Slight Adverse (Not significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP. | **Neutral (Not significant** |
| River Irk | Impact to hydrological and Hydromorphological processes | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP.<br><br>Some residual risk due to works carried out within the watercourse. | **Slight Adverse (Not significant)** |
| River Irwell | | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Indirect | Implementation of measures and controls within the CEMP. | **Slight Adverse (Not significant)** |
| Land classes as 'Less vulnerable' regarding flood risk | Impact to Flood Risk | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP. | **Neutral (Not significant)** |
| Land Classes as 'More vulnerable' regarding flood risk | | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP. | **Slight Adverse (Not significant)** |

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| Construction workers | | **Very Large Adverse (Significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Direct | All risks to construction workers are managed through each development's health and safety systems and CEMP. | **Slight Adverse (Not significant)** |
| Glacial Till and Alluvium superficial aquifers (Secondary (undifferentiated) and Secondary A aquifers) | Temporary impacts to groundwater levels and flow from excavation earthworks and below-ground structures. | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| Bedrock aquifer (Manchester Marls Formation – Secondary B aquifer) | | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| Bedrock aquifers (Collyhurst Sandstone Formation and Chester Formation – Principal aquifers) | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Regional<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| Licensed groundwater abstractions and historic local boreholes | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Regional<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| | | | | |
| Glacial Till and Alluvium superficial aquifers (Secondary (undifferentiated) and Secondary A aquifers) | Impact on groundwater quality due to the mobilisation of contaminants and sediments released at surface during earthworks or from accidental spillages. | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| Bedrock aquifer (Manchester Marls Formation – Secondary B aquifer) | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Regional<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| Bedrock aquifers (Collyhurst Sandstone Formation and Chester Formation – Principal aquifers) | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Regional<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| Licensed groundwater abstractions and historic local boreholes | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Regional<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| **Operational Phase** | | | | |

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| River Irk | Impacts to water quality from site drainage. | **Slight Adverse (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Indirect | There is no additional mitigation required. | **Slight Adverse (Not significant)** |
| River Irwell | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Indirect | There is no additional mitigation required. | **Slight Adverse (Not significant)** |
| River Irk | Impacts to channel morphology from new structures within the channel / floodplain. | **Slight Beneficial (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Direct | There is no additional mitigation required. | **Slight Beneficial (Not significant)** |
| River Irwell | | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Indirect | There is no additional mitigation required. | **Neutral (Not significant)** |
| Water Utilities Infrastructure | Impact to Infrastructure Capacity. | **Slight Beneficial (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Direct | There is no additional mitigation required. | **Slight Beneficial (Not significant)** |

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| Land classes as 'Less vulnerable' regarding flood risk | Impacts to Flood Risk. | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Direct | There is no additional mitigation required. | **Neutral (Not significant)** |
| Land Classes as 'More vulnerable' regarding flood risk | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Direct | There is no additional mitigation required. | **Slight Adverse (Not significant)** |
| Glacial Till and Alluvium superficial aquifers (Secondary (undifferentiated) and Secondary A aquifers) | Impact groundwater levels and flow caused by permanent below-ground structures.<br><br>Reduction of surface area for groundwater recharge. | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Short term<br>- Direct | The below-ground structures will be designed to allow groundwater to flow around them in the direction of the natural receptor of flow (River Irk). The increase in developed surface area is not expected to be significant compared to the existing land use and therefore, any impact to groundwater recharge is not expected to be significant. | **Neutral (Not significant)** |
| Bedrock aquifer (Manchester Marls Formation – Secondary B aquifer) | | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Short term<br>- Direct | The below-ground structures will be designed to allow groundwater to flow around them in the direction of the natural receptor of flow (River Irk). The increase in developed surface area is not expected to be significant compared to the existing land use and therefore, any impact to groundwater recharge is not expected to be significant. | **Neutral (Not significant)** |
| Bedrock aquifers (Collyhurst Sandstone Formation and Chester Formation – Principal aquifers) | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Regional<br>- Short term | The below-ground structures will be designed to allow groundwater to flow around them in the direction of the natural receptor of flow (River Irk). The increase in developed surface area is not expected to be significant compared to the | **Neutral (Not significant)** |

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| | | - Direct | existing land use and therefore, any impact to groundwater recharge is not expected to be significant. | |
| Licensed groundwater abstractions and historic local boreholes | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Local<br>- Short term<br>- Direct | The below-ground structures will be designed to allow groundwater to flow around them in the direction of the natural receptor of flow (River Irk). The increase in developed surface area is not expected to be significant compared to the existing land use and therefore, any impact to groundwater recharge is not expected to be significant. | **Neutral (Not significant)** |

## Conclusions (Application 4)

10.157. Throughout this assessment the methodology used has been outlined in LA113 DMRB[4]. All additional mitigation recommended should be adopted to reduce the potential impact from the Proposed Development. There are no significant residual effects. The majority of residual effects associated with the Application 4 are either slight adverse / beneficial or neutral; therefore, are insignificant.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 4)

10.158. A list of development sites within 250 m of Application 4, sourced from MCC and Salford City Council Planning Portals[47] have been considered in the assessment of potential cumulative effects. Cumulative effects result from the Proposed Development in combination with other developments currently at the planning, consented, or construction stages and results are presented in **Table 10.22**.

10.159. The development sites comprise brownfield land, which presents a potential source of contamination of groundwater quality. However, this has been assessed within **Chapter 9: Ground Conditions** and is therefore not considered in this chapter. There are no residual effects on groundwater from Application 4 and therefore, no cumulative effects.

[47] www.manchester.gov.uk. (n.d.). *See or comment on planning applications | Planning permission | Manchester City Council*. [online] Available at: https://www.manchester.gov.uk/info/200074/planning/5865/planning_permission.

***Table 10.22:*** *Summary of cumulative schemes and their likely significant effects*

| Scheme No. | Planning ref | Proposed end use | Approximate distance and direction from the Site | Known status | Justification |
|---|---|---|---|---|---|
| **(3) Gasworks** | 128248/FO/2020 | Mixed residential and commercial use | 140 m south | Construction not started | Project is within 500 m of the River Irk. There is potential for cumulative impacts to the River Irk and River Irwell from pollutants and entrained sediment during the construction phase, and increased flood risk during the operational phase. |
| **(4) Meadowside** | 116366/FO/2017 | Mixed residential and commercial use | 70 m south | Under Construction | Project is within 500 m of the River Irk. There is potential for cumulative impacts to the River Irk and River Irwell from pollutants and entrained sediment during the construction phase, and increased flood risk during the operational phase. |
| **(7) Victoria Riverside** | 126944/FO/2020 | Mixed residential and commercial use | 50 m south | Under construction | Project is within 500 m of the River Irk. There is potential for cumulative impacts to the River Irk and River Irwell from pollutants and entrained sediment during the construction phase, and increased flood risk during the operational phase. |
| **(8) 87 Rochdale Road** | 131708/FO/2021 | Mixed residential and commercial use | 200m south | Construction not started | Project is within 500 m of the River Irk. There is potential for cumulative impacts to the River Irk and River Irwell from pollutants and entrained sediment during the construction phase, and increased flood risk during the operational phase. |
| **(21) 1 Lord Street** | 113914/FO/2016 | Mixed residential and commercial use | 140 m west | Construction not started | Project is within 500 m of the River Irk. There is potential for cumulative impacts to the River Irk and River Irwell from pollutants and entrained sediment during the construction phase, and increased flood risk during the operational phase. |

## Approach

10.160. The assessment of potential cumulative effects with the scoped-in surrounding schemes is listed in **Table 10.23**. The assessment of potential cumulative effects has considered the proximity of the neighbouring development sites to the Application 4 boundary and a high-level assessment regarding impact to water quality, hydromorphology and flood risk during the demolition and construction and operational phases.

## Likely Residual Cumulative Effects and their Significance

10.161. An assessment of potential cumulative effects has been completed in relation to surface water and has considered all of the potential receptors identified in Application 4 during the demolition, construction, and operational phases**.** A summary of the likely residual cumulative effects and their significance during the demolition and construction phase is provided in **Table 10.23**.

***Table 10.23:*** *Residual Cumulative effects and their significance during the Demolition, Construction and Operational phase*

| Receptor | Cumulative effects | Significance |
|---|---|---|
| Demolition and Construction Phase | | |
| River Irk | Potential for increased turbidity in the River Irk from entrained sediments reaching the watercourse via surface water runoff. May impact sediment processes in the watercourse with potential increased sediment loading.<br><br>Potential for increased risk of spillage of pollutants affecting the watercourse. The risk of spillage of each site will remain the same, however the combined total is greater for the River Irk. | All development will adopt a CEMP to comply with relevant policy which contain measures to minimise impact to water quality of nearby watercourses. There will be some residual risk associated with the cumulative effects. It should be noted that schemes 4 and 7 are already under construction and therefore the cumulative effects relating to these sites are not relevant as they will likely be complete before Application 4 begins construction.<br><br>The residual cumulative effects relating to water quality are assessed to be **Slight Adverse (not significant)**. |
| River Irwell | Potential for increased turbidity in the River Irwell from entrained sediments reaching the watercourse via surface water runoff. May impact sediment processes in the watercourse with potential increased sediment loading. The potential impact is reduced by the diluting capacity of the River Irwell.<br><br>Potential for increased risk of spillage of pollutants affecting the watercourse. The risk of spillage of each site will remain the same, however the combined total is greater for the River Irwell. | All development will adopt a CEMP to comply with relevant policy which contain measures to minimise impact to water quality of nearby watercourses. There will be some residual risk associated with the cumulative effects. It should be noted that schemes 4 and 7 are already under construction and therefore the cumulative effects relating to these sites are not relevant as they will likely be complete before Application 4 begins construction.<br><br>The residual cumulative effects relating to water quality are assessed to be **Slight Adverse (not significant)**. |
| Water Utilities Infrastructure | Potential for reduced capacity of drainage networks with entrainment of sediments or temporary discharges. | All development will adopt a CEMP to comply with relevant policy which contain measures to control sediment on site. Discharge to water networks will require licenses which will be granted by the relevant regulators.<br><br>The residual cumulative effects relating to Water Utilities Infrastructure is assessed to be **Neutral (not significant)**. |

| Receptor | Cumulative effects | Significance |
|---|---|---|
| Nitrate Vulnerable Zone | Potential for increased risk of spillage of nitrates or from routine runoff from construction sites across the cumulative schemes. | All development will adopt a CEMP to comply with relevant policy which contain measures to minimise impact to water quality of nearby watercourses. There will be some residual risk associated with the cumulative effects.<br>The residual cumulative effects are assessed to be **Neutral (not significant)**. |
| Less vulnerable development | Potential for increased risk of flooding to nearby receptors if cumulative projects share receptors. | All development will adopt a CEMP to comply with relevant policy which contain measures to manage flood risk during the construction phase. Permits will be required for any works within the channel or within 8 m of the channel, therefore the EA will be able to regulate any construction works within the River Irk or Irwell which could impact local flood risk.<br>The residual cumulative effects are assessed to be **Neutral (not significant)**. |
| More vulnerable development | Potential for increased risk of flooding to nearby receptors if cumulative projects share receptors. | All development will adopt a CEMP to comply with relevant policy which contain measures to manage flood risk during the construction phase. Permits will be required for any works within the channel or within 8 m of the channel, therefore the EA will be able to regulate any construction works within the River Irk or Irwell which could impact local flood risk.<br>The residual cumulative effects are assessed to be **Slight Adverse (not significant)**. |
| Construction workers | No cumulative effects are anticipated. All risks to construction workers are managed through each development's health and safety systems and CEMP. | **Slight Adverse (not significant)**. |
| Operational Phase | | |
| River Irk | Potential for impacts to water quality from sites which all discharge to the River Irk. | All sites will include drainage strategies which comply with standard guidance and legislation. Drainage strategies will propose treatment measures to reduce impact to water quality of receiving watercourses. There could be some minor residual cumulative impact.<br>The residual cumulative effects are assessed to be **Slight Adverse (not significant)**. |

| Receptor | Cumulative effects | Significance |
|---|---|---|
| River Irwell | Potential for impacts to water quality from sites which all discharge to the River Irwell. | All sites will include drainage strategies which comply with standard guidance and legislation. Drainage strategies will propose treatment measures to reduce impact to water quality of receiving watercourses. There could be some minor residual cumulative impact although the River Irwell has a greater diluting capacity.<br><br>The residual cumulative effects are assessed to be **Slight Adverse (not significant)**. |
| Water Utilities Infrastructure | Potential for insufficient capacity within existing utility networks. | New developments will comply with appropriate policy with regards to flood risk and surface water management, limiting discharge to existing or greenfield runoff rates.<br><br>The residual cumulative effect is assessed to be **Neutral (not significant)**. |
| Nitrate Vulnerable Zone | Potential for impacts to water quality from sites which all discharge to the River Irk within the NVZ. | All sites will include drainage strategies which comply with standard guidance and legislation. Drainage strategies will propose treatment measures to reduce impact to water quality of receiving watercourses. The land use of the sites is urban and therefore unlikely to discharge significant volumes of nitrates to the receptor. There could be some negligible residual cumulative impact.<br><br>The residual cumulative effects are assessed to be **Neutral (not significant)**. |
| Less vulnerable development | Potential impacts on flood risk for all sites located within the floodplain of the River Irk or Irwell.<br><br>Potential impact to surface water flood risk for all sites introducing increased impermeable surface area. | All sites will include drainage strategies which comply with standard guidance and legislation. These will ensure that there is no increase to surface water runoff from the site by attenuating flows and restricting discharge rates. If required, flood mitigation measures will ensure that each site will not increase fluvial flood risk to any receptor, therefore cumulatively there is no increased impact.<br><br>The residual cumulative effects are assessed to be **Neutral (not significant)**. |
| More vulnerable development | Potential impacts on flood risk for all sites located within the floodplain of the River Irk or Irwell.<br><br>Potential impact to surface water flood risk for all sites introducing increased impermeable surface area. | All sites will include drainage strategies which comply with standard guidance and legislation. These will ensure that there is no increase to surface water runoff from the site by attenuating flows and restricting discharge rates. If required, flood mitigation measures will ensure that each site will not increase fluvial flood risk to any receptor, therefore cumulatively there is no increased impact.<br><br>The residual cumulative effects are assessed to be **Slight Adverse (not significant)**. |

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 4)

10.162. The Northern Gateway Regeneration Framework (SRF) has been prepared by MCC to guide the future development of regeneration north of Manchester City Centre.

10.163. The SRF covers 155 ha to the north of Manchester City Centre between Victoria Station, NOMA and Northern Quarter in the south-west, and Queens Park and the intermediate ring road (Queens Road) to the north-east.

10.164. Application 4 covers a small area within the SRF. It is assumed that all developments within the SRF will have a phased delivery. A phased approach ensures that likely residual effects (**Table 10.21**) will not be impacted by cumulative schemes within the SRF due to mitigation and appropriate use of the CEMP.

### Approach

10.165. An assessment of potential effects of Application 4, cumulative schemes and the SRF are listed in **Table 10.24**. There are no residual effects on groundwater from the Proposed Development and therefore, no cumulative effects of Application 4, cumulative schemes and the SRF.

10.166. The assessment of potential cumulative effects has considered the proximity of the neighbouring development sites within the SRF combined with the cumulative schemes referred to in **Table 10.22**.

***Table 10.24:*** *Assessment of likely residual cumulative effects of Application 4, cumulative schemes and the SRF*

| Receptor | Cumulative effects | Significance |
|---|---|---|
| Demolition and Construction Phase | | |
| River Irk | Potential for increased turbidity in the River Irk from entrained sediments reaching the watercourse via surface water runoff. This may impact sediment processes in the watercourse with potential increased sediment loading.<br><br>Potential for increased risk of spillage of pollutants affecting the watercourse. The risk of spillage of each site will remain the same, however the combined total is greater for the River Irk. | All development will adopt a CEMP to comply with relevant policy which contain measures to minimise impact to water quality of nearby watercourses during the demolition and construction phase. There will be some residual risk associated with the cumulative effects for any developments which are constructed simultaneously.<br><br>The residual cumulative effects relating to water quality are assessed to be **Slight Adverse (not significant)**. |
| River Irwell | Potential for increased turbidity in the River Irwell from entrained sediments reaching the watercourse via surface water runoff. This may impact sediment processes in the watercourse with potential increased sediment loading. The potential impact is reduced by the diluting capacity of the River Irwell.<br><br>Potential for increased risk of spillage of pollutants affecting the watercourse. The risk of spillage of each site will remain the same, however the combined total is greater for the River Irwell. | All development will adopt a CEMP to comply with relevant policy which contain measures to minimise impact to water quality of nearby watercourses during the construction phase. There will be some residual risk associated with the cumulative effects for any developments which are constructed simultaneously.<br><br>The residual cumulative effects relating to water quality are assessed to be **Slight Adverse (not significant)**. |
| Construction workers | No cumulative effects are anticipated. All risks to construction workers are managed through each development's health and safety systems and CEMP. | **Slight Adverse (not significant)**. |
| Water Utilities Infrastructure | Potential for reduced capacity of drainage networks with entrainment of sediments or temporary discharges. | All development will adopt a CEMP to comply with relevant policy which contain measures to control sediment on site. Discharge to water networks will require licenses which will be granted by the relevant regulators. |

| Receptor | Cumulative effects | Significance |
|---|---|---|
| | | The residual cumulative effects are assessed to be **Neutral (not significant)**. |
| Nitrate Vulnerable Zone | Potential for increased risk of spillage of nitrates or from routine runoff from construction sites across the cumulative schemes. | All development will adopt a CEMP to comply with relevant policy which contain measures to minimise impact to water quality of nearby watercourses. There will be some residual risk associated with the cumulative effects although this is limited by the phasing approach through the SRF.<br>The residual cumulative effects are assessed to be **Neutral (not significant)**. |
| Less vulnerable development | Potential for increased risk of flooding to nearby receptors if cumulative projects share receptors. | All development will adopt a CEMP to comply with relevant policy which contain measures to manage flood risk during the demolition and construction phase. Permits will be required for any works within the channel or within 8 m of the channel, therefore the EA will be able to regulate any construction works within the River Irk or Irwell which could impact local flood risk.<br>The residual cumulative effects are assessed to be **Neutral (not significant)**. |
| More vulnerable development | Potential for increased risk of flooding to nearby receptors if cumulative projects share receptors. | All development will adopt a CEMP to comply with relevant policy which contain measures to manage flood risk during the demolition and construction phase. Permits will be required for any works within the channel or within 8 m of the channel, therefore the EA will be able to regulate any construction works within the River Irk or Irwell which could impact local flood risk.<br>The residual cumulative effects are assessed to be **Slight Adverse (not significant)**. |
| Operational Phase | | |
| River Irk | Potential for impacts to water quality from sites which all discharge to the River Irk.<br><br>Potential for impacts to channel morphology for all works in or above the channel. | All sites will include drainage strategies which comply with standard guidance and legislation. Drainage strategies will propose treatment measures to reduce impact to water quality of receiving watercourses. There could be some minor residual cumulative impact.<br>Any works within 8 m of the River Irk will require a permit from the EA and therefore the cumulative impacts of these elements on hydromorphology and |

| Receptor | Cumulative effects | Significance |
|---|---|---|
| | | hydrology can be regulated. All proposals will ensure that there is no increase to flood risk or impact to WFD quality elements.<br><br>The residual cumulative effects are assessed to be **Slight Adverse (not significant)**. |
| River Irwell | Potential for impacts to water quality from sites which all discharge to the River Irwell. | All sites will include drainage strategies which comply with standard guidance and legislation. Drainage strategies will propose treatment measures to reduce impact to water quality of receiving watercourses. There could be some minor residual cumulative impact although the River Irwell has a greater diluting capacity.<br><br>The residual cumulative effects are assessed to be **Slight Adverse (not significant)**. |
| Water Utilities Infrastructure | Potential for insufficient capacity within existing utility networks. | New developments will comply with appropriate policy with regards surface water discharge and agree this in principle with the LLFA and other relevant regulators. The SRF will be served by the drainage network installed as part of Application 2 which has been designed to accommodate the future SRF developments.<br><br>The residual cumulative effects are assessed to be **Neutral (not significant)**. |
| Nitrate Vulnerable Zone | Potential for impacts to water quality from sites which all discharge to the River Irk within the NVZ. | All sites will include drainage strategies which comply with standard guidance and legislation. Drainage strategies will propose treatment measures to reduce impact to water quality of receiving watercourses. The land use of the sites is urban and therefore unlikely to discharge significant volumes of nitrates to the receptor. There could be some negligible residual cumulative impact.<br><br>The residual cumulative effects are assessed to be **Neutral (not significant)**. |
| Less vulnerable development | Potential impacts to flood risk for all sites located within the floodplain of the River Irk or Irwell.<br><br>Potential impact to surface water flood risk for all sites introducing increased impermeable surface area. | All sites will include drainage strategies which comply with standard guidance and legislation. These will ensure that there is no increase to surface water runoff from the site by attenuating flows and restricting discharge rates. Flood mitigation measures (if required) will also ensure that each site will not increase fluvial flood risk to any receptor, therefore cumulatively there is no increased impact.<br><br>The residual cumulative effects are assessed to be **Neutral (not significant)**. |

| Receptor | Cumulative effects | Significance |
|---|---|---|
| More vulnerable development | Potential impacts to flood risk for all sites located within the floodplain of the River Irk or Irwell.<br><br>Potential impact to surface water flood risk for all sites introducing increased impermeable surface area. | All sites will include drainage strategies which comply with standard guidance and legislation. These will ensure that there is no increase to surface water runoff from the site by attenuating flows and restricting discharge rates. Flood mitigation measures (if required) will ensure that each site will not increase fluvial flood risk to any receptor, therefore cumulatively there is no increased impact.<br><br>The residual cumulative effects are assessed to be **Slight Adverse (not significant)**. |

## Conclusions

10.167. This section presents information related to flood risk and drainage within Application 4 as part of the EIA. The assessment covers both the demolition and construction and operational phases of Application 4 as well as the likely significant effects Application 4 will have with the cumulative schemes and the SRF.

10.168. Receptors of the environmental effects that could potentially arise from Application 4 have been identified and the effect of Application 4 to these receptors has been examined. Where required, appropriate mitigation has been explored and a review of the residual effects (once the recommended mitigation measures have been implemented) has been undertaken.

10.169. The majority of potential impacts associated with Application 4 will be mitigated through 'embedded mitigation' measures designed into the development as well as additional mitigation, including the implementation of a CEMP.

10.170. The mitigation measures identified for both the demolition and construction and operational phases of Application 4 will significantly reduce the risk to the receptors that have been identified. All residual effects of Application 4 on identified receptors have been assessed as not significant.

# NT02 – NT04 (Full Application 5)

10.171. This section of this chapter presents an assessment of the detailed design of Application 5. Hereafter, the assessment refers to only plots NT02-NT04 covered in Application 5.

10.172. New Town Neighbourhood, specifically land designated for the development of plots NT02, NT03 and NT04 (in relation to application 5), is also located in the Lower Irk Valley. The Site is bounded by Dantzic Street, beyond which is the Application 4 area of the Site. To the east, the Application 5 area is bounded by Dalton Street and a small number of two-storey homes and a mid-rise residential tower building. To the south, the Application 5 area is bound by the railway line into Victoria Station. To the west, the Application 5 area is bound by the emerging Victoria Riverside development.

10.173. Application 5 currently consists of hardstanding and areas of prepared ground.

## Baseline Conditions (Application 5)

10.174. Baseline information for both the surface water and groundwater environment for Application 5 is presented below. The baseline conditions relating to flood risk are presented in the accompanying FRA (see **Appendix 10.1**).

### Surface Water features

10.175. Refer to **Sections 10.69-10.79** regarding surface water features and protected areas scoped in for assessment in Application 5. There are no surface water abstraction points or surface water discharge locations within the Application 5 boundary.

### Fluvial and Surface water flood risk

10.176. The potential risk of flooding for Application 5 from all current and future sources has been assessed in accordance with the National Planning Policy Framework.

10.177. The overall long-term flood risk from surface water is between Low risk to High risk for Application 5.

10.178. The overall long-term flood risk from canal flooding is no risk for Application 5.

10.179. The overall long-term flood risk from reservoirs is medium risk for Application 5, the Environment Agency's Reservoir Flood Risk map23 indicates that the site is at risk of flooding in the event of reservoir failure.

### Groundwater

#### Geology

10.180. The published geological map of the region indicates that Made Ground is present above the superficial deposits across the entire Study Area. The GI (2022)[35] undertaken for the Proposed Development indicates that the depth

of Made Ground varies from 1.7 mbgl in the west to 3 mbgl in the east. A detailed description of the Made Ground is presented in **Chapter 9: Ground Conditions**.

10.181. The superficial deposits underlying the Made Ground comprises Glacial Till. The GI (2022) undertaken within the Site indicates that Glacial Till was encountered to depths between 3 and 10 mbgl. A detailed description of the Glacial Till is presented in **Chapter 9: Ground Conditions**.

10.182. The bedrock geology underlying the superficial deposits comprises the Chester Formation (sandstone) and the Manchester Marls Formation (predominantly mudstone with sandstone and siltstone bands, as recorded in the 2022 GI borehole logs). The Chester Formation was encountered at depths between 2 and 7.65 mbgl in plots NT02 and NT03. The GI (2022) indicates that the Chester Formation overlies the Manchester Marls Formation in NT02 whilst in plot NT03, the Manchester Marls Formation was also found directly beneath the Glacial Till. In plot NT04, the bedrock beneath the Glacial Till comprises the Manchester Marls Formation encountered at depths between 6 and 10 mbgl. A fault, trending NNW-SSE, cuts across the east of Application 5 (within Plot NT04), which uplifts the Manchester Marl Formation. A detailed description of the bedrock strata encountered within the Application 5 Study Area is presented in **Chapter 9: Ground Conditions**.

### Aquifer Designations

10.183. Glacial Till is designated by the EA as a Secondary (undifferentiated) aquifer, which are typically low permeability aquifers that rarely support small supplies or baseflow to rivers.

10.184. The Chester Formation is designated as a Principal aquifer, which is an aquifer that regionally provides significant quantities of potable drinking water and may also support baseflow to rivers, lakes and wetlands. The Manchester Marls Formation is designated as a Secondary B aquifer, which is a designation given to aquifers with mainly lower permeability layers that may store and yield limited amounts of groundwater (EA, 2017)[48]. The bedrock aquifers are expected to be in hydraulic connectivity with the River Irk (based on the 2022 GI) and therefore, likely support baseflow to the river.

### WFD Groundwater Body

10.185. The bedrock aquifers (Chester, Manchester Marls, and Collyhurst Sandstone Formations) underlying the Study Area are within the Manchester and East Cheshire Permo-Triassic Sandstone Aquifers Groundwater Body (GB41201G101100) under the WFD. The groundwater body covers a surface catchment area of 367.346 km$^2$. The Overall, Quantitative, and Chemical status of the groundwater body is classified as 'Poor' (2019 Cycle 3) with an

[48] Environment AgencyGOV.UK. (2017) ). Protect groundwater and prevent groundwater pollution. [online],] Available at: https://www.gov.uk/government/publications/protect-groundwater-and-prevent-groundwater-pollution/protect-groundwater-and-prevent-groundwater-pollution [Accessed March 2023]

objective of achieving 'Good' Overall, Quantitative, and Chemical status by 2021. The reasons for not achieving 'Good' status include saline intrusion (Quantitative and Chemical from natural and other pressures) and an unknown activity under investigation.

### Groundwater Levels and Flow

10.186. Groundwater flow within the Made Ground and Glacial Till is expected to be variable and limited in lateral and vertical extent with flow occurring within the higher permeability lenses (i.e., sand and gravel).

10.187. The groundwater flow direction within the bedrock aquifers is considered to be towards the River Irk, based on the results of the GI (2022). Groundwater flow within the sandstone aquifer occurs via a combination of intergranular and fracture flow. The Manchester Marls Formation predominantly comprises low permeability mudstones with bands of more permeable sandstones, where flow is expected to occur via a combination of intergranular and fracture flow.

10.188. The 2022 GI indicates that groundwater levels are relatively consistent across the Study Area and therefore, groundwater within the Chester Formation and Manchester Marls Formation is expected to be in continuity.

10.189. Due to the coverage of Made Ground and Glacial Till across the entire Study Area (between depths of 2 and 10 mbgl), recharge to the bedrock aquifer within the Study Area is considered relatively low and may occur more where these overlying deposits are thinner or where they comprise more permeable lenses (i.e., sand and gravel). Where Made Ground and Glacial Till are present, the sandstone aquifer is likely to be semi-confined to confined.

10.190. Based on the GIs undertaken within the Application 4 Site and the similar geological setting, it is possible that perched discontinuous groundwater is present within the Made Ground and Glacial Till, which may be hydraulically separated from groundwater within the sandstone and mudstone aquifer where these deposits are thicker. However, this has not been proven within the Application 5 GI (2022).

10.191. Water strikes were not recorded during the 2022 GI due to the drilling method. Groundwater level monitoring was, however, undertaken in 11 boreholes across the Study Area. The results of the groundwater monitoring presented in the RoC report (dated October 2022)[37] records groundwater levels between 4.60 and 13.84 mbgl (26.25 and 29.3 mAOD) within the bedrock aquifers. The RoC report notes that groundwater level monitoring was undertaken within the summer months and therefore, it is possible that seasonal high groundwater levels are higher than those recorded.

### Groundwater Vulnerability

10.192. The EA's 2017 groundwater vulnerability map shows the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties (EA, 2023)[49]. The

[49] Agency, E. (2020). *Groundwater Vulnerability Maps (2017) on MAGIC*. [online] www.data.gov.uk. Available at: https://www.data.gov.uk/dataset/42d7d021-538c-46e2-abbb-644e01c63551/groundwater-vulnerability-maps-2017-on-magic.

groundwater vulnerability map indicates that the Application 5 Study Area is classified as a Medium-Low to Low groundwater vulnerability zone. This is likely attributed to the coverage of the low permeability Glacial Till and Made Ground artificial deposits.

### GWDTEs and SPZs

10.193. There are no known identified GWDTEs within the Application 5 Study Area.

10.194. There are also no SPZs, and no drinking water protected areas within the Application 5 Study Area.

### Licensed Groundwater Abstractions

10.195. Licensed groundwater abstraction data has been requested from the EA (see **Table 10.5**). The data indicates that there are no licensed groundwater abstractions within the Proposed Development and that there are four licensed abstractions within the Study Area. Details of the licensed abstractions are provided in **Table 10.25**.

***Table 10.25:*** *Licensed groundwater abstractions within the 1 km Study Area*

| Licence holder | Easting | Northing | Purpose of abstraction | Source of abstraction | Proximity to Proposed Development (NT02-04) |
|---|---|---|---|---|---|
| Joseph Holt Ltd | 384100 | 399700 | General cooling (low loss) | Permo-Triassic Sandstone | 597 m northwest |
| Joseph Holt Ltd | 384100 | 399700 | Process water | Permo-Triassic Sandstone | 597 m northwest |
| Packaging Products (Coatings) Ltd | 385000 | 400100 | General cooling (low loss) | Permo-Triassic Sandstone | 646 m northeast |
| British Telecommunications Plc | 383700 | 398700 | General cooling (high loss) | Permo-Triassic Sandstone | 1.1 km southwest |

10.196. Given that the land use within the Proposed Development and Study Area is industrialised and urbanised, it is considered likely that smaller properties that may have historically been supplied by groundwater resources are likely to have since been connected to mains water supply.

10.197. BGS historical borehole data is publicly available and has been obtained to identify potential receptors30. There are no BGS borehole records within the Proposed Development and 33 total borehole records within the Study Area. The closest BGS borehole record to the Site is located approximately 174 m west of the boundary. The BGS

borehole records suggest that there are historic or smaller abstractions targeting the sandstone aquifers within the site.

10.198. Contamination within the soils and within the shallow groundwater in the Made Ground was recorded during the 2022 GI. The impacts of potential contamination of groundwater on the aquifers is assessed in **Chapter 9: Ground Conditions** and therefore, has not been assessed in this chapter.

### Flood Risk

10.199. Site investigations carried out by Arup (Application 4) and RoC Consulting (Application 5) indicate that groundwater was encountered at varying depths across the site generally ranging from 3 mbgl to 6 mbgl. Therefore, it is considered that the risk of groundwater flooding to the site is low.

10.200. A detailed description of the baseline flood risk for all sources of flooding for Application 5 is included in the accompanying FRA (see **Appendix 10.1**).

## Embedded Mitigation (Application 5)

### Demolition and Construction Phase

10.201. There are no embedded mitigation measures proposed as part of the demolition and construction phase.

### Operational Phase

7.1 The following embedded mitigation measures are proposed as part of the completed development (refer to the Flood Risk Assessment (**Appendix 10.1**) for further information:

- The built development will sit outside of the flood extent for the 1 in 100 year storm event due to the creation of compensatory flood storage;
- Less vulnerable development such as commercial units located on the lower ground level will be constructed using flood resilient design with a waterproof external construction to a level of the 1 in 100 year storm event plus 45% climate change, plus 150mm freeboard;
- More vulnerable developments such residential buildings located on the lower ground level will be constructed using flood resilient design with a waterproof external construction to a level of the 1 in 100 year storm event plus 45% climate change, plus 150mm freeboard;
- No residential development shall have a finished floor level lower than the 1 in 100 year storm event plus 45% climate change plus 150mm freeboard;
- The surface water drainage will be designed such that the rate of surface run-off from the Site is no greater than the existing scenario and as such will not result in an increase of flooding elsewhere;

- New private and adoptable surface water system which is designed to accommodate 100 year plus 45% climate change rainfall event;
- All surface water runoff from within the wider boundary will be collected into new separate private and adoptable surface water drainage systems prior to discharge to the River Irk at greenfield runoff rates;
- A reduction in surface water runoff into the combined sewerage system is likely to have the potential to reduce the occurrence of spills into the River Irk from CSO's; and
- Overland flows will be safely routed away from buildings and ultimately be conveyed across the site surface towards the River Irk in the event of failure or design exceedance of the proposed site drainage system.

## Assessment of likely significant effects (Application 5)

### Demolition and Construction Phase

10.202. Potential impacts on the water environment stemming from the demolition and construction phase of the Proposed Development include the following which are assessed separately below:

- Impact to water quality and hydromorphology by entrainment of materials;
- Impact to water quality by spillage of pollutants;
- Impact to hydrological and hydromorphological processes in and over the River Irk;
- Impacts to Flood Risk; and
- Impacts to Groundwater during Demolition and Construction.

#### Impact to water quality and hydromorphology by entrainment of materials

10.203. The entrainment of loose sediment either exposed through excavation or stockpiled on site could make its way to the River Irk and subsequently the River Irwell. The likelihood of this process increases where there are proposed works within the channel (i.e., installation of a new outfall). This can increase the turbidity within the watercourse and have detrimental impacts to both water quality and aquatic ecology. If fine sediment is deposited, it can smother aquatic habitats and impact the oxygen levels in the water body. It can also impact the hydromorphological processes by altering bedforms within the watercourse through sediment deposition and consequently altering the cross-sectional profile and variation. Changes to the sediment dynamics could also potentially alter prevailing erosion and deposition processes operating. The potential for fine sediment accumulations could also result in a change in marginal and in-channel vegetation. This could trigger a feedback loop resulting in further morphological adjustment of the watercourse at the reach-scale.

10.204. This potential impact could affect the River Irk and River Irwell. Potential effects to hydrological and hydromorphological processes of these watercourses associated with a new outfall are presented in **Table 10.26**. In addition, it could also affect the water utilities infrastructure.

***Table 10.26:*** *Assessment of effects to water quality and hydromorphology by entrainment of materials*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance (prior to mitigation) |
|---|---|---|---|---|
| River Irk | High | Moderate Adverse | Works directly in the River Irk for the construction of a new outfall. | **Moderate Adverse**<br><br>Reversible / Local / Short term / Direct |
| River Irwell | Very High | Minor Adverse | Works directly within the River Irk which is immediately upstream of the River Irwell. The River Irwell has a greater diluting capacity for suspended sediments. | **Moderate Adverse**<br><br>Reversible / Local / Short term / Indirect |
| Water Utilities Infrastructure | High | Moderate Adverse | Excess sediments spilling into the existing drainage network have the potential to reduce the networks capacity. | **Moderate Adverse**<br><br>Reversible / Local / Short term / Direct |

10.205. The following significant effects are the same as the Outline Application (Application 4).

## Impacts to water quality by spillage of pollutants

10.206. The conclusions regarding magnitude of impact and significance of effect by spillage of pollutants are the same for Application 4 and 5. **Table 10.27** summarises the assessment of effects to water quality by spillage of pollutants.

***Table 10.27****: Assessment of effects to water quality by spillage of pollutants (Application 5)*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance prior to mitigation |
|---|---|---|---|---|
| River Irk | High | Moderate Adverse | Works occurring adjacent to and within the River Irk. | **Moderate Adverse**<br>Reversible / Local / Short term / Direct |
| River Irwell | Very High | Minor Adverse | Works occurring adjacent to and within the waterbody immediately upstream of the River Irwell. | **Moderate Adverse**<br>Reversible / Local / Short term / Indirect |
| Nitrate Vulnerable Zone | Very High | Negligible | Works occurring within NVZ, risk of routine runoff. | **Slight Adverse**<br>Reversible / Local / Short term / Direct |

### Impact to hydrological and hydromorphological processes

10.207. A new outfall is proposed for the surface water drainage network serving Application 5.

10.208. Whilst the new outfall is constructed, a dry working area within the channel will be required. During this work, the cross-sectional area of the River Irk will be reduced, therefore potentially increasing velocities, increasing scour and causing a back-up of water upstream of the dry working areas. This could have an influence on flow conditions in the downstream River Irwell. If velocities through the reach are higher, there is potential for more sediment to be carried through the reach and transported to the River Irwell.

10.209. The channel at this location is heavily modified and therefore expected to be tolerant to any increased shear stresses in the channel. Hydrological connectivity of the watercourse will be maintained as the dry working area will not extend across the whole channel.

10.210. The assessment of effects from this potential impact are presented in **Table 10 28**.

***Table 10 28:*** *Assessment of effects for hydrological and hydromorphological processes from works in the River Irk channel*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance prior to mitigation |
|---|---|---|---|---|
| River Irk | High | Moderate Adverse | Works directly in the channel. Hydraulic connectivity will be maintained throughout construction. Condition of the watercourse is likely to be tolerant to small changes in shear stress and velocity. | **Moderate Adverse**<br><br>Reversible / Local / Short term / Direct |
| River Irwell | Very High | Minor Adverse | Works occurring in the watercourse upstream. Any potential significant effects are likely to dissipate before reaching the River Irwell which is 0.4 km downstream of the River Irk. | **Moderate Adverse**<br><br>Reversible / Local / Short term / Indirect |

### Impacts to Flood Risk

10.211. The conclusions regarding magnitude of impact and significance of flood risk during the demolition and construction phase are the same for Application 4 and 5. **Table 10.29** summarises the assessment of effects to flood risk.

***Table 10.29:*** *Assessment of effects to flood risk (Application 5)*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance prior to mitigation |
|---|---|---|---|---|
| Land classed as 'less vulnerable' regarding flood risk | Medium | Moderate Adverse | Potential for flooding | **Moderate Adverse** Reversible / Local / Short term / Direct |
| Land classed as 'more vulnerable' regarding flood risk | High | Moderate Adverse | Potential for flooding. | **Moderate Adverse** Reversible / Local / Short term / Direct |
| Construction Workers | Very High | Major Adverse | Potential for loss of life for workers in the channel and the floodplain during a high flow event. | **Very Large Adverse** Permanent / Local / Long term / Direct |

## Impacts to Groundwater during Demolition and Construction

10.212. The potential impacts to groundwater during the demolition and construction phase within the Application 5 Study Area are the same as those for Application 4 and, therefore, the following paragraphs should be read in conjunction with **Section 10.130.**

10.213. Excavations are proposed in areas across the Application 5 Site and drawing no. RDB/ROC/ZZ/XX/DR/C/0601 (see **Appendix 10.5)** indicates that the proposed finished levels range between 31.55 and 41 mAOD. Groundwater levels encountered during the 2022 GI[35] monitoring recorded water levels between 26.25 and 29.3 mAOD (see **Section 10.127)** and therefore, it is unlikely that groundwater will be encountered during the proposed earthworks. Due to the monitoring period, the groundwater level monitoring results may not be representative of the seasonal high groundwater levels and if levels were to rise by >2 m, then groundwater may be encountered.

10.214. The RoC GI report (October 2022)[37] indicates that piled foundations are recommended and should be piled into the competent bedrock. The potential impact is, therefore, similar to that for Application 4 (see **Section 10.128**).

10.215. The potential impacts to groundwater during the demolition and construction phase within the Application 5 Study Area are the same as the impacts provided in **Table 10.15**, although, it should be noted that Alluvium deposits and the Collyhurst Sandstone Formation were not encountered within the Application 5 Study Area and therefore, these receptors do not apply to Application 5.

## Operational Phase

10.216. Potential impacts to the water environment stemming from the operational phase of the Proposed Development include the following which are assessed separately below:

- Impacts to water quality from site drainage;
- Impacts to channel morphology from new structures within the channel / floodplain;
- Impact to flood risk; and
- Impacts to groundwater from the Proposed Development.

### Impacts to water quality from site drainage

10.217. The conclusions regarding magnitude of impact and significance of impact to water quality from site drainage are the same for Application 4 and 5. **Table 10.30** summarises the assessment of effects from the impacts to water quality from site drainage.

***Table 10.30:*** *Assessment of impacts to water quality from site drainage*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance (prior to mitigation) |
|---|---|---|---|---|
| River Irk | High | Negligible | Surface water runoff treated via site drainage. Very low risk of spillage. | **Slight Adverse** Permanent / Local / Long term / Indirect |
| River Irwell | Very High | Negligible | Surface water runoff treated via site drainage. Very low risk of spillage. | **Slight Adverse** Permanent / Local / Long term / Indirect |

### Impacts to channel morphology from new structures within the channel /floodplain

10.218. Application 5 includes a new outfall to the River Irk to discharge surface water runoff from the site drainage network. The outfall will introduce a new flow to the channel which can alter flow dynamics and sediment processes.

10.219. The new outfall will be constructed above the 1 in 30 year flood level, will be angled in the direction of flow and have appropriate bed protection to minimise disruption to flow dynamics and minimise scour.

10.220. The assessment of effects from this potential impact are presented in **Table 10.31**.

***Table 10.31:*** *Assessment of channel morphology from new structures within the channel / floodplain*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance (prior to mitigation) |
|---|---|---|---|---|
| River Irk | High | Negligible | Outfall design will minimise impact. | **Slight Adverse**<br><br>Permanent / Local / Long term / Direct |
| River Irwell | Very High | No change | There are no physical changes proposed for the River Irwell. Impacts to the River Irk are not anticipated to impact the River Irwell. | **Neutral**<br><br>Permanent / Local / Long term / Indirect |

## Impact to Infrastructure Capacity

10.221. Application 5 has its own drainage network; therefore, it is unlikely to impact the capacity of existing infrastructure.

10.222. The assessment of effects for this potential impact are presented in **Table 10.32**.

***Table 10.32:*** *Assessment of likely significant impact to infrastructure capacity*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance (prior to mitigation) |
|---|---|---|---|---|
| Water Utilities Infrastructure | High | Minor Beneficial | A new drainage network will be in place for Application 5, reducing the risk of surcharging the capacity for existing infrastructure. | **Slight Beneficial**<br><br>Permanent / Local / Long term / Direct |

## Impact to flood risk

10.223. Refer to the Flood Risk Assessment (see **Appendix 10.1**) for an explanation of how Application 5 will affect flood risk receptors. The conclusions for magnitude of impact and significance of effect are the same as those reported for Application 4 (**Table 10.19**). A summary of assessment of likely significant effects are highlighted in **Table 10.33**.

***Table 10.33:*** *Assessment of likely significant effects of flood risk (Application 5)*

| Receptor | Sensitivity | Magnitude of impact | Justification | Significance (prior to mitigation) |
|---|---|---|---|---|
| Land classed as 'Less Vulnerable' regarding flood risk | Medium | Negligible | Flood model shows no significant change in flood risk. The change in water level between the baseline and Proposed Development is between the range of 0.002-0.01 mm. | **Neutral**<br>Permanent / Local / Long term / Direct |

| | | | | |
|---|---|---|---|---|
| Land classed as 'More Vulnerable' regarding flood risk | High | Negligible | Flood model shows no significant change in flood risk. The change in water level between baseline and Proposed Development is between the range of 0.002-0.01 mm. | **Slight Adverse** Permanent / Local / Long term / Direct |

### Impacts to Groundwater during Operational Phase

10.224. The potential impacts to groundwater during the operational phase within the Application 5 Study Area are the same as those for Application 4 and, therefore, the following paragraphs should be read in conjunction with **Section 10.146.**

10.225. The potential impacts to groundwater during the operational phase within the Application 5 Study Area are the same as the impacts provided in **Table 10.15**, although, it should be noted that Alluvium deposits and the Collyhurst Sandstone Formation were not encountered within the Application 5 Study Area and therefore, these receptors do not apply to Application 5.

## Additional mitigation and enhancement measures (Application 5)

10.226. The measures to be included in a CEMP identified below will be sufficient to minimise the risk of potential impacts to the water environment to a tolerable level. Any works within the channel or within 8 m of the River Irk will require a Flood Risk Activity Permit from the EA. The permitting process should ensure that suitable measures are in place during the demolition and construction phase to manage flood risk and environmental impact.

10.227. The potential risk to groundwater quality is expected to be mitigated by the implementation of a Demolition Plan, Remediation Strategy, CEMP, and, if required, a Piling Risk Assessment through sediment and pollution control measures outlined in the Additional Mitigation Section.

10.228. The following mitigation measures, which are not exhaustive, are recommended to be included within the CEMP:

### Sediment and Pollution Control

- Avoid the positioning of stockpiles near to watercourses and ensure they are located outside of the flood zone;
- Stockpiles should be located a minimum of 10 m from the top of bank of any watercourse;
- Cover stockpiles when not in use;
- Contain stockpiles with bunds or sediment fences;
- Control of runoff during construction. This may include creating temporary drainage systems to both alleviate flood risk and help to prevent sediment laden runoff entering the watercourse;

- Compliance with the relevant Sections of BS6031:2009 Code of Practice for Earthworks[50] with respect to protection of water quality and control of site drainage including washings, dewatering, abstractions and surface water;
- Fuels and potentially hazardous construction materials should be stored in bunded areas with external cut-off drainage, and fuel should be stored in double skinned tanks with 110% capacity;
- Waste fuels and other fluid contaminants should be collected in leak-proof containers prior to removal from site to an approved processing facility;
- Fuelling and lubrication of construction vehicles and plant should be done on hard standing or on haul roads, where reasonably practical, with appropriate cut-off drainage and located away from watercourses. In the event of plant breakdown drip trays should be used during any emergency maintenance and spill kits will be available on site;
- Provide sediment barriers between earth works and the construction zone and the watercourse to prevent sediment from washing into the river. An exclusion zone of 8 m from the watercourse should be maintained as far as practicable;
- Use of silt fences, silt traps, filter bunds, settlement basins and / or proprietary units to treat sediment laden water generated on site before discharge;
- Use of in-channel silt management systems such as silt curtains within the River Irk during in-channel works or works adjacent to the channel;
- Availability of oil absorbent booms on site to be deployed in the event of a significant spillage;
- Regular inspection of control and treatment measures to ensure they are working effectively;
- Regular checking of construction plant for oil and fuel leaks, particularly when construction works are undertaken in or near the existing site water bodies;
- Collection of waste fuels and other fluid contaminants in leak-proof containers prior to removal from construction site to an approved recycling processing facility;
- Concrete mixing and washing areas should be located more than 10 m from any watercourse; have settlement and re-circulation systems for water reuse; have a contained area for washing out of concrete batching plant or ready-mix lorries; and collect wash-waters and, where necessary, contain wash-water for authorised off-site disposal. Wash-water from concrete should not be discharged into the watercourse;
- Avoiding vehicle cleaning near to existing watercourses;
- Dewatering working areas to maintain a dry construction area and passing any water generated by the dewatering process through silt busters or sediment tanks prior to returning this water to the watercourses;

[50] British Standards Institute (2009) BS 6031:2009 Code of practice for earthworks

- Lining any temporary excavations to prevent infiltration of contaminants to the groundwater;
- Foul drainage from site welfare facilities should be disposed of appropriately. This may be by discharge to the foul sewer or by collection in a septic tank for disposal off site; and
- Deploying appropriate measures / methods in areas where contamination has been identified (or is suspected).

## Vegetation clearance

- Limit the clearance of vegetation on the channel banks and riparian zone. Where practicable, maintain a vegetated buffer strip between the construction zone and the watercourse. Ideally, a minimum buffer strip of 8 m should be retained where possible;
- Where works are required on the watercourse banks, or in-channel, vegetation clearance should be restricted to the working area and should be undertaken only immediately prior to the commencement of those works, except for other circumstances where earlier clearance may be required due to the presence of protected species. Vegetation should be re-established as soon as practicable; and
- Appropriate management and disposal of invasive non-native species.

## Timing of works

- River works including wall demolition will be timed to avoid disturbance of spawning fish. For the species encountered during detailed fish surveys this period is April- July;
- Undertaking the construction works during the late-spring and summer period typically coincides with lower flow conditions, less precipitation and reduced risk of high flow events, thus reducing the risk of the impacts listed above; and
- Avoid construction activities during high flow events and heavy rainfall. Monitoring of flows and rainfall within the upstream catchment should be undertaken and action taken to halt works should high flows be anticipated due to prevailing weather conditions.

## Managing flood risk

- Adoption and implementation of a Flood Action Plan by the Principal Contractor;
- Sign up for flood warnings and check online warnings regularly;
- Avoid works in the floodplain or watercourses during high flow events, intense rainfall events or when a flood warning is issued;
- Avoid long term works in the floodplain during winter when fluvial flooding is more likely;
- Site compound(s) should be located outside of the floodplain;
- Materials and mobile machinery should be stored outside the floodplain;

- If a flood warning is received from the EA, all machinery and equipment should be moved out of the floodplain. If this cannot be completed in a safe time, equipment should be secured to prevent it being washed away; and
- All relevant consents should be sought as required from the EA for any temporary works or permanent structures within 8 m of a 'main river' watercourse.

## Operational Phase

10.229. No additional mitigation is required as all mitigation is embedded in the design of the Proposed Development.

## Likely Residual Effects of the Development and their significance (Application 5)

### Purpose

10.230. Residual effects are those effects of the Proposed Development which result after mitigation measures have been implemented.

### Likely residual effects of the development and their significance

10.231. **Table 10.34** assesses the residual effects of the Proposed Development and their significance.

***Table 10.34:*** *Residual effects summary for Application 5*

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| **Demolition and Construction Phase** | | | | |
| River Irk | Impact to water quality and hydromorphology by entrainment of materials | **Moderate Adverse (significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP. | **Slight Adverse (Not significant)** |
| River Irwell | | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Indirect | Implementation of measures and controls within the CEMP. | **Slight Adverse (Not significant)** |
| Water Utilities Infrastructure | | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP. | **Neutral (Not significant)** |
| River Irk | Impacts to water quality by spillage of pollutants | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP. | **Slight Adverse (Not significant)** |
| River Irwell | | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term | Implementation of measures and controls within the CEMP. | **Slight Adverse (Not significant)** |

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| | | - Indirect | | |
| Nitrate Vulnerable Zone | | **Slight Adverse (Not significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP. | **Neutral (Not significant** |
| River Irk | Impact to hydrological and Hydromorphological processes | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP.<br><br>Some residual risk due to works carried out within the watercourse. | **Slight Adverse (Not significant)** |
| River Irwell | | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Indirect | Implementation of measures and controls within the CEMP. | **Slight Adverse (Not significant)** |
| Land classes as 'Less vulnerable' regarding flood risk | Impact to Flood Risk | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP. | **Neutral (Not significant)** |
| Land Classes as 'More vulnerable' regarding flood risk | | **Moderate Adverse (Significant)**<br>- Reversible<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP. | **Slight Adverse (Not significant)** |

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| Construction workers | | **Very Large Adverse (Significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Direct | All risks to construction workers are managed through each development's health and safety systems and CEMP. | **Slight Adverse (Not significant)** |
| Glacial Till superficial aquifers (Secondary (undifferentiated) and Secondary A aquifers) | Temporary impacts to groundwater levels and flow from excavation earthworks and below-ground structures. | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| Bedrock aquifer (Manchester Marls Formation – Secondary B aquifer) | | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| Bedrock aquifers (Chester Formation – Principal aquifer) | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Regional<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| Licensed groundwater abstractions and historic local boreholes | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Regional<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| | | | | |
| Glacial Till superficial aquifers (Secondary (undifferentiated) and Secondary A aquifers) | Impact on groundwater quality due to the mobilisation of contaminants and sediments released at surface during earthworks or from accidental spillages. | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| Bedrock aquifer (Manchester Marls Formation – Secondary B aquifer) | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Regional<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| Bedrock aquifers (Chester Formation – Principal aquifer) | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Regional<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| Licensed groundwater abstractions and historic local boreholes | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Regional<br>- Short term<br>- Direct | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment. | **Neutral (Not significant)** |
| **Operational Phase** | | | | |

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| River Irk | Impacts to water quality from site drainage. | **Slight Adverse (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Indirect | There is no additional mitigation required. | **Slight Adverse (Not significant)** |
| River Irwell | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Indirect | There is no additional mitigation required. | **Slight Adverse (Not significant)** |
| River Irk | Impacts to channel morphology from new structures within the channel / floodplain. | **Slight Adverse (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Direct | There is no additional mitigation required. | **Slight Adverse (Not significant)** |
| River Irwell | | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Indirect | There is no additional mitigation required. | **Neutral (Not significant)** |
| Water Utilities Infrastructure | Impact to Infrastructure Capacity. | **Slight Beneficial (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Direct | There is no additional mitigation required. | **Slight Beneficial (Not significant)** |

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| Land classes as 'Less vulnerable' regarding flood risk | Impacts to Flood Risk. | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Direct | There is no additional mitigation required. | **Neutral (Not significant)** |
| Land Classes as 'More vulnerable' regarding flood risk | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Local<br>- Long term<br>- Direct | There is no additional mitigation required. | **Slight Adverse (Not significant)** |
| Glacial Till superficial aquifers (Secondary (undifferentiated) and Secondary A aquifers) | Impact groundwater levels and flow caused by permanent below-ground structures.<br><br>Reduction of surface area for groundwater recharge. | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Short term<br>- Direct | The below-ground structures will be designed to allow groundwater to flow around them in the direction of the natural receptor of flow (River Irk). The increase in developed surface area is not expected to be significant compared to the existing land use and therefore, any impact to groundwater recharge is not expected to be significant. | **Neutral (Not significant)** |
| Bedrock aquifer (Manchester Marls Formation – Secondary B aquifer) | | **Neutral (Not significant)**<br>- Permanent<br>- Local<br>- Short term<br>- Direct | The below-ground structures will be designed to allow groundwater to flow around them in the direction of the natural receptor of flow (River Irk). The increase in developed surface area is not expected to be significant compared to the existing land use and therefore, any impact to groundwater recharge is not expected to be significant. | **Neutral (Not significant)** |
| Bedrock aquifers (Chester Formation – Principal aquifers) | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Regional<br>- Short term | The below-ground structures will be designed to allow groundwater to flow around them in the direction of the natural receptor of flow (River Irk). The increase in developed surface area is not expected to be significant compared to the | **Neutral (Not significant)** |

| Receptor | Description of effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|---|
| | | - Direct | existing land use and therefore, any impact to groundwater recharge is not expected to be significant. | |
| Licensed groundwater abstractions and historic local boreholes | | **Slight Adverse (Not significant)**<br>- Permanent<br>- Local<br>- Short term<br>- Direct | The below-ground structures will be designed to allow groundwater to flow around them in the direction of the natural receptor of flow (River Irk). The increase in developed surface area is not expected to be significant compared to the existing land use and therefore, any impact to groundwater recharge is not expected to be significant. | **Neutral (Not significant)** |

## Likely Residual Cumulative Effects and their significance

10.232. An assessment of potential cumulative effects has been completed in relation to surface water. The assessment of potential cumulative effects has considered all the potential receptors identified in Application 5 during the demolition, construction, and operational phases**.** A summary of the likely residual cumulative effects and their significance during the demolition and construction and operational phases are provided in **Table 10.356.**

***Table 10.35**: Assessment of likely residual cumulative effects and their significance (Application 5)*

| Receptor | Cumulative effects | Significance |
|---|---|---|
| Demolition and Construction Phase | | |
| River Irk | Potential for increased turbidity in the River Irk from entrained sediments reaching the watercourse via surface water runoff. This may impact sediment processes in the watercourse with potential increased sediment loading.<br><br>Potential for increased risk of spillage of pollutants affecting the watercourse. The risk of spillage of each site will remain the same, however the combined total is greater for the River Irk. | All development will adopt a CEMP to comply with relevant policy which contain measures to minimise impact to water quality of nearby watercourses. There will be some residual risk associated with the cumulative effects. It should be noted that schemes 4 and 7 are already under construction and therefore the cumulative effects relating to these sites are not likely as they will likely be complete before Application 5 begins construction.<br><br>The residual cumulative effects relating to water quality are assessed to be **Slight Adverse (not significant)**. |
| River Irwell | Potential for increased turbidity in the River Irwell from entrained sediments reaching the watercourse via surface water runoff. This may impact sediment processes in the watercourse with potential increased sediment loading. The potential impact is reduced by the diluting capacity of the River Irwell.<br><br>Potential for increased risk of spillage of pollutants affecting the watercourse. The risk of spillage of each site will remain the same, however, the combined total is greater for the River Irwell. | All development will adopt a CEMP to comply with relevant policy which contain measures to minimise impact to water quality of nearby watercourses. There will be some residual risk associated with the cumulative effects. It should be noted that schemes 4 and 7 are already under construction and therefore the cumulative effects relating to these sites are not likely as they will likely be complete before Application 5 begins construction.<br><br>The residual cumulative effects relating to water quality are assessed to be **Slight Adverse (not significant)**. |
| Construction workers | No cumulative effects are anticipated. All risk to construction workers is managed through each development's health and safety systems and CEMP. | The residual cumulative effects relating to construction workers is assessed to be **Slight Adverse (not significant)**. |
| Water Utilities Infrastructure | Potential for reduced capacity of drainage networks with entrainment of sediments or temporary discharges. | All development will adopt a CEMP to comply with relevant policy which contain measures to control sediment on site. Discharge to water networks will require licenses which will be granted by the relevant regulators.<br><br>The residual cumulative effects relating to Water Utilities Infrastructure is assessed to be **Neutral (not significant)**. |

| Receptor | Cumulative effects | Significance |
|---|---|---|
| Nitrate Vulnerable Zone | Potential for increased risk of spillage of nitrates or from routine runoff from construction sites across the cumulative schemes. | All development will adopt a CEMP to comply with relevant policy which contain measures to minimise impact to water quality of nearby watercourses. There will be some residual risk associated with the cumulative effects.<br>The residual cumulative effects relating to NVZ is assessed to be **Neutral (not significant)**. |
| Less vulnerable development | Potential for increased risk of flooding to nearby receptors if cumulative projects share receptors. | All development will adopt a CEMP to comply with relevant policy which contain measures to manage flood risk during the construction phase. Permits will be required for any works within the channel or within 8 m of the channel, therefore the EA will be able to regulate any construction works within the River Irk or Irwell which could impact local flood risk.<br>The residual cumulative effects relating to less vulnerable development is assessed to be **Neutral (not significant)**. |
| More vulnerable development | Potential for increased risk of flooding to nearby receptors if cumulative projects share receptors. | All development will adopt a CEMP to comply with relevant policy which contain measures to manage flood risk during the construction phase. Permits will be required for any works within the channel or within 8 m of the channel, therefore the EA will be able to regulate any construction works within the River Irk or Irwell which could impact local flood risk.<br>The residual cumulative effects relating to more vulnerable development is assessed to be **Slight Adverse (not significant)**. |
| Operational Phase | | |
| River Irk | Potential for impacts to water quality from sites which all discharge to the River Irk. | All sites will include drainage strategies which comply with standard guidance and legislation. Drainage strategies will propose treatment measures to reduce impact to water quality of receiving watercourses. There could be some minor residual cumulative impact.<br>The residual cumulative effects relating to the River Irk are assessed to be **Slight Adverse (not significant)**. |

| Receptor | Cumulative effects | Significance |
|---|---|---|
| River Irwell | Potential for impacts to water quality from sites which all discharge to the River Irwell. | All sites will include drainage strategies which comply with standard guidance and legislation. Drainage strategies will propose treatment measures to reduce impact to water quality of receiving watercourses. There could be some minor residual cumulative impact although the River Irwell has a greater diluting capacity.<br><br>The residual cumulative effects relating to the River Irwell is assessed to be **Slight Adverse (not significant)**. |
| Water Utilities Infrastructure | Potential for insufficient capacity within existing utility networks. | New developments will comply with appropriate policy with regards to flood risk and surface water management. All developments will comply with appropriate policy with regards to flood risk and surface water management, limiting discharge to greenfield runoff rates.<br><br>The residual cumulative effect is assessed to be **Neutral (not significant)**. |
| Nitrate Vulnerable Zone | Potential for impacts to water quality from sites which all discharge to the River Irk within the NVZ. | All sites will include drainage strategies which comply with standard guidance and legislation. Drainage strategies will propose treatment measures to reduce impact to water quality of receiving watercourses. The land use of the sites is urban and therefore unlikely to discharge significant volumes of nitrates to the receptor. There could be some negligible residual cumulative impact.<br><br>The residual cumulative effects relating to the NVZ is assessed to be **Neutral (not significant)**. |
| Less vulnerable development | Potential impacts to flood risk for all sites located within the floodplain of the River Irk or Irwell.<br><br>Potential impact to surface water flood risk for all sites introducing increased impermeable surface area. | All sites will include drainage strategies which comply with standard guidance and legislation. These therefore should ensure that there is no increase to surface water runoff from the site by attenuating flows and restricting discharge rates. Flood risk mitigation (if required) will ensure that each site will not increase fluvial flood risk to any receptor, therefore cumulatively there is no increased impact.<br><br>The residual cumulative effects relating to less vulnerable development is assessed to be **Neutral (not significant)**. |
| More vulnerable development | Potential impacts to flood risk for all sites located within the floodplain of the River Irk or Irwell. | All sites will include drainage strategies which comply with standard guidance and legislation. These therefore should ensure there is no increase to surface water runoff from the site by attenuating flows and restricting discharge rates. Flood risk mitigation (if required) will ensure that each site will not increase fluvial flood risk to any receptor, therefore cumulatively there is no increased impact. |

| Receptor | Cumulative effects | Significance |
|---|---|---|
| | Potential impact to surface water flood risk for all sites introducing increased impermeable surface area. | The residual cumulative effects relating to more vulnerable development is assessed to be **Slight Adverse (not significant)**. |

## Assessment of Application 5, cumulative schemes and the SRF

10.233. Application 5 (NT02-NT04) is a small parcel of land located to the south of the overall SRF proposal and will take place in phase one of the SRF. A phased approach ensures that likely significant effects discussed in (**Section 10.238)** will not be impacted by cumulative schemes within the SRF due to mitigation and appropriate use of the CEMP.

10.234. An assessment of potential cumulative effects of application 5, cumulative schemes and the SRF during the demolition and construction and operational phases are provided in **Table 10.36**. The assessment of potential cumulative effects has considered all potential receptors identified in **Table 10.4.**

10.235. There are no residual effects on groundwater from the Proposed Development and therefore, no cumulative effects of Application 5, cumulative schemes and the SRF.

***Table 10.36:*** *Assessment of likely residual cumulative effects of Application 5, cumulative schemes and the SRF*

| Receptor | Cumulative Effects | Significance |
|---|---|---|
| Demolition and Construction Phase | | |
| River Irk | Potential for increased turbidity in the River Irk from entrained sediments reaching the watercourse via surface water runoff. This may impact sediment processes in the watercourse with potential increased sediment loading.<br><br>Potential for increased risk of spillage of pollutants affecting the watercourse. The risk of spillage of each site will remain the same, however the combined total is greater for the River Irk. | All development will adopt a CEMP to comply with relevant policy which contain measures to minimise impact to water quality of nearby watercourses during the construction phase. There will be some residual risk associated with the cumulative effects for any developments which are constructed simultaneously.<br><br>The residual cumulative effects relating to water quality is assessed to be **Slight Adverse (not significant)**. |
| River Irwell | Potential for increased turbidity in the River Irwell from entrained sediments reaching the watercourse via surface water runoff. This may impact sediment processes in the watercourse with potential increased sediment loading. The potential impact is reduced by the diluting capacity of the River Irwell.<br><br>Potential for increased risk of spillage of pollutants affecting the watercourse. The risk of spillage of each site will remain the same, however the combined total is greater for the River Irwell. | All development will adopt a CEMP to comply with relevant policy which contain measures to minimise impact to water quality of nearby watercourses during the construction phase. There will be some residual risk associated with the cumulative effects for any developments which are constructed simultaneously.<br><br>The residual cumulative effects relating to water quality is assessed to be **Slight Adverse (not significant)**. |
| Construction workers | No cumulative effects are anticipated. All risks to construction workers are managed through each development's health and safety systems and CEMP. | The residual cumulative effects relating to construction workers is assessed to be **Slight Adverse (not significant)**. |
| Water Utilities Infrastructure | Potential for reduced capacity of drainage networks with entrainment of sediments or temporary discharges. | All development will adopt a CEMP to comply with relevant policy which contain measures to control sediment on site. Discharge to water networks will require licenses which will be granted by the relevant regulators. |

| Receptor | Cumulative Effects | Significance |
|---|---|---|
| | | Therefore, the residual cumulative effects relating to Water Utilities Infrastructure is assessed to be **Neutral (not significant)**. |
| Nitrate Vulnerable Zone | Potential for increased risk of spillage of nitrates or from routine runoff from construction sites across the cumulative schemes. | All development will adopt a CEMP to comply with relevant policy which contain measures to minimise impact to water quality of nearby watercourses. There will be some residual risk associated with the cumulative effects although this is limited by the phasing approach through the SRF.<br><br>The residual cumulative effects relating to water quality are assessed to be **Neutral (not significant)**. |
| Less vulnerable development | Potential for increased risk of flooding to nearby receptors if cumulative projects share receptors. | All development will adopt a CEMP to comply with relevant policy which contain measures to manage flood risk during the construction phase. Permits will be required for any works within the channel or within 8 m of the channel, therefore the EA will be able to regulate any construction works within the River Irk or Irwell which could impact local flood risk.<br><br>The residual cumulative effects relating to less vulnerable development is assessed to be **Neutral (not significant)**. |
| More vulnerable development | Potential for increased risk of flooding to nearby receptors if cumulative projects share receptors. | All development will adopt a CEMP to comply with relevant policy which contain measures to manage flood risk during the construction phase. Permits will be required for any works within the channel or within 8 m of the channel, therefore the EA will be able to regulate any construction works within the River Irk or Irwell which could impact local flood risk.<br><br>The residual cumulative effects relating to more vulnerable development is assessed to be **Slight Adverse (not significant)**. |

| Receptor | Cumulative Effects | Significance |
|---|---|---|
| Operational Phase | | |
| River Irk | Potential for impacts to water quality from sites which all discharge to the River Irk.<br><br>Potential for impacts to channel morphology for all works in or above the channel. | All sites will include drainage strategies which comply with standard guidance and legislation. Drainage strategies will propose treatment measures to reduce impact to water quality of receiving watercourses. There could be some minor residual cumulative impact.<br><br>Any works within 8 m of the River Irk will require a permit from the EA and therefore the cumulative impacts of these elements on hydromorphology and hydrology can be regulated. All proposals will ensure there is no increase to flood risk or impact to WFD quality elements, therefore cumulative impacts will be negligible.<br><br>The residual cumulative effects relating to the River Irk are assessed to be **Slight Adverse (not significant)**. |
| River Irwell | Potential for impacts to water quality from sites which all discharge to the River Irwell. | All sites will include drainage strategies which comply with standard guidance and legislation. Drainage strategies will propose treatment measures to reduce impact to water quality of receiving watercourses. There could be some minor residual cumulative impact although the River Irwell has a greater diluting capacity.<br><br>The residual cumulative effects relating to the River Irwell are assessed to be **Slight Adverse (not significant)**. |
| Water Utilities Infrastructure | Potential for insufficient capacity within existing utility networks. | New developments will comply with appropriate policy with regards surface water discharge and agree this in principle with the LLFA and other relevant regulators. The SRF will be served by the drainage network installed as part of Application 2 which has been designed to accommodate the future SRF developments.<br><br>The residual cumulative effects relating to Water Utilities Infrastructure are assessed to be **Neutral (not significant)**. |
| Nitrate Vulnerable Zone | Potential for impacts to water quality from sites which all discharge to the River Irk within the NVZ. | All sites will include drainage strategies which comply with standard guidance and legislation. Drainage strategies will propose treatment measures to reduce impact to water quality of receiving watercourses. The land use of the sites is urban and therefore unlikely to discharge significant volumes of nitrates to the receptor. There could be some negligible residual cumulative impact. |

| Receptor | Cumulative Effects | Significance |
|---|---|---|
| | | The residual cumulative effects relating to the NVZ is assessed to be **Neutral (not significant)**. |
| Less vulnerable development | Potential impacts to flood risk for all sites located within the floodplain of the River Irk or Irwell.<br><br>Potential impact to surface water flood risk for all sites introducing increased impermeable surface area. | All sites will include drainage strategies which comply with standard guidance and legislation. They will ensure that there is no increase to surface water runoff from the site by attenuating flows and restricting discharge rates. Flood risk mitigation (if required) will ensure that each site will not increase fluvial flood risk to any receptor, therefore cumulatively there is no increased impact.<br><br>The residual cumulative effects relating to less vulnerable development are assessed to be **Neutral (not significant)**. |
| More vulnerable development | Potential impacts to flood risk for all sites located within the floodplain of the River Irk or Irwell.<br><br>Potential impact to surface water flood risk for all sites introducing increased impermeable surface area. | All sites will include drainage strategies which comply with standard guidance and legislation. They will ensure that there is no increase to surface water runoff from the site by attenuating flows and restricting discharge rates. Flood risk mitigation (if required) will ensure that each site will not increase fluvial flood risk to any receptor, therefore cumulatively there is no increased impact.<br><br>The residual cumulative effects relating to more vulnerable development is assessed to be **Slight Adverse (not significant)**. |

## Summary and Conclusions

10.236. This section of this chapter presents information related to flood risk and drainage within Application 5 as part of the EIA. The assessment covers both the demolition and construction and operational phases of Application 5 as well as the likely significant effects Application 5 will have with cumulative schemes and the SRF.

10.237. Receptors of the environmental effects that could potentially arise from Application 5 have been identified and the effect of Application 5 to these receptors has been examined. Where required, appropriate mitigation has been explored and a review of the residual effects (once the recommended mitigation measures have been implemented) has been undertaken.

10.238. The majority of potential impacts associated with the development will be mitigated through 'embedded mitigation' measures designed into the development as well as additional mitigation, including the implementation of a CEMP.

10.239. The mitigation measures identified for both the demolition and construction and operational phases of Application 5 will significantly reduce the risk to the receptors that have been identified. All residual effects of Application 5 on identified receptors have been assessed as not significant.

# In Combination Effects of Applications 4 and 5

10.241. Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 have been set out previously in this chapter.

## Assessment of Likely Significant Effects (Applications 4 and 5)

### Demolition and Construction Phase

10.242. The potential impacts identified for Application 4 and Application 5 remain valid for in-combination effects. During the demolition and construction phase both developments will involve the adoption of a CEMP to control potential impact to water quality, hydromorphology, groundwater and flood risk. There will be some residual risk associated with in-combination impact to water quality.

10.243. Works in and within 8 m of the channel will require a Flood Risk Activities Permit from the EA and therefore the in-combination effects on flood risk associated with in-channel works of the two applications can be regulated.

### Operational Phase

10.244. The potential impacts identified for Application 4 and Application 5 remain valid for in-combination effects.

10.245. The drainage strategy for each application ensures that the surface water discharge is controlled and sufficiently treated. There will be some minor in-combination effects regarding water quality, but these are negligible and therefore the in-combination effects are similar to those reported for the separate applications.

10.246. The flood model has been run for Application 4 and 5 combined. **Figure 10.1** shows the difference in depth between the baseline and the in-combination scenario. When compared to **Drawing 79268-MR1-003** in **Appendix 10.1, Flood Risk Assessment** it can be seen that the in-combination scenario results in a reduced benefit upstream and an increase from Minor Adverse to Moderate Adverse for a very localised area between RB17 and the River Irk. This change in impact magnitude does not affect the less or more vulnerable development. There is no other change shown in depth between Application 4 and the combination of Applications 4 and 5. Therefore, regarding flood risk, the potential effects identified for Application 4 and 5 remain valid for in-combination effects.

## Phasing Effects (Applications 4 and 5)

10.247. Phasing of the two Applications will reduce the in-combination impacts identified above during the demolition and construction and operational phases. The worst-case effect will be no greater than those identified for the individual applications.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5)

10.248. No additional mitigation measures have been identified as necessary to minimise the in-combination effects identified above for the demolition and construction or operational phases.

## Likely Residual Effects of the Development and their significance (Applications 4 and 5)

10.249. The likely residual effects remain the same as those reported above. The effect of phasing has no material change to the conclusion of this study.

## Assessment of Cumulative Effects and their significance (Applications 4 and 5)

10.250. As explained above, the in-combination effects of Application 4 and 5 are similar to the effects reported for the individual applications. Therefore, the cumulative effects associated with nearby developments as well as Application 4 and 5 remain similar to those reported in the cumulative effects section for Application 4 and 5 individually.

# In Combination Effects of Applications 4 and 5, Cumulative Schemes and SRF

10.251. Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 have been set out previously in this chapter.

## Assessment of Likely Significant Effects (Applications 4 and 5 and the SRF)

### Demolition and Construction Phase

10.252. The potential impacts identified for Application 4 and Application 5 individually, remain valid for in-combination effects with cumulative schemes the SRF. During the demolition and construction phase all developments will involve the adoption of a CEMP to control potential impact to water quality, hydromorphology, groundwater and flood risk. There will be some residual risk associated with in-combination impact to water quality.

10.253. Works in and within 8 m of the channel will require a Flood Risk Activities Permit from the EA, and therefore the in-combination effects on flood risk associated with in-channel works of the two applications, cumulative schemes and the SRF can be regulated and minimised.

### Operational Phase

10.254. The potential impacts identified for the in-combination of Application 4 and Application 5 remain valid for in-combination effects with cumulative schemes and the SRF.

10.255. The drainage strategy for each application ensures that the surface water discharge from the sites is controlled and sufficiently treated. There will be some minor in-combination effects regarding water quality, but these are negligible and therefore the in-combination effects are similar to those reported for the applications separately.

10.256. Other developments within the SRF will need to comply with the NPPF and therefore ensure that there is no significant increase to flood risk as a result of each development. Therefore in-combination effects of Application 4 and 5 and the SRF are anticipated to be the same as those reported for in-combination of Application 4 and 5.

10.257. The results of the hydraulic modelling have shown that both Application 4 and 5 do not cause any adverse changes in results (water levels / extents) when compared to the undeveloped / present day scenario.

## Phasing Effects (Applications 4 and 5 and the SRF)

10.258. Phasing of the two Applications, cumulative schemes and the SRF will reduce the in-combination impacts identified above during the demolition and construction and operational phase. The worst-case effect will be no greater than those identified for the individual applications.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5 and the SRF)

10.259. No additional mitigation measures have been identified as necessary to minimise the in-combination effects identified above for the demolition and construction or operational phases.

## Likely Residual Effects of the Development and their significance (Applications 4 and 5 and the SRF)

10.260. The likely residual effects remain the same as those reported above. The effect of phasing has no material change to the conclusion of this study.

## Assessment of Cumulative Effects and their significance

10.261. As explained above, the in-combination effects of Application 4 and 5 are similar to the effects reported for the individual applications. Therefore, the cumulative effects associated with nearby developments as well as Application 4, Application 5 and the SRF remain similar to those reported in the Cumulative Effects section for Application 4 and 5 individually.

# 11. Transport and Access

## Introduction

11.1 This chapter assesses the effects of the Proposed Development (Application 4 only, Application 5 only, and Application 4 and 5 combined) on Transport and Access considerations.

11.2 The chapter describes the methods used to assess the likely significant effects, the baseline conditions currently existing at the site and surroundings, the potential direct and indirect effects of the development arising in terms of Transport and Access considerations, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It assesses and presents mitigation measures for Application 4 only, Application 5 only, and Applications 4 and 5 combined). The mitigation measures are clearly set out for each application. It has been written by WSP UK Ltd.

11.3 The approach to the assessment has been informed by and based on the 1993 Institute of Environmental Assessment (IEA) publication Guidance Notes No. 1: Guidelines for the Environmental Assessment of Road Traffic.

11.4 This chapter is supported by appendices which are located in **Volume 3: Appendices** of this ES. Specific reference should be made to the Transport Assessment and Travel Plan submitted by WSP which are included in the Appendices to this ES, as **Appendices 11.1 and 11.2.**

11.5 With reference to the EIA scoping report, the matters within that Report are covered either within this Chapter or within the associated appendices, with more detailed matters such as swept path drawings covered in the appendices. We have also received and reviewed the TfGM / MCC highways response to the EIA scoping report, which corelates with the scoping discussions already held with these parties (see para 11.8), and as such consider that this Chapter and the associated appendices address the scope appropriately.

## Assessment Methodology and Significance Criteria

### Policy Framework

11.6 The assessment and the associated Transport Assessment and Travel Plan have been informed by the following legislation, policies and published guidance:

- National Policy:
    - NPPF (2021)[1] in particular the following section:

[1] National Planning Policy Framework Department for Levelling Up, Housing and Communities, 2021.

- ‘Chapter 9 – Promoting Sustainable Transport’;
- Local Transport Note 1/20[2];
- Manual for Streets[3];
- Manual for Streets 2[4];
- IEMA Guidelines for the Environmental Assessment of Road Traffic (IEMA Guidelines) [5]

- Regional Policy
  - TfGM Greater Manchester Transport Strategy 2040 and associated Streets for All Strategy[6]
  - City Centre Transport Strategy to 2040 (2021) [7]
  - TfGM Made to Move[8]
  - GM Interim Active Travel Design Guide[9]
  - GM Walking and Cycling Investment Plan[10]
  - Places for Everyone[11]
- Local Policy
  - Strategic Regeneration Framework: Manchester Northern Gateway[12]
  - Northern Gateway Initial Development Area Transport Strategy[13]
  - MCC Core Strategy 2012-2027[14]
  - MCC Design for Access 2 [15]
  - MCC Manchester Residential Quality Guidance[16]

## Assessment Scenarios

11.7 The assessment scenarios in respect of the EIA for the Proposed Development are set out in **Chapter 2: Approach.** The assessment scenarios in respect of the EIA for the Proposed Development are as follows:

[2] Cycle Infrastructure Design, Department for Transport, 2020.
[3] Manual for Streets, Department for Transport, 2007.
[4] Manual for Streets 2, Chartered Institution of Highways and Transportation, 2010.
[5] Guidelines for the Environmental Assessment of Road Traffic, IEMA, 1993.
[6] TfGM Greater Manchester Transport Strategy 2040, Transport for Greater Manchester, 2021.
[7] City Centre Transport Strategy, Greater Manchester Combined Authority, 2021.
[8] TfGM Made to Move, Transport for Greater Manchester, 2017.
[9] GM Interim Active Travel Design Guide, Transport for Greater Manchester, 2021.
[10] GM Walking and Cycling Investment Plan, Transport for Greater Manchester, 2018.
[11] Places for Everyone, Greater Manchester Combined Authority, 2021.
[12] Strategic Regeneration Framework: Manchester Northern Gateway, Manchester City Council, 2019.
[13] Northern Gateway Initial Development Area Transport Strategy, Arup, 2019.
[14] MCC Core Strategy 2012-2027, Manchester City Council, 2012
[15] MCC Design for Access 2, Manchester City Council, 2003.
[16] MCC Manchester Residential Quality Guidance, Manchester City Council, 2017.

***Table 11.1:*** *Assessment Scenarios*

| Assessment | Scenario |
|---|---|
| **Application 4** | Demolition, groundworks, and construction effects |
| | Operational Effects |
| | Cumulative effects with identified Committed schemes |
| **Application 5** | Demolition, groundworks, and construction effects |
| | Operational Effects |
| | Cumulative effects with identified Committed schemes |
| **In combination effects of Applications 4 and 5** | Demolition, groundworks, and construction effects |
| | Operational Effects |
| | Cumulative effects with identified Committed schemes |
| **In combination effects of Applications 4 and 5 and SRF** | Demolition, groundworks, and construction effects |
| | Operational Effects |
| | Cumulative effects with identified Committed schemes |

## Assessment Methodology and Study Area

11.8 The Assessment Methodology and Study Area has been proposed and agreed through a Transport Assessment scoping note which was provided to Transport for Greater Manchester (TfGM) and Manchester City Council (MCC) development control on 8th April 2022. It is included as Appendix A within the WSP Transport Assessment (**Volume 3: Appendices, Appendix 11.1**).

11.9 The IEMA Guidelines set out two rules which have been used as threshold impacts to define the scale and extent of this assessment as follows:

- Rule 1: Include highway links where traffic flows will increase by more than 30%; and
- Rule 2: Include any other specifically sensitive areas where traffic flows have increased by 10% or more.

11.10 It should be noted that on road links where traffic flows are low, or in particular new road links, any increase in traffic flow can result in a percentage increase that would be higher than the IEMA Guidelines. Any overall increase in road traffic should be considered in the context of the capacity of the road and sensitivity of the receptor.

11.11 On road links within the Study Area where impacts are lower than those set out above, no additional detailed assessment of the effects is considered necessary based on the above.

11.12 On road links within the Study Area where the traffic flows exceed the 30% threshold (10% on sensitive links), a more detailed assessment has been undertaken based on the potential effects in the following section.

## Significance Criteria

### Criteria for Assessing Magnitude of Effect

#### Severance

11.13 IEMA Guidance defines severance as "the perceived division that can occur within a community when it becomes separated by a major traffic artery" (Para 4.27) that 'separates people from places', such as difficulties crossing existing roads.

11.14 There is no quantitative measure which gives a correlation between traffic levels and levels of significance. However, IEMA guidance suggests "that changes in traffic flow of 30%, 60% and 90% are regarding as producing slight, moderate and substantial changes in severance respectively" (Para 4.31). The guidance also suggests that 'marginal changes in traffic flows are, by themselves, unlikely to create or remove severance'.

11.15 A quantitative assessment has therefore been undertaken by comparing the percentage change in traffic flows between the baseline and the Proposed Development scenario, and by applying the rules set out in the IEMA Guidelines, as follows:

- Very low: Change in daily two-way total traffic, or HDVs, of less than 30%
- Low: Change in daily two-way total traffic, or HDVs, of 30%-60%
- Medium: Change in daily two-way total traffic, or HDVs, of 60%-90%
- High: Change in daily two-way total traffic, or HDVs, of 90% and above

#### Driver Delay

11.16 IEMA Guidelines state that "delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system" (paragraph 4.34). As such, the impact of

the Proposed Development on driver delay is typically considered in relation to background traffic, and existing conditions. Junction assessment modelling can be used to estimate increased vehicle delays at junctions if necessary.

11.17 The magnitude of effect has been classified as very low, low, medium or high, with reference to the junction modelling output set out in the Transport Assessment (**Appendix 11.1**).

### Pedestrian Delay, Amenity, Fear and Intimidation

11.18 IEMA Guidance states that "changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general increases in traffic levels are likely to lead to increases in delay" (Para 4.35). There are a range of local factors that affect pedestrian delay including the level of pedestrian activity, visibility and general physical conditions of the site. However, IEMA Guidance does not set out thresholds for judging the significance of changes in levels of delay, and suggests that the assessor uses their judgement to determine whether pedestrian delay is a significant impact.

### Public Transport (Bus/Tram/Rail) Services

11.19 There is no formal published guidance for the assessment of service capacity for public transport modes. A qualitative assessment of magnitude of impact (application of professional judgement) has been undertaken for all public transport services based on the number of trips expected to be generated and the level of service currently available.

### Accidents and Safety

11.20 The IEMA guidelines do not include any definition in relation to accidents and safety, suggesting that professional judgement will be needed to assess the implications of local circumstance, or factors which may increase or decrease the risk of accidents. As such a qualitative approach (professional judgement) has been applied to determine the magnitude of impact from the proposed development, based upon the Personal Injury Accident data obtained for the area.

## Criteria for Assessing Sensitivity of Receptor

11.21 To ensure a relative assessment of the increase in traffic flows in environmental terms the following criteria have been used to assess the sensitivity of the users of each road link as a receptor:

- High:
    - Users of any road links with high sensitivity to changes in traffic, pedestrian or cyclist flows (e.g. extremely congested areas of the highway network, accident blackspot locations, routes with high volumes of pedestrians and cyclists, or with no pedestrian footways.
    - Users of any road links with high numbers of vulnerable users such as elderly, school children, mobility impaired, or with those with ill health.

- Medium:
    - Users of any road links with medium sensitivity to changes in traffic, pedestrian or cyclist flows, (such as congested single junctions, localised accident clusters).
    - Users of any road links in proximity to uses such as parks, recreation areas, shopping areas, or large residential areas (driveways) to the road link.
- Low:
    - Users of any road links with low sensitivity to changes in traffic, pedestrian or cyclist flows (such as existing road with significant traffic flows, road links with no major pre-existing congestion, no significant accident clusters, and lower volumes of pedestrians and cyclists.

## Significance of Effects

11.22 The significance of the effects have been assessed on the basis of the sensitivity of the receptors and the magnitude of effect to determine the significance of effect as presented in **Table 11.2.**

11.23 The assessment of potential effects will take into account both the construction and operational phases. The significance level attributed to each effect will be assessed based on the magnitude of effect due to the Proposed Development, and the sensitivity of the affected receptor to change.

***Table 11.2:*** *Significance of Effect*

| Magnitude of Effect | Sensitivity of Receptor | | |
|---|---|---|---|
| | Low | Medium | High |
| Very Low | Negligible | Negligible to Minor | Minor |
| Low | Negligible to Minor | Minor | Minor to Moderate |
| Medium | Minor | Minor to Moderate | Moderate |
| High | Minor to Moderate | Moderate | Major |

11.24 The significance of the impacts has been defined as follows:

- Major effect: where the Proposed Development could be expected to have a very significant effect (either beneficial or adverse) on a highway link and its users;
- Moderate effect: where the Proposed Development could be expected to have a noticeable effect (either beneficial or adverse) on a highway link and its users;

- Minor to Moderate effect: where the Proposed Development could occasionally be expected to have a noticeable effect (either beneficial or adverse) on a highway link and its users;
- Minor effect: where the Proposed Development could be expected to result in a small, barely noticeable effect (either beneficial or adverse) on a highway link and its users;
- Negligible to Minor effect: where the Proposed Development could occasionally be expected to result in a small, barely noticeable effect (either beneficial or adverse) on a highway link and its users; and
- Negligible effect: where no discernible effect is expected as a result of the Proposed Development on traffic volumes on a highway link and its users.

11.25 Based on professional judgement, moderate and major effects are considered significant in EIA terms.

11.26 In determining the scale of impacts, consideration has been given to the following characteristics:

- Is the effect Positive or Negative;
- The geographic extent of the effect;
- The magnitude of the effect;
- Duration (e.g. short term (up to five years), medium term (five to ten years), or permanent (10 years or more));
- Timing;
- Frequency;
- Reversibility; and
- Likelihood.

11.27 The effects have been described as either adverse, neutral or beneficial as follows:

- Beneficial – An advantageous effect to a receptor;
- Neutral – An effect that on balance, is neither beneficial nor adverse to a receptor or equally beneficial and adverse; or
- Adverse – A detrimental effect to a receptor.

## Red Bank Methodology (Outline Application 4)

### Study Area

11.28 A full scoping process with MCC Highways and TfGM was undertaken. In relation to traffic capacity assessment and accident analysis, the scoping process concluded that the following specific locations should be assessed:

- Redbank/Roger Street/Lord Street

- Redbank / Honey Street
- Cheetham Hill Road/Lord Street
- Angel Street /Dantzic Street

11.29 The study area has therefore included these locations and the highway links between and immediately adjacent to these, plus all areas within the application red line boundary.

## Survey and Data Sources

11.30 The scoping process with MCC Highways and TfGM concluded that the use of traffic survey data undertaken as part of the Northern Gateway Initial Development Area Transport Strategy would be acceptable for the purposes of this application. These surveys were conducted on Tuesday 11th December 2018. The survey hours were between 0700 to 1000 and 1600 to 1900 hours. The locations surveyed were as follows:

- Red Bank / Honey Street
- Cheetham Hill Road / Knowsley Street
- Red Bank / Roger Street / Lord Street
- Cheetham Hill Road / Lord Street
- Cheetham Hill Road / Trinity Way
- Cheetham Hill Road / Aspin Lane / Miller Street / Corporation Street
- Angel Street / Dantzic Street
- Rochdale Road / Swan Street
- Rochdale Road / Angel Street
- Gould Street / Rochdale Road
- Bromley Street / Rochdale Road / Livesey Street

## Demolition and Construction

11.31 The technical scope for the construction stage has considered the following:

- Construction works and the associated temporary disruption to pedestrians, cyclists and road vehicle users during the works;
- Construction works and the associated temporary generation of heavy duty vehicles (HDVs) during the works and the effects on the highway, pedestrian and cycle environment, in particular the associated severance, delay, amenity, fear and intimidation, accidents and safety issues; and
- Construction works and the associated workforce demand for travel both by car and public transport (trains, trams and buses).

## The Completed and Operational Development

11.32 The technical scope for the operational phase has considered the following:

- Operational phase changes to traffic flows on the local road network and the associated impacts on driver delay and accidents and safety issues;
- Operational phase changes to the pedestrian/cycle environment and the associated impacts on severance, delay, amenity, fear and intimidation, accidents and safety; and
- Operational phase changes for public transport (trains, trams and buses) arising from the new on-site residential and non-residential occupants.

## Identification of Sensitive Receptors

11.33 The existing sensitive receptors that may be affected by potential transport impacts as a result of the Proposed Development are limited to the users of each road link in question, namely:

- Pedestrians;
- Cyclists;
- Vehicle drivers.

11.34 The sensitivity rating for each road link identified as sensitive to the Proposed Development was assigned by reference to the criteria presented in Paragraph 11.20 and is presented in **Table 11.3** below.

***Table 11.3:*** *Summary of Highway Network Sensitive Receptors*

| Road Name | Link Ref No | Between | | Sensitivity |
|---|---|---|---|---|
| Collyhurst Road | **3 / 4** | Vauxhall Street | Fitzgeorge Street | Low |
| Red Bank | **30 / 31** | Roger Street | Knowsley Street | Medium |
| Redbank | **50 / 51** | Honey Street | Back Bank Street | Medium |
| Roger Street | **52 / 53** | Redbank | Chase Street | Medium |
| Lord Street | **54 / 55** | Cheetham Hill Road | Redbank | Low |
| Cheetham Hill Road | **56 / 57** | Trinity Way | Lord Street | Low |
| Corporation Street | **60** | Cheetham Hill Road | Dantzic Street | Low |
| Dantzic Street | **61 / 62** | Angel Street | Corporation Street | Medium |
| Angel Street | **68** | Dantzic Street | Rochdale Road | Low |

11.35 In addition, existing users of the public transport network are considered a sensitive receptor.

11.36 No specific receptor sensitivity criteria is available for the assessment of public transport services. In environmental terms relating to the assessment of transport, the sensitivity of public transport services regarding the change in passenger numbers is low. This is based on the professional judgement that there is

sufficient spare capacity and frequency of public transport services in the city centre location currently available to accommodate demand. Nonetheless, the impact of the Proposed Development on the capacity of public transport facilities is considered as part of the analysis below.

## NT02 – NT04 Methodology (Full Application 5)

11.37 The methodology adopted is consistent with that adopted for Application 4, and reference should therefore be made to the preceding section which provided this methodology.

## Assumptions/Limitations

11.38 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- Personal Injury Accident data is only available up to the end of December 2022. This does not undermine the validity or robustness of the assessment. The five years to December 2022 is considered a recent and representative period to review accident data. It is recognised that Covid-19 restrictions will have influenced travel patterns during 2020 and the early part of 2021; however, it is also important to note that using this most recent data also includes for the influence of post-pandemic travel patterns and behaviours.
- The assessment has relied on the use of 2018 traffic surveys. This does not undermine the validity or robustness of the assessment. This approach has been used due to the impact of Covid-19 restrictions in 2020 and early 2021 meaning that traffic surveys undertaken in the past two years would be unlikely to be representative of typical conditions. Given changes to working practices (e.g. increased home working and increased flexibility in working hours) since Covid-19, the traffic surveys are considered to be robust assessments of current conditions.
- Completed development traffic generation has been based on trip rates derived from the industry standard TRICS database. This does not undermine the validity or robustness of the assessment as this is a standard approach to calculating the potential trip generation of a proposed scheme. The adoption of this approach for residential-related trips is considered very robust as limited parking is proposed to be provided within the site. Criteria have been applied to ensure that the most representative survey sites were selected;
- In relation to the 'swing plot' (located within Application 4) the worst-case assumption has been made in relation to traffic impact, which is that the primary school proposal is brought forward on this plot.

## Consultation

11.39 The following consultation has been undertaken in the preparation of this assessment.

***Table 11.4:*** *Consultation*

| Consultee | Application | Date and Time | Comments | Actions |
|---|---|---|---|---|
| **MCC Highways, TfGM** | 4 and 5 | 21 July 2022 | See detailed notes within Transport Assessment | Agreement on broad scope of TA and TP, subject to refinement in respect of junctions to be modelled. |
| **MCC Highways, TfGM** | 4 and 5 | 25 October 2022 | See detailed notes within Transport Assessment | Further confirmation of junctions to be modelled. |
| **MCC Highways, TfGM** | 4 and 5 | Ongoing written consultation concluding 15 November 2022 | See detailed notes within Transport Assessment | Final confirmation of scope of TA and TP plus junctions to be modelled. |

11.40 We have reviewed the EIA scoping opinion received in March 2023 with commentary from MCC Highways and TfGM. The feedback received does not significantly diverge from that received during the above consultation, and as such is addressed within either this ES chapter or the associated appendices.

11.41 The Assessment Methodology has been proposed through a Transport Assessment scoping note which was provided to Transport for Greater Manchester (TfGM) and Manchester City Council (MCC) development control on 8th April 2022, prior to the initial consultation meeting listed above. It is included as Appendix A within the WSP Transport Assessment (**Volume 3: Appendices, Appendix 11.1**).

11.42 This scoping note outlined the proposed approach to the Transport Assessment, Travel Plan and associated ES Chapter. A scoping meeting was held between WSP, MCC and TfGM on 21st July 2022, and it was requested at this stage that WSP provide quantification of the likely traffic impact on the local network using the industry standard approach to trip generation and distribution.

11.43 WSP produced a Trip Rate and Trip Generation Technical Note, issued to TfGM and MCC on 31st August 2022 which is also included in Appendix A of the Transport Assessment. TfGM provided comments via email, which are summarised and included in a WSP note summarising a response to these comments issued on 6th October 2022.

11.44 As a result of these scoping discussions the trip rates, distribution and scope of junction capacity assessment have been agreed and comments provided by TfGM and MCC officers have been used to inform the content and methodologies including within the Transport Assessment and Travel Plan. Relevant email correspondence between WSP, TfGM and MCC confirming this agreement is included in the WSP Transport Assessment.

## Assessment of Cumulative Effects and their Significance

11.45 In relation to cumulative developments, the developments from the EIA list (see Chapter 2 of this ES) were fully reviewed with reference to their scale, nature, location, and to any Transport Assessment or Statement submitted as part of their planning permission.

11.46 Through this process, various sites were filtered out on the basis of either insignificant trip generation, or that they generate traffic outside of the traffic study area for this ES chapter.

11.47 Traffic flows for the following developments were included in the traffic capacity assessment within the Transport Assessment appended to this ES:

- Meadowside
- New Victoria
- Victoria Riverside

# Red Bank (Outline Application 4)

## Baseline Conditions (Application 4)

### Road Network

#### Red Bank

11.48 Red Bank is a single carriageway that runs from Corporation Street in the south to the Red Bank / Derby Street / Collingham Street junction in the north. At its southern extent, Red Bank turns into Corporation Street where the carriageway passes under the railway and is renamed as Dantzic Street approximately 130m to the northeast of the viaduct. The width of the highway at the southern extent is approximately 7m which increases to approximately 8.8m between the junctions of Scotland and Colenso Way. Footways of an approximate width of 2m are provided on both sides of the carriageway throughout the extent of the road.

11.49 Single-yellow lines are used extensively on both sides of the carriageways, and double-yellow lines at the access and egress to junctions, across the southern and central extent of Red Bank. These are poorly marked with significant levels of on-street parking seen on both sides of the carriageway.

11.50 Tactile paving at junctions to indicate crossing facilities for pedestrians are located along Red Bank at the junctions with Scotland, Colenso Way, Hornbeam Way, Lord Street and Roger Street. These side roads are also all accessible by private vehicles providing links to various residential and industrial land uses.

11.51 There are no cycling facilities across the extent of Red Bank and no public transport services.

### Dantzic Street (leading to Collyhurst Road)

11.52 Dantzic street is a single carriageway at approximately 8.5m wide throughout the extent of the road and provides a connection between the City Centre and North Manchester and turns into Collyhurst Road as it progresses northwards towards the A6010 Queens Road. Footways of between approximately 2 and 2.5m are present on both sides of the carriageway with formal pedestrian crossing facilities located across the A664 / Angel Street junction and a pedestrian island between Mincing Street and Corporation Street.

11.53 Between Warford Street and Gould Street there is a single-yellow line on the southbound lane where high levels of on-street parking can be seen on the northbound lane, and a single yellow line on both lanes between Gould Street and the Corporation Street / Mincing Street junction. Double-yellow lines are present in both directions between the Corporation Street / Mincing Street junction and the A664.

11.54 There is no dedicated cycling infrastructure throughout Dantzic Street in addition to no public transport facilities.

### Collyhurst Road (up to Fitzgeorge Street).

11.55 Collyhurst Road extends from Dantzic Street in the south and provides a connection between the site area and north Manchester and is a single carriageway at an approximate width of 6.8m and footways on both sides of the carriageway at 2.4m wide. No pedestrian crossings are provided throughout the extent of the road. A walking connection to Rochdale Road is provided from Fitzgeorge Street which passes through St Catherine's Wood. Double-yellow lines are present on the access and egress of Vauxhall Street and industrial firm Packaging Products.

11.56 There is also no cycling infrastructure or public transport facilities across the extent of Collyhurst Road examined in this baseline review.

### Cheetham Hill Road (up to North Street)

11.57 Cheetham Hill Road is a single dual lane carriageway that extends from Corporation Street in the south with an approximate width of 12m throughout the extent of the carriageway. This diverges into three lanes on both the northbound and southbound approach into the A6042. At its southern extent Cheetham Hill Road provides southbound movements to the A664 and Angel Street as part of the one-way circulatory system in place in the local vicinity, whilst northbound movements are provided from Manchester Ring Road and Corporation Street.

11.58 Wide footways with an approximate width of 3m are provided across both sides of the carriageway throughout the extent of Cheetham Hill Road. Between Corporation Street and the A6042 this is lined with a guardrail on

both sides of the carriageway. A non-segregated cycle lane on the southbound approach to the A6042 junction runs for approximately 60m at 1.5m wide, in addition to ASLs on all approaches. Formal pedestrian crossings are located across multiple junctions throughout Cheetham Hill Road including the A6042, Lord Street, Derby Street, Broughton Street and North Street junctions. Single and double-yellow lines are used extensively across both sides of the carriageway, although significant levels of pavement parking can be seen given its wide footways. The TA identifies seven bus stops located across the extent of Cheetham Hill Road assessed in this baseline review.

### A664 / Angel Street

11.59 The A664 and Angel Street form part of the one-way circular loop with Manchester City Centre's Ring Road. These provide connections to Dantzic Street from the Ring Road, and to Rochdale Road from Dantzic Street respectively.

11.60 The A664 is a one-way single dual lane carriageway with an approximate width of 6.9m which diverges into three lanes approximately 70m before the junction of Dantzic Street and Angel Street. On the left side of the carriageway is a footway of approximately 2.8m in width which extends to become a grass verge on the corner of the road, with a signalised pedestrian crossing at the junction of Dantzic Street. Double-yellow lines are present across the extent of the left-hand side of the carriageway. The A664 also provides pedestrian access to Corporation Street and Crown Lane to the north.

11.61 A poorly marked ASL can be seen at the junction of Dantzic Street whilst there is no public transport infrastructure across the extent of the carriageway.

11.62 Angel Street is a one-way single dual lane carriageway width an approximate width of 8.8m that diverges into three lanes approximately 50m before the Rochdale Road junction. Footways of an approximate width of 2.7m are present on both sides of the carriageway, and formal pedestrian crossings located at the Naples Street / Angel Square junction and at Rochdale Road. An advisory cycle lane of approximately 1.5m is seen across the extent of the road. This is separated from the pavement by six on-street parking bays between Naples Street and Simpson Street, three of which are general on-street parking and three dedicated to electric vehicle charging.

11.63 The one-way nature of Angel Street provides turning movements into Simpson Street, while Angel Street can by left turn only from Dyche Street and Style Street. Both access and egress are provided on Angel Street for Angel Square. Naples Street has been stopped up and is a dedicated walking and cycling route that provides a direct link to a formal pedestrian crossing over Angel Street.

### Roger Street

11.64 Roger Street is a single carriageway that connects Red Bank to Hargreaves Street at its western end and is approximately 6.9m in width. A footway of an approximate width of 2m is present on both sides of the carriageway. Street lighting is present on the eastbound carriageway. Both the entrance and exit into Roger

Street at the Red Bank / Roger Street junction is marked with double-yellow lines, with single-yellow lines present along the eastbound carriageway only. Significant on-street parking is present on approximately 125m of the westbound carriageway between the junction of Roger Street and Red Bank and Hargreaves Street in the east.

11.65 Roger Street provides access to various side roads and facilities including the Brighton Street car park and Chase Street, Crabbe Street and Hargreaves Street which form a gyratory along the eastern section of the carriageway.

11.66 There is no public transport or cycling infrastructure across the entirety of Roger Street.

### Lord Street (between Cheetham Hill Road and Red Bank)

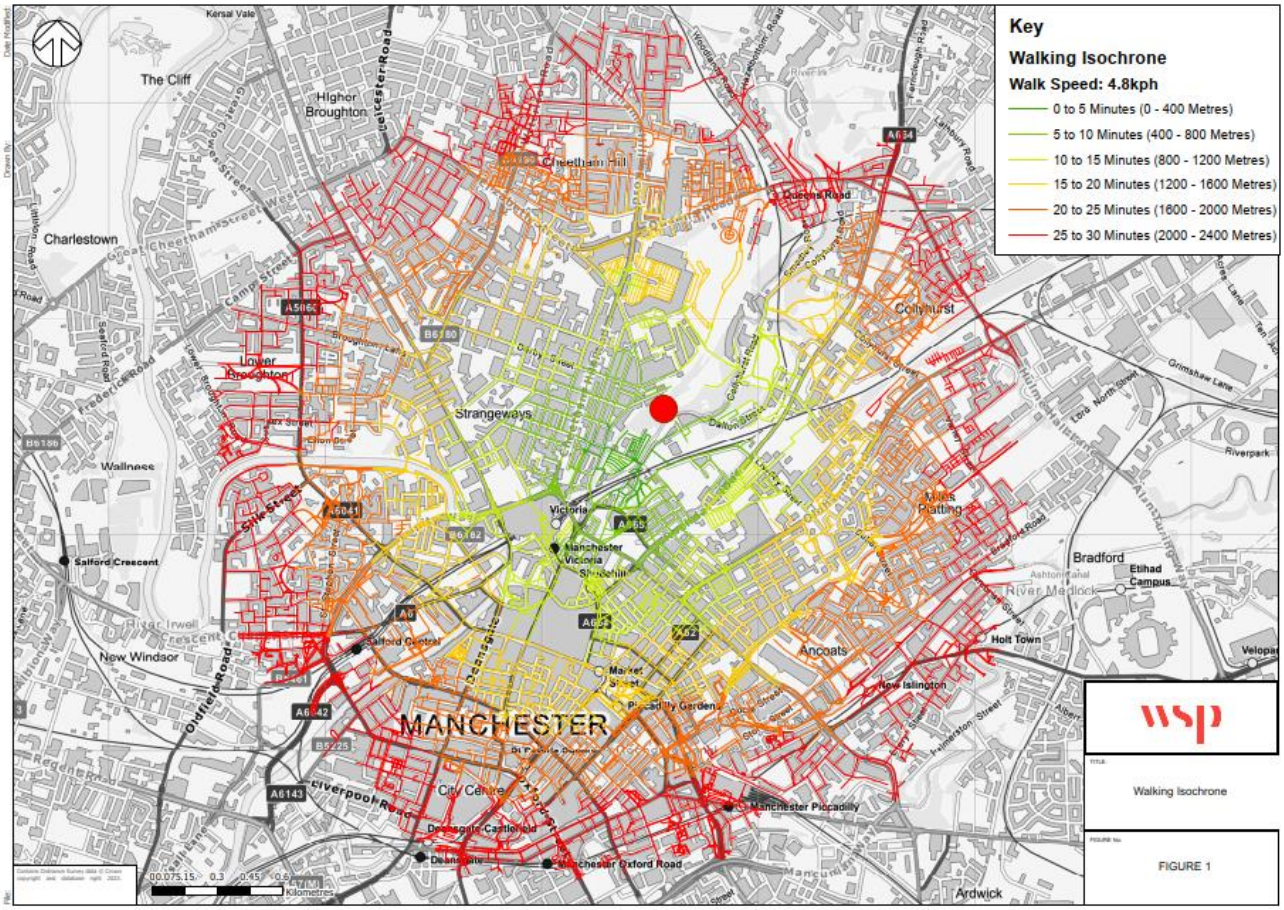
11.67 Lord Street connects Red Bank to Cheetham Hill Road and is a single carriageway of approximately 7.5m in width. Footways of approximately 3m in width are present on both sides of the carriageway. Double-yellow lines are extensively used throughout the carriageway and are on both sides of the carriageway between the Cheetham Hill Road junction and Lord Street / Fernie Street junction, on the eastbound carriageway between Stocks Street and Stocks Street East and at the approach and exit on Lord Street at the junction with Red Bank. A low level of on-street parking is present in the sections of the road with no double-yellow lines due to the residential nature of the neighbourhood.

11.68 Lord Street provides accessibility to multipole side roads including Stocks Street, Stocks Street East, Fernie Street and Hornbeam Way, all of which lead to various residential blocks in the local vicinity. It is also noted that no public transport or cycling infrastructure is present on Lord Street.

## Active Travel

11.69 **Figure 11.1** demonstrates walking accessibility from the centre of the Proposed Development based on 400 metres (five minutes) intervals. This reflects a central point of both Application 4 and 5, given the scale and nature of the isochrone any differential between the two is not significant in the context of this drawing.

***Figure 11.1*** *– Walking Isochrones*




11.70

11.71

11.72

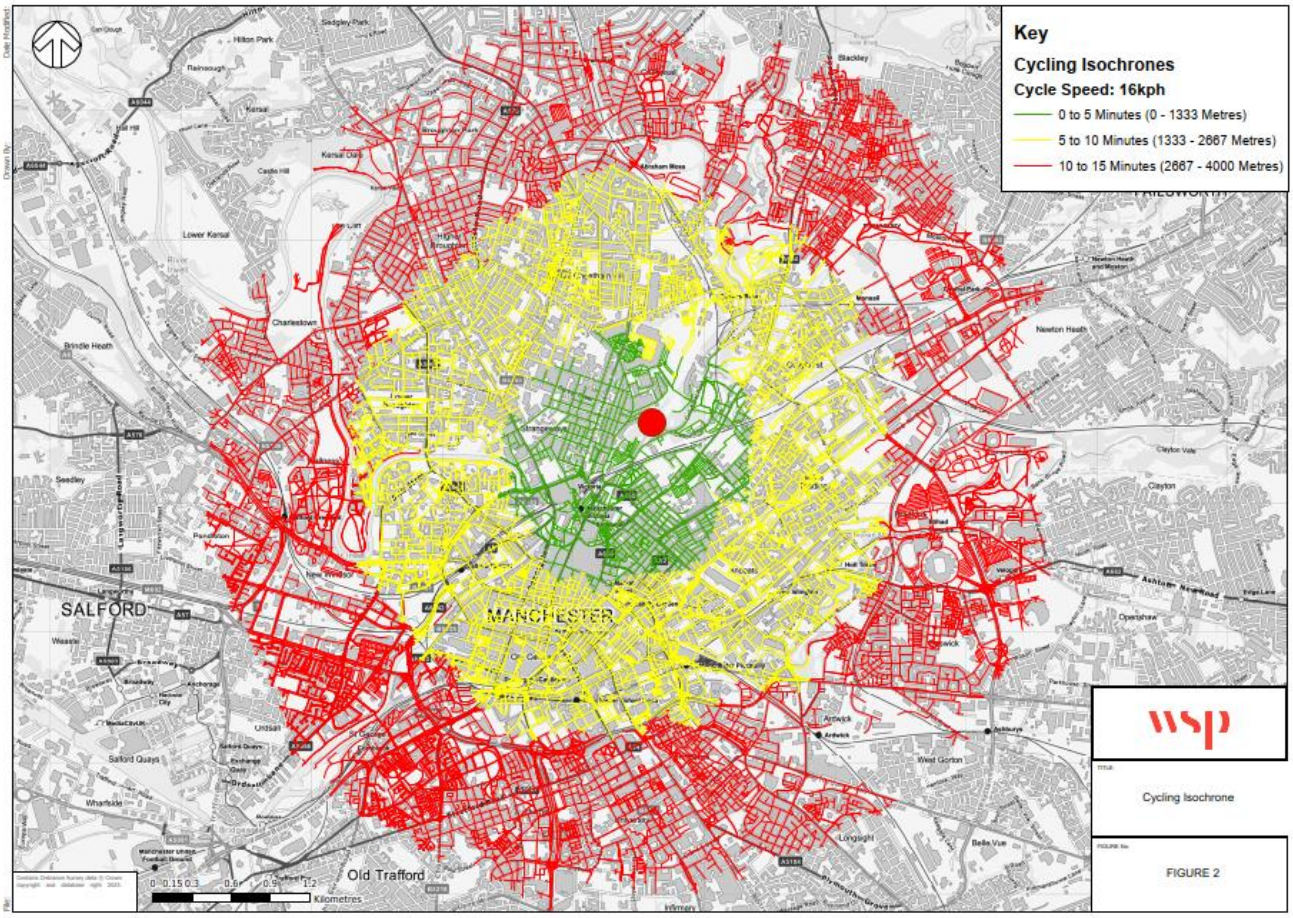
11.73 **Figure 11.1** identifies the walking connectivity using appropriate isochrones. The extent of these isochrones show that the Site is well connected to local bus stops, train stations, tram stops and cycleways which indicates that the Site is conducive for the potential of longer, multi-modal trips by sustainable modes of transport.

11.74 Key sustainable transport facilities within a short distance to the Application 4 and Application 5 Sites, which have the potential to facilitate multimodal trips via walking, include:

- Victoria Rail and Metrolink Station;
- Exchange Square, Shudehill and Market Street Tram stops;
- Shudehill Bus Station; and
- Bus connections to the wider Greater Manchester region from Rochdale Road and Cheetham Hill Road.

11.75 **Figure 11.2** demonstrates cycling accessibility from the centre of the Proposed Development based on a maximum cycling distance of 8 km of five-minute intervals. This reflects a central point of both Application 4 and 5, given the scale and nature of the isochrone any differential between the two is not significant in the context of this drawing.

***Figure 11.2** – Cycling Isochrones*




11.76 **Figure 11.2** indicates that the cycling isochrone covers a significant extent of the centre of Greater Manchester, providing clear opportunities for multimodal trips to and from the Site to various locations.

11.77 The local cycling infrastructure in the vicinity of the Site is likely to encourage trips to be made by bicycle and walking rather than private vehicle. These facilities include:

- Dantzic Street / Collyhurst Road is a designated route of TfGM's cycle network;
- Confirmed Bee Network Infrastructure across Lord Street, Roger Street and Gould Street; and
- Existing Beeways implemented in 2019 across Cheetham Hill Road and the section of Redbank below the junction of Red Bank, Lord Street and Roger Street.

## Public Transport

11.78 The location of the Site is conducive to public transport accessibility. Public transport access, such as Manchester Victoria rail and tram station and multiple bus stops on Cheetham Hill Road and Rochdale Road, are available within a 12-minutue walk from the centre of the Proposed Development.

### Bus Services

11.79 Both the application 4 and application 5 sites are highly accessible by bus by both Cheetham Hill Road to the west and Rochdale Road to the east.

11.80 The nearest bus stops to Redbank are located adjacent to St Chad's Street and Knowsley Street along Cheetham Hill Road, both of which are accessible by approximately three minutes on foot from the closest section of the Application 4 site.

11.81 As can be seen in **Figure 11.2**, a large number of bus services use Rochdale Road or Cheetham Hill Road. Accessibility from these bus stops is provided by Dalton Street to the north and Gould Street to the south. Journey times to Dantzic Street from nearby bus stops on foot are approximately seven minutes and four minutes respectively.

11.82 **Table** identifies key information regarding bus services in the local vicinity, split between Cheetham Hill Road and Rochdale Road.

***Table 11.5:*** *Local Bus Services*

| No | Route | Frequency | | |
|---|---|---|---|---|
| | | Mon-Fri | Sat | Sun |
| Cheetham Hill Road | | | | |
| 41 | Sale - Middleton | 1 per hour | 1 per hour | 1 per hour |
| | Middleton - Sale | 1 per hour | 1 per hour | 1 per hour |
| 135 | Manchester - Bury | 6 per hour | 6 per hour | 6 per hour |
| | Bury - Manchester | 6 per hour | 6 per hour | 6 per hour |
| Rochdale Road | | | | |
| 17/17a | Manchester – Rochdale | 6 per hour | 4 per hour | 4 per hour |
| | Rochdale - Manchester | 6 per hour | 4 per hour | 4 per hour |
| 18 | Manchester – Middleton | 6 per hour | 5 per hour | 4 per hour |
| | Middleton - Manchester | 6 per hour | 5 per hour | 4 per hour |
| 56/156 | Manchester – North Manchester General Hospital – Higher Blackley Circular | 2 per hour | 2 per hour | 1 per hour |
| 81 | Manchester – Oldham | 2 per hour | 1 per hour | 1 per hour |
| | Oldham - Manchester | 2 per hour | 1 per hour | 1 per hour |
| 112/113 | Manchester – Middleton | 4 per hour | 3 per hour | 2 per hour |
| | Middleton - Manchester | 4 per hour | 3 per hour | 2 per hour |
| 117 | Manchester – Middleton | 2 per hour | 2 per hour | 1 per hour |
| | Middleton - Manchester | 2 per hour | 2 per hour | 1 per hour |
| 118/119 | Manchester – North Manchester General Hospital | 4 per hour | 4 per hour | 2 per hour |
| | Manchester – North | 4 per hour | 4 per hour | 2 per hour |

| No | Route | Frequency | | |
|---|---|---|---|---|
| | | Mon-Fri | Sat | Sun |
| | Manchester General Hospital | | | |
| 163 | Manchester – Bury | 5 per hour | 5 per hour | 4 per hour |
| | Bury - Manchester | 5 per hour | 5 per hour | 4 per hour |

11.83 A total of 14 bus routes run nearby the Site with most services reaching frequencies of at least four per hour during weekdays and Saturdays. Key bus routes with high frequencies provide connections from Manchester City Centre to Middleton (41, 18, 112, 113, 117), and Bury (135, 163). These services provide the Application 4 and Application 5 Sites with an alternative to private car journeys from a range of local destinations.

11.84 Infrequent services also connect the Site to Oldham (81) and South Manchester (41). These services are still likely to provide a good alternative to private car journeys given the various local centres that these services pass through such as Moston and Withington respectively.

## Tram Services

11.85 The centre of both the application 4 and application 5 sites are within approximately 12 minutes on foot from Manchester Victoria Tram Stop.

***Table 11.6:*** *Tram Services*

| Route | Frequency | First / Last Weekday Service |
|---|---|---|
| Altrincham – Bury | 5/hr (Mon-Sun) | 05:37/23:01 |
| Bury – Altrincham | 5/hr (Mon-Sun) | 05:55/23:01 |
| Manchester Piccadilly - Bury | 5/hr (Mon-Sun) | 05:37/23:37 |
| Bury – Manchester Piccadilly | 5/hr (Mon-Sun) | 05:55/23:25 |
| East Didsbury – Rochdale Town Centre | 5/hr (Mon-Sun) | 05:21/23:45 |
| Rochdale Town Centre – East Didsbury | 5/hr (Mon-Sun) | 05:32/23:32 |
| Manchester Airport – Manchester Victoria | - | - |
| Manchester Victoria – Manchester Airport | 5/hr (Mon-Sun) | 05:46/23:10 |
| East Didsbury – Shaw and Crompton | 5/hr (Mon-Sun) | - |
| Shaw and Crompton – East Didsbury | 5/hr (Mon-Sun) | - |

## Rail Services

11.86 In addition to Manchester Victoria Tram stop, Manchester Victoria train station is also a 12-minute journey on foot from the centre of both the application 4 and application 5 sites. This is also accessible by bicycle and bus.

**Table 11.7** identifies the key local, regional and national destinations that can be accessed by train from Manchester Victoria train station and the service frequencies.

***Table 11.7:*** *Rail Services*

| Destination | Frequency | Provider |
|---|---|---|
| **Local Routes** | | |
| Rochdale | 5 per hour | Northern |
| Wigan Wallgate | 3 per hour | Northern |
| Stalybridge | 2 per hour | Transpennine Express / Northern |
| Salford Crescent | 5 per hour | Northern |
| **Regional Routes** | | |
| Liverpool Lime Street | 1 per hour | Transpennine Express |
| Leeds | 4 per hour | Transpennine Express / Northern |
| Blackburn | 3 per hour | Northern |
| Clitheroe | 1 per hour | Northern |
| Southport | 1 per hour | Northern |
| Chester | 1 per hour | Northern |
| Kirkby (Merseyside) | 3 per hour | Northern |
| **National Routes** | | |
| York | 2 per hour | Transpennine Express |
| Newcastle | 1 per hour | Transpennine Express |

## Traffic Flows – Baseline

11.87 Baseline (2019) traffic flows in the highway network within the agreed study area are as follows, expressed in 24 Hour Average Annual Daily Traffic (AADT).

***Table 11.8:*** *Baseline Traffic Flows*

| Road Name | Ref No | 24 Hour AADT – 2019 | |
|---|---|---|---|
| | | All Vehicles | HDV only |
| Collyhurst Road | **3 / 4** | 3714 | 24 |
| Red Bank | **30 / 31** | 5097 | 63 |
| Redbank | **50 / 51** | 8771 | 169 |
| Roger Street | **52 / 53** | 2327 | 15 |

| Road Name | Ref No | 24 Hour AADT – 2019 | |
|---|---|---|---|
| | | All Vehicles | HDV only |
| Lord Street | **54 / 55** | 6709 | 147 |
| Cheetham Hill Road | **56 / 57** | 27004 | 749 |
| Corporation Street | **60** | 17638 | 521 |
| Dantzic Street | **61 / 62** | 6445 | 81 |
| Angel Street | **68** | 18416 | 426 |

## Road Safety Data

11.88 An analysis of Personal Injury Accident (PIA) data has been carried out on the local highway network surrounding the site to establish any patterns in location or causation factors which may be exacerbated as a result of the proposed development.

11.89 PIA data for a five-year period has been obtained from Crashmap, up to and including December 2021.

11.90 The following locations have been analysed under the PIA study area:

Junctions:

- Red Bank / Roger Street / Lord Street;
- Red Bank / Honey Street;
- Cheetham Hill Road / Lord Street; and
- Angel Street / Dantzic Street.

Links:

- Red Bank; and
- Dantzic Street

### Red Bank / Roger Street / Lord Street Junction

11.91 The PIA data showed that there were no collisions in the five-year period at the Red Bank / Roger Street / Lord Street junction.

### Red Bank / Honey Street Junction

11.92 The PIA data showed that there were no collisions in the five-year period at the Red Bank / Honey Street Junction.

### Cheetham Hill Road / Lord Street

11.93 The PIA identified two collisions at the Cheetham Hill / Lord Street junction:

- A slight collision that occurred in 2019 and involved two vehicles with two casualties reported; and
- A slight collision that occurred in 2021 and involved two vehicles, one of which was a cyclist, and two casualties reported.

### Dantzic Street / Angel Street

11.94 The PIA data showed that there was one serious collision in 2020 over the course of the five-year study period. This involved three vehicles and three casualties.

### Red Bank – Link Analysis

11.95 A total of four collisions were identified along Red Bank over the five-year study period, with 75% of accidents classified as slight and one fatal collision. The year with the most collisions is 2019 which accounted for 50% of collisions, while 50% of collisions included cyclists which both classified as slight. 75% of collisions occurred at junctions, with one fatal and slight collision occurring at the Red Bank / Scotland junction and one slight collision occurring at the Red Bank / Derby Street junction respectively.

### Dantzic Street – Link Analysis

11.96 A total of three collisions were identified across Dantzic Street over the five-year study period, with all three collisions classed as slight. Two thirds of the collisions occurred in 2019, with one occurring in 2018. All three collisions occurred at various junctions across Dantzic Street, with one occurring at the junction of Corporation Street, Gould Street and Dalton Street respectively. None of the collisions on Dantzic Street involved cyclists or pedestrians.

## Embedded Mitigation (Application 4)

### Demolition and Construction

11.97 No specific embedded mitigation relating to transport is included within the construction phase for Application 4 relating to transport.

### The Completed and Operational Development

11.98 Embedded mitigation as presented in **Chapter 5: The Proposed Development** would in summary comprise the following:

- Creation of a new network of pedestrian and cycle friendly streets and public realm within and in the vicinity of the site red line boundary;
- Provision of on-site facilities to minimise the need for travel off-site for purposes such as local shopping;
- Cycle parking provided in public realm areas, and associated secure and indoor cycle parking for residents and visitors in line with MCC and TfGM standards. Cycle parking will be provided to encourage the use of active travel to and from, and within the Application 4 site. The level of provision proposed for residents is 1 cycle space per residential property (up to 3,250 spaces) and is in accordance with MCC and TfGM standards.
- Disabled parking in line with relevant MCC and TfGM standards;

11.99 The provision of car parking for which approval is sought as part of Application 4 is 12% and comprises:

- Up to 325 spaces for the residential development proposed by the outline application of which up to 21 spaces would be accessible which amounts to 6.5% of the total number of spaces for the residential development;
- Up to 25 spaces for the non-residential development proposed by the outline application including visitor and accessible spaces;
- Up to 52 car parking spaces to support the development proposed at Application 5. The intention is that the 52 car park spaces will be provided in a temporary location within the Application 4 area initially with a permanent solution provided in a centralised location as the residential led development proposed by Application 4 is brought forwards.

11.100 Of the 12% car parking proposed by Application 4, the provision of residents car parking (up to 325 spaces) amounts to 10%, in line with the principles set within the "Northern Gateway Initial Development Area Transport Strategy (March 2019)" which recommends a parking provision of no more than 10% for residential uses. The implications of this level of provision have been tested through the master planning process for the Red Bank neighbourhood which has informed the preparation of this full planning application.

11.101 Given the highly accessible location of the Application 4 Site, the proposed on-site facilities, and the existing and proposed active travel infrastructure, it is considered the level of residents car parking provision is suitable and appropriate. Residents car parking provision at this level, will encourage active travel and public transport to be the mode of choice for new residents. Furthermore, all of the resident's car parking spaces proposed in Application 4 will provide electric vehicle (EV) charging facilities (with 20% active and 80% passive infrastructure for future connection).

## Assessment of Likely Significant Effects (Application 4)

## Demolition and Construction

### Traffic Flows

11.102 Full details of the indicative construction programme for Application 4 are presented in **Chapter 5: The Proposed Development**.

11.103 It has been assumed that the demolition and construction works would start in Q1 2025. The works would be completed in Q4 2032.

11.104 The worst-case demolition and construction vehicle trips for Application 4 would be 256 construction vehicles per day (128 arrivals, 128 departures), consisting of 50% LGV trips and 50% HGV trips. This would occur in Q1 2027.

11.105 There would also be 292 employee vehicles per day (146 arrivals, 146 departures). However as parking for staff involved in construction would not be provided on the Site, these would disperse across multiple parking locations in the wider area, and have not therefore been considered within the table below.

11.106 **Table 11.9** sets out the total traffic associated with the worst-case demolition and construction scenario (scenario 3) compared to the future baseline (scenario 2).

***Table 11.9:*** *Construction Phase Traffic Effects*

| Road Name | Ref No | Sensitivity | Future Baseline 24 Hour AADT (2029) | Construction Traffic AADT | Percentage increase |
|---|---|---|---|---|---|
| Collyhurst Road | **3 / 4** | Low | 4086 | - | - |
| Red Bank | **30 / 31** | Medium | 5607 | - | - |
| Redbank | **50 / 51** | Medium | 9674 | 256 | 2.6% |
| Roger Street | **52 / 53** | Medium | 2576 | - | - |
| Lord Street | **54 / 55** | Low | 7399 | - | - |
| Cheetham Hill Road | **56 / 57** | Low | 29734 | - | - |
| Corporation Street | **60** | Low | 19407 | - | - |
| Dantzic Street | **61 / 62** | Medium | 7105 | - | - |
| Angel Street | **68** | Low | 20266 | - | - |

11.107 Where no impact is quantified, this is because construction traffic flows are not anticipated on these links based on the construction routing set out in the Transport Assessment (**Appendix 11.1**).

11.108 Based on the IEMA Guidelines of screening criteria, all links with a 30 % change in traffic should be taken forward for further assessment. In addition, any links identified as medium and high sensitivity receptors with a change of

10 % in traffic should also be considered. There is therefore no need for further assessment of construction traffic effects on the above links.

## The Completed and Operational Development

### Traffic Flows

**Table 11.10** sets out the operational phase traffic effects within the Study Area.

***Table 11.10:*** *Operational Phase Traffic Effects*

| Road Name | Ref No | Sensitivity | 24 hour Average Annual Daily Traffic (2032) | 2032 with Cumulative Developments | 2032 with Cumulative Developments and Application 4 | Percentage Impact |
|---|---|---|---|---|---|---|
| Collyhurst Road | **3 / 4** | Low | 4194 | 4289 | 4333 | 1% |
| Red Bank | **30 / 31** | Medium | 5755 | 5954 | 8329 | 40% |
| Redbank | **50 / 51** | Medium | 9924 | 10122 | 10871 | 7% |
| Roger Street | **52 / 53** | Medium | 2642 | 2642 | 4459 | 69% |
| Lord Street | **54 / 55** | Low | 7597 | 7597 | 10356 | 36% |
| Cheetham Hill Road | **56 / 57** | Low | 30512 | 31327 | 34087 | 9% |
| Corporation Street | **60** | Low | 19921 | 21323 | 22272 | 5% |
| Dantzic Street | **61 / 62** | Medium | 7296 | 7839 | 9625 | 23% |
| Angel Street | **68** | Low | 20802 | 22159 | 22997 | 4% |

11.109 Based on the IEMA Guidelines of screening criteria, all links with a 30 % change in traffic flows should be taken forward for further assessment. In addition, any links identified as medium and high sensitivity receptors, with a change of 10 % in traffic flows should also be considered.

11.110 On this basis, the following links are considered further:

***Table 11.11:*** *Road links screened in for further assessment*

| Road Name | Link Ref No | Between | | Sensitivity |
|---|---|---|---|---|
| Red Bank | **30 / 31** | Roger Street | Knowsley Street | Medium |
| Roger Street | **52 / 53** | Redbank | Chase Street | Medium |
| Lord Street | **54 / 55** | Cheetham Hill Road | Redbank | Low |
| Dantzic Street | **61 / 62** | Angel Street | Corporation Street | Medium |

### Severance

11.111 Based on the criteria set out above, the significance of effect on each assessed link can be categorised as follows:

- Red Bank: Low magnitude of impact on a medium receptor, leading to a **minor adverse** effect.
- Roger Street: Medium magnitude of impact on a medium receptor, leading to a **minor to moderate adverse** effect.
- Lord Street: Low magnitude of impact on a low receptor **negligible to minor adverse** effect.
- Dantzic Street: Very low magnitude of impact on a medium receptor, leading to a **negligible to minor adverse** effect.

### Driver Delay

11.112 The Transport Assessment at **Appendix 11.1** contains a detailed assessment of the highway network including the impact of the Proposed Development on the capacity of the key junctions included within the study area and this concludes that junctions in the study area would operate within capacity with the operational development in place.

11.113 Based on the analysis within the Transport Assessment, the driver delay impact on Redbank, Roger Street and Dantzic Street is of a low magnitude. The driver delay impact on Lord Street is of a medium magnitude.

11.114 Based on the criteria set out above, the significance of effect on each link can be categorised as follows:

- Red Bank: Low magnitude of impact on a medium receptor, leading to a **minor adverse** effect.
- Roger Street: Low magnitude of impact on a medium receptor, leading to a **minor adverse** effect.
- Lord Street: Medium magnitude of impact on a low receptor leading to a **minor adverse** effect.
- Dantzic Street: Low magnitude of impact of a medium receptor, leading to a **minor adverse** effect.

### Pedestrian Delay, Amenity (including Fear and Intimidation)

11.115 In a similar manner to Severance, effect on Pedestrian Delay and Amenity is largely in accordance with the additional levels of traffic on a particular road link. Accordingly, the effects have been determined with reference to the magnitude of impact criteria for severance as follows:

- Red Bank: Low magnitude of impact on a medium receptor, leading to a **minor adverse** effect.

- Roger Street: Medium magnitude of impact on a medium receptor, leading to a **minor to moderate adverse** effect.
- Lord Street: Low magnitude of impact on a low receptor **negligible to minor adverse** effect.
- Dantzic Street: Very low magnitude of impact of a medium receptor, leading to a **negligible to minor adverse** effect.

### Public Transport (Bus/Tram/Rail)

11.116 It is expected that the overall increase in public transport users during the operational phase, whilst high as a mode share of trips from the Site, would not be overly significant in the context of the city centre public transport network. It would therefore be readily accommodated within the available network capacity and would predominantly be undertaken outside of the peak periods. The magnitude of impact is therefore considered low.

11.117 The receptor sensitivity is also low, leading to a **negligible to minor adverse** effect on public transport users in the Study Area.

### Accidents and Safety

11.118 As set out in the Transport Assessment, a full analysis of existing highway accident patterns has been undertaken, including the links screened in to this ES chapter.

11.119 The highway accident patterns analysed in the Transport Assessment have shown no unusual pre-existing patterns of accidents in the Study Area which would be significantly exacerbated by the Proposed Development. However, additional traffic levels on the road links will inevitably lead to some impact on road safety. Accordingly, the magnitude of impact has been determined based upon the percentage change in traffic flows, in a similar manner to the Severance and Pedestrian Delay/Amenity assessments. This results in the following:

- Red Bank: Low magnitude of impact on a medium receptor, leading to a **minor adverse** effect.
- Roger Street: Medium magnitude of impact on a medium receptor, leading to a **minor to moderate adverse** effect.
- Lord Street: Low magnitude of impact on a low receptor **negligible to minor adverse** effect.
- Dantzic Street: Very low magnitude of impact of a medium receptor, leading to a **negligible to minor adverse** effect.

## Additional Mitigation / Enhancement Measures (Application 4)

11.120 This section describes the measures which are required to mitigate any significant environmental effects of Application 4 with regards to Transport considerations.

## Demolition and Construction

11.121 Although no adverse effects are identified for the construction phase of Application 4, additional mitigation will comprise the implementation of standard practice management and control measures within the Construction Environmental Management Plan and Construction Logistics Plan to reduce the potential impacts from demolition and construction traffic. These measures would comprise the following:

- Demolition and construction traffic routing and contractor awareness of the selected routes. The selected routes at this time would seek to avoid the city centre and residential areas, i.e. using North Street and Cheetham Hill Road to access the A6010 and the wider highway network;
- Site traffic control, particularly at peak hours;
- Use of off-site holding areas or consolidation centres, if required;
- Site access and egress management e.g. use of traffic marshals, wheel washing facilities;
- Vehicle loading and unloading on-site as far as possible;
- Good housekeeping measures; and
- Early agreement of road and footpath closures and associated communication to receptors within the study area.

## The Completed and Operational Development

11.122 In the operational phase of Application 4, additional mitigation (over and above the embedded mitigation previously described) will comprise:

- A Travel Plan covering all uses within the Proposed Development, setting out measures and enhancements to use non-car modes. This will be based upon the Framework Travel Plan submitted for the planning application appended at **Appendix 11.2.**
- Electric Vehicle parking provided for residents, in line with relevant local and national standards and the aspirations within the SRF.

11.123 Whilst not required to mitigate any effects identified in the EIA, the following highway mitigation has been identified as being necessary as a result of the detailed junction capacity work within the TA.

- Amendments to signal timings at Cheetham Hill Rd / Lord St junction including addition of a right turn arrow turning right into Lord St. Physical works would be limited to changing the traffic signal heads and potential road marking changes, there would be no kerbline changes or works outside the adopted highway.

- Minor amendments to kerblines at the Redbank / Lord St junction, as per drawing TP-022 attached. All works are within adopted highway. See Appendix J of the Transport Assessment (**Appendix 11.1** to this ES).

## Likely Residual Effects of the Development and their Significance (Application 4)

11.124 The residual effects of Application 4 are summarised in **Table 11.12** below.

***Table 11.12:*** *Residual Effects Summary*

| Description of | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|
| *The Completed and Operational Development* | | | |
| ***Severance*** | Red Bank: **minor adverse** effect. Roger Street: **minor to moderate adverse** effect. Lord Street: **negligible to minor adverse** effect. Dantzic Street: **negligible to minor adverse** effect. | Travel Plan | Overall a **Minor adverse** effect in the long term at the local level |
| ***Driver Delay*** | Red Bank: **minor adverse** effect. Roger Street: **minor adverse** effect. Lord Street: **minor adverse** effect. Dantzic Street: **minor adverse** effect. | Travel Plan, Highway mitigation | Overall a **Minor adverse** effect in the long term at the local level |
| ***Pedestrian Delay and Amenity (including Fear and Intimidation)*** | Red Bank: **minor adverse** effect. Roger Street: **minor to moderate adverse** effect. Lord Street: **negligible to minor adverse** effect. Dantzic Street: **negligible to minor adverse** effect. | Travel Plan, EV parking, Highway mitigation | Overall a **Minor adverse** effect in the long term at the local level |

| Description of | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|
| ***Public Transport (Bus/Tram/Rail)*** | **Negligible to minor adverse** effect. | Travel Plan | A **Negligible to minor adverse** effect in the long term at the local level. |
| ***Accidents and Safety*** | Red Bank: **minor adverse** effect.<br>Roger Street: **minor to moderate adverse** effect.<br>Lord Street: **negligible to minor adverse** effect.<br>Dantzic Street: **negligible to minor adverse** effect. | Travel Plan, Highway mitigation | Overall a **Minor adverse** effect in the long term at the local level |

## Conclusions (Application 4)

11.125 The above table sets out the key findings of the ES chapter in relation to Application 4, and concludes that there are no moderate or major adverse (and therefore significant) effects in either the short or long term.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 4)

11.126 A review of committed developments in the local area has been undertaken and those developments forecast to result in an increase in vehicle trips on the local highway network have been included as part of the future year traffic assessments. Based on the trip generation and distribution included within the Transport Assessments/Transport Statements supporting the planning applications, the following committed developments have been included in the assessments within this ES chapter and the associated Transport Assessment:

- Meadowside (116366/FO/2017)
- New Victoria (111777/FO/2016/C1)
- Victoria Riverside (126944/FO/2020)

11.127 These committed schemes have been inherently assessed as part of the future baseline scenario, and thus included within all subsequent assessments which build on this future baseline.

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 4)

### Approach

11.128 As the overall quantum and nature of development within the wider SRF remains to be fully determined, it has not been possible to undertake quantitative assessment of the traffic flow impact of the SRF proposals. It is envisaged this would be undertaken by the respective applicants as and when applications within the SRF area come forward.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

11.129 With the wider SRF development being located north and east of the application 4 site, and assuming the same principle of construction traffic is adopted (i.e. directed towards the key radial and orbital roads rather than through the city centre) it is not anticipated there would be a significant construction traffic impact from the SRF on the traffic network under consideration within the ES chapter.

#### The Completed and Operational Development

11.130 The overall principles of the SRF are in line with those adopted within applications 4 and 5, i.e. promoting best-practice walking and cycling infrastructure and high quality public transport links.

11.131 The SRF area as a whole benefits from being in an accessible location and on-site facilities will improve this and reduce the need to travel still further.

11.132 Accordingly, it is considered likely that the overall impacts of the SRF (once suitable mitigation is applied) will be similar in scale and nature to those identified for the Redbank and NT02 – NT04 applications.

# NT02-NT04 (Full Application 5)

## Baseline Conditions (Application 5)

11.133 Baseline conditions are as described for Application 4 earlier in this chapter. Where distances are quoted it has been clarified how these apply to both Applications 4 and 5. At a more detailed level, the TA at **Appendix 11.1** sets out details of the distances to local facilities from both application sites.

## Embedded Mitigation (Application 5)

### Demolition and Construction

11.134 No specific embedded mitigation relating to transport is included within the construction phase for Application 5 relating to transport.

### The Completed and Operational Development

11.135 Embedded mitigation as presented in **Chapter 5: The Proposed Development** would in summary comprise the following:

- Creation of a new network of pedestrian and cycle friendly streets and public realm within and in the vicinity of the site red line boundary;
- Provision of on-site facilities to minimise the need for travel off-site for purposes such as local shopping;
- Significant changes to Dantzic Street including narrowing of the carriageway and improved walking and cycling routes, to improve active travel conditions whilst not preventing car movement;
- Cycle parking provided in public realm areas, and associated secure and indoor cycle parking for residents and visitors in line with MCC and TfGM standards. Cycle parking will be provided to encourage the use of active travel to and from, and within the Application 5 site. The level of provision proposed is 1 cycle space per residential property (1,551 cycle spaces).
- Disabled parking in line with relevant MCC and TfGM standards;

11.136 Application 5 proposes 10% car parking for residents of the development totalling 155 on site and off site car parking spaces comprising:

- 7% car parking for residents of the development on site and within the podiums and on Dulwich Street totalling 104 car parking spaces. Of these 104 car parking spaces, 10 are accessible which equates to 6.5% of the overall car parking proposed by the proposed development (155 car parking spaces) and will be provided on site.
- 3% car parking for residents of the development off site in a location within the Application 4 area to be identified totalling 52 car parking spaces. Initially, the off site car park will be temporary in a secure and well

lit car park until the permanent solution is delivered as part of Application 4 as described at paragraph 12.105. It is proposed that the location, design and specification of the temporary off site car parking area will be secured by condition.

- 13 car parking spaces on site are proposed at Dulwich Street, Dantzic Street and Dalton Street (including 4 accessible spaces) for visitors to residents and users of the non-residential uses proposed by the development located in close proximity to main residential and non-residential entrances.

## Assessment of Likely Significant Effects (Application 5)

### Demolition and Construction

#### Traffic Flows

11.137 Full details of the indicative construction programme for Application 5 are presented in Chapter 5: The Proposed Development.

11.138 It has been assumed that the demolition and construction works would start in Q3 2023. The works would be completed in Q4 2029.

11.139 The worst-case demolition and construction vehicle trips for the Proposed Development would be 216 construction vehicles per day (108 arrivals, 108 departures), consisting of 50% LGV trips and 50% HGV trips. This would occur in Q1 2026.

11.140 There would also be 246 employee vehicles per day (123 arrivals, 123 departures). However as parking for staff involved in construction would not be provided on the Site, these would disperse across multiple parking locations in the wider area, and have not therefore been considered within the table below.

11.141 **Table 11.13** sets out the total traffic associated with the worst-case demolition and construction scenario (scenario 4) compared to the future baseline (scenario 2).

***Table 11.13:*** *Construction Phase Traffic Effects*

| Road Name | Ref No | Sensitivity | Future Baseline 24 Hour AADT | Construction Traffic AADT | Percentage increase |
|---|---|---|---|---|---|
| Collyhurst Road | **3 / 4** | Low | 4086 | 216 | 5.3% |
| Red Bank | **30 / 31** | Medium | 5607 | - | - |
| Redbank | **50 / 51** | Medium | 9674 | - | - |
| Roger Street | **52 / 53** | Medium | 2576 | - | - |
| Lord Street | **54 / 55** | Low | 7399 | - | - |
| Cheetham Hill Road | **56 / 57** | Low | 29734 | - | - |
| Corporation | **60** | Low | 19407 | - | - |

| Road Name | Ref No | Sensitivity | Future Baseline 24 Hour AADT | Construction Traffic AADT | Percentage increase |
|---|---|---|---|---|---|
| Street | | | | | |
| Dantzic Street | **61 / 62** | Medium | 7105 | - | - |
| Angel Street | **68** | Low | 20266 | - | - |

11.142 Where no impact is quantified, this is because construction traffic flows are not anticipated on these links based on the construction routing set out in the Transport Assessment.

11.143 Based on the IEMA Guidelines of screening criteria, all links with a 30 % change in traffic should be taken forward for further assessment. In addition, any links identified as medium and high sensitivity receptors in with a change of 10 % in traffic should also be considered. There is therefore no need for further assessment of construction traffic effects on the above links.

## The Completed and Operational Development

### Traffic Flows

11.144 **Table 11.14** sets out the operational phase traffic effects within the Study Area.

***Table 11.14:*** *Operational Phase Traffic Effects*

| Road Name | Ref No | Sensitivity | 24 hour Average Annual Daily Traffic (2029) | 2029 with Cumulative Developments | 2029 with Cumulative Developments and Application 5 | Percentage Impact |
|---|---|---|---|---|---|---|
| Collyhurst Road | **3 / 4** | Low | 4086 | 4181 | 4332 | 4% |
| Red Bank | **30 / 31** | Medium | 5607 | 5806 | 6717 | 16% |
| Redbank | **50 / 51** | Medium | 9674 | 9872 | 10023 | 2% |
| Roger Street | **52 / 53** | Medium | 2576 | 2576 | 2576 | 0% |
| Lord Street | **54 / 55** | Low | 7399 | 7399 | 8027 | 8% |
| Cheetham Hill Road | **56 / 57** | Low | 29734 | 30549 | 31177 | 2% |
| Corporation Street | **60** | Low | 19407 | 20809 | 21642 | 4% |
| Dantzic Street | **61 / 62** | Medium | 7105 | 7648 | 8833 | 15% |

| Road Name | Ref No | Sensitivity | 24 hour Average Annual Daily Traffic (2029) | 2029 with Cumulative Developments | 2029 with Cumulative Developments and Application 5 | Percentage Impact |
|---|---|---|---|---|---|---|
| Angel Street | **68** | Low | 20266 | 21624 | 21975 | 2% |

11.145 Based on the IEMA Guidelines of screening criteria, all links with a 30% change in traffic flows should be taken forward for further assessment. In addition, any links identified as medium and high sensitivity receptors with a change of 10 % in traffic flows should also be considered. On this basis, the following links are considered further:

***Table 11.15:*** *Road links screened in for further assessment*

| Road Name | Link Ref No | Between | | Sensitivity |
|---|---|---|---|---|
| Red Bank | **30 / 31** | Roger Street | Knowsley Street | Medium |
| Dantzic Street | **61 / 62** | Angel Street | Corporation Street | Medium |

### Severance

11.146 Based on the criteria set out above the significance of effect on each link can be categorised as follows:

- Red Bank: Very low magnitude of impact on a medium receptor, leading to a **negligible to minor adverse** effect.
- Dantzic Street: Very low magnitude of impact of a medium receptor, leading to a **negligible to minor adverse** effect.

### Driver Delay

11.147 The Transport Assessment at **Appendix 11.1** contains a detailed assessment of the highway network including the impact of the Proposed Development on the capacity of the key junctions included within the study area and this concludes that junctions in the study area would operate within capacity with the operational development in place.

11.148 Based on the analysis within the Transport Assessment, the driver delay impact on Redbank and Dantzic Street is of a low magnitude.

11.149 Based on the criteria set out above the significance of effect on each link can be categorised as follows:

- Red Bank: Low magnitude of impact on a medium receptor, leading to a **minor adverse** effect.

- Dantzic Street: Low magnitude of impact of a medium receptor, leading to a **minor adverse** effect.

### Pedestrian Delay, Amenity (including Fear and Intimidation)

11.150 In a similar manner to Severance, effect on Pedestrian Delay and Amenity is largely in accordance with the additional levels of traffic on a particular road link. Accordingly, the impacts have been determined with reference to the criteria for severance as follows:

- Red Bank: Very low magnitude of impact on a medium receptor, leading to a **negligible to minor adverse** effect.
- Dantzic Street: Very low magnitude of impact of a medium receptor, leading to a **negligible to minor adverse** effect.

### Public Transport (Bus/Tram/Rail)

11.151 It is expected that the overall increase in public transport users during the operational phase, whilst high as a mode share of trips from the Site, would not be overly significant in the context of the city centre public transport network. It would therefore be readily accommodated within the available network capacity and would predominantly be undertaken outside of the peak periods. The magnitude of impact is therefore considered low.

11.152 The receptor sensitivity is also low, leading to a **negligible to minor adverse** effect on public transport users in the Study Area.

### Accidents and Safety

11.153 As set out in the Transport Assessment, a full analysis of existing highway accident patterns has been undertaken, including the links screened in to this ES chapter.

11.154 The highway accident patterns analysed in the Transport Assessment have shown no unusual pre-existing patterns of accidents in the Study Area which would be significantly exacerbated by the Proposed Development. However, additional traffic levels on the road links will inevitably lead to some impact on road safety. Accordingly, the magnitude of impact has been determined based upon the percentage change in traffic flows, in a similar manner to the Severance and Pedestrian Delay/Amenity assessments. This results in the following:

- Red Bank: Very low magnitude of impact on a medium receptor, leading to a **negligible to minor adverse** effect.
- Dantzic Street: Very low magnitude of impact of a medium receptor, leading to a **negligible to minor adverse** effect.

## Additional Mitigation / Enhancement Measures (Application 5)

11.155 This section describes the measures which are required to mitigate any significant environmental effects of Application 5 with regards to Transport considerations.

### Demolition and Construction

11.156 Although no adverse effects are identified for the construction phase, additional mitigation will comprise the implementation of standard practice management and control measures within the Construction Environmental Management Plan and Construction Logistics Plan to reduce the potential impacts from demolition and construction traffic. These measures would comprise the following:

- Demolition and construction traffic routing and contractor awareness of the selected routes. The selected routes at this time would seek to avoid the city centre and residential areas, i.e. using Collyhurst Road to access the A6010 and the wider highway network;;
- Site traffic control, particularly at peak hours;
- Use of off-site holding areas or consolidation centres, if required;
- Site access and egress management e.g. use of traffic marshals, wheel washing facilities;
- Vehicle loading and unloading on-site as far as possible;
- Good housekeeping measures; and
- Early agreement of road and footpath closures and associated communication to receptors within the study area.

### The Completed and Operational Development

11.157 In the operational phase of Application 5, additional mitigation (over and above the embedded mitigation previously described) will comprise:

- A Travel Plan covering all uses within the Proposed Development, setting out measures and enhancements to use non-car modes. This will be based upon the Framework Travel Plan submitted for the planning application appended at **Appendix 11.2**.
- Electric Vehicle parking provided for residents, in line with relevant local and national standards and the aspirations within the SRF.

## Likely Residual Effects of the Development and their Significance (Application 5)

11.158 The residual effects of Application 5 are summarised in **Table 11.16** below.

***Table 11.16:*** *Residual Effects Summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|
| *Completed Development* | | | |
| ***Severance*** | Red Bank: **negligible to minor adverse** effect. Dantzic Street: **negligible to minor** effect. | Travel Plan. | Overall a **Negligible to Minor adverse** effect in the long term at the local level |
| ***Driver Delay*** | Red Bank: **minor adverse** effect. Dantzic Street: **minor adverse** effect. | Travel Plan | Overall a **Minor adverse** effect in the long term at the local level |
| ***Pedestrian Delay and Amenity (including Fear and Intimidation)*** | Red Bank: **negligible to minor adverse** effect. Dantzic Street: **negligible to** minor adverse effect. | Travel Plan, EV charging. | Overall a **Negligible to Minor adverse** effect in the long term at the local level |
| ***Public Transport (Bus/Tram/Rail)*** | **Negligible to minor adverse** effect. | Travel Plan | A **Negligible to minor adverse** effect in the long term at the local level. |
| ***Accidents and Safety*** | Red Bank: **negligible to minor adverse** effect. Dantzic Street: **negligible to minor adverse** effect. | Travel Plan | Overall a **Negligible to Minor adverse** effect in the long term at the local level |

### Conclusions (Application 5)

11.159 The above table sets out the key findings of the ES chapter in relation to Application 5, and concludes that there are no moderate or major (and therefore significant) adverse effects in either the short or long term.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 5)

11.160 A review of committed developments in the local area has been undertaken and those developments forecast to result in an increase in vehicle trips on the local highway network have been included as part of the future year traffic assessments. Based on the trip generation and distribution included within the Transport Assessments/Transport Statements supporting the planning applications, the following committed developments have been included in the assessments within this ES chapter and the associated Transport Assessment:

- Meadowside (116366/FO/2017)

- New Victoria (111777/FO/2016/C1)
- Victoria Riverside (126944/FO/2020)

11.161 These committed schemes have been inherently assessed as part of the future baseline scenario, and thus included within all subsequent assessments which build on this future baseline.

11.162 It is acknowledged that the HIF Works will be ongoing (albeit reducing in scale to conclude in 2024) at the same time as site preparation and initial construction works are on-going on the Application 5 site (starting in 2023). The assessment of construction impacts for the Application 5 site reported in this chapter are based on peak construction activity and it is therefore considered that the combined impacts of the HIF Works and Application 5 construction works as described would be less than those already assessed in this

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 5)

### Approach

11.163 As the overall quantum and nature of development within the wider SRF remains to be fully determined, it has not been possible to undertake quantitative assessment of the traffic flow impact of the SRF proposals. It is envisaged this would be undertaken by the respective applicants as and when applications within the SRF area come forward.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

11.164 With the wider SRF development being located north and east of the application 5 site, and assuming the same principle of construction traffic is adopted (i.e. directed towards the key radial and orbital roads rather than through the city centre) it is not anticipated there would be a significant construction traffic impact from the SRF on the traffic network under consideration within the ES chapter.

#### The Completed and Operational Development

11.165 The overall principles of the SRF are in line with those adopted within applications 4 and 5, i.e. promoting best-practice walking and cycling infrastructure and high quality public transport links.

11.166 The SRF area as a whole benefits from being in an accessible location and on-site facilities will improve this and reduce the need to travel still further.

11.167 Accordingly, it is considered likely that the overall impacts of the SRF (once suitable mitigation is applied) will be similar in scale and nature to those identified for the Redbank and NT02 – NT04 applications.

# In Combination Effects of Applications 4 and 5

11.168 Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 has been set out previously in this chapter.

11.169 The provision of residents car parking in Applications 4 and 5, amounts to 10% of the total number of residential properties proposed (up to 480 car parking spaces) in line with the principles set within the "Northern Gateway Initial Development Area Transport Strategy (March 2019)" which recommends a parking provision of no more than 10% for residential uses. The implications of this level of provision have been tested through the master planning process for the Red Bank neighbourhood which has informed the preparation of this full planning application. Given the highly accessible location of the Application 4 and 5 Sites, the proposed on-site facilities, and the existing and proposed active travel infrastructure, it is considered the level of residents car parking provision is suitable and appropriate.

## Assessment of Likely Significant Effects (Applications 4 and 5)

### Demolition and Construction

#### Traffic Flows

11.170 **Table 11.17** sets out the total traffic associated with the worst-case demolition and construction scenario of Application 4 and 5 combined, compared to the future baseline (scenario 2). For robustness, it has been assumed both Application 4 and Application 5 are at peak construction at the same time, when in reality this is unlikely to be the case.

***Table 11.17**: Construction Phase Traffic Effects*

| Road Name | Ref No | Sensitivity | Future Baseline 24 Hour AADT | Construction Traffic AADT | Percentage increase |
|---|---|---|---|---|---|
| Collyhurst Road | **3 / 4** | Low | 4086 | 216 | 5.3% |
| Red Bank | **30 / 31** | Medium | 5607 | - | - |
| Redbank | **50 / 51** | Medium | 9674 | 256 | 2.6% |
| Roger Street | **52 / 53** | Medium | 2576 | - | - |
| Lord Street | **54 / 55** | Low | 7399 | - | - |
| Cheetham Hill Road | **56 / 57** | Low | 29734 | - | - |
| Corporation Street | **60** | Low | 19407 | - | - |
| Dantzic Street | **61 / 62** | Medium | 7105 | - | - |
| Angel Street | **68** | Low | 20266 | - | - |

11.171 Where no impact is quantified, this is because construction traffic flows are not anticipated on these links based on the construction routing set out in the Transport Assessment (**Appendix 11.1**).

11.172 Based on the IEMA Guidelines of screening criteria, all links with a 30 % change in traffic should be taken forward for further assessment. In addition, any links identified as medium and high sensitivity receptors in with a change of 10 % in traffic should also be considered. There is therefore no need for further assessment of construction traffic effects on the above links.

## The Completed and Operational Development

### Traffic Flows

11.173 **Table 11.18** sets out the operational phase traffic effects of Application 4 and 5 combined within the Study Area.

***Table 11.18:*** *Operational Phase Traffic Effects*

| Road Name | Ref No | Sensitivity | 24 hour Average Annual Daily Traffic (2032) | 2032 with Cumulative Developments | 2032 with Cumulative Developments and Application 4 and 5 | Percentage Impact |
|---|---|---|---|---|---|---|
| Collyhurst Road | **3 / 4** | Low | 4194 | 4289 | 4483 | 5% |
| Red Bank | **30 / 31** | Medium | 5755 | 5954 | 9240 | 55% |
| Redbank | **50 / 51** | Medium | 9924 | 10122 | 11022 | 9% |
| Roger Street | **52 / 53** | Medium | 2642 | 2642 | 4459 | 69% |
| Lord Street | **54 / 55** | Low | 7597 | 7597 | 10985 | 45% |
| Cheetham Hill Road | **56 / 57** | Low | 30512 | 31327 | 34715 | 11% |
| Corporation Street | **60** | Low | 19921 | 21323 | 23105 | 8% |
| Dantzic Street | **61 / 62** | Medium | 7296 | 7839 | 10810 | 38% |
| Angel Street | **68** | Low | 20802 | 22159 | 23349 | 5% |

11.174 Based on the IEMA Guidelines of screening criteria, all links with a 30 % change in traffic flows should be taken forward for further assessment. In addition, any links identified as medium and high sensitivity receptors, with a change of 10 % in traffic flows should also be considered. On this basis, the following links are considered further:

***Table 11.19:*** *Road links screened in for further assessment*

| Road Name | Link Ref No | Between | | Sensitivity |
|---|---|---|---|---|
| Red Bank | **30 / 31** | Roger Street | Knowsley Street | Medium |
| Roger Street | **52 / 53** | Redbank | Chase Street | Medium |
| Lord Street | **54 / 55** | Cheetham Hill Road | Redbank | Low |
| Dantzic Street | **61 / 62** | Angel Street | Corporation Street | Medium |

### Severance

11.175 Based on the criteria set out above, the significance of effect on each link can be categorised as follows:

- Red Bank: Low magnitude of impact on a medium receptor, leading to a **minor adverse** effect.
- Roger Street: Medium magnitude of impact on a medium receptor, leading to a **minor to moderate adverse** effect.
- Lord Street: Low magnitude of impact on a low receptor **negligible to minor adverse** effect
- Dantzic Street: Low magnitude of impact of a medium receptor, leading to a **minor adverse** effect.

### Driver Delay

11.176 The Transport Assessment at **Appendix 11.1** contains a detailed assessment of the highway network including the impact of the Proposed Development on the capacity of the key junctions included within the study area and this concludes that junctions in the study area would operate within capacity with the operational development in place.

11.177 Based on the analysis within the Transport Assessment, the driver delay impact on Redbank, Roger Street and Dantzic Street is of a low magnitude. The driver delay impact on Lord Street is of a medium magnitude.

11.178 Based on the criteria set out above, the significance of effect on each link can be categorised as follows:

- Red Bank: Low magnitude of impact on a medium receptor, leading to a **minor adverse** effect.
- Roger Street: Low magnitude of impact on a medium receptor, leading to a **minor adverse** effect.
- Lord Street: Medium magnitude of impact on a low receptor leading to a **minor adverse** effect.
- Dantzic Street: Low magnitude of impact of a medium receptor, leading to a **minor adverse** effect.

### Pedestrian Delay, Amenity (including Fear and Intimidation)

11.179 In a similar manner to Severance, effect on Pedestrian Delay and Amenity is largely in accordance with the additional levels of traffic on a particular road link. Accordingly, the impacts have been determined with reference to the criteria for severance as follows:

- Red Bank: Low magnitude of impact on a medium receptor, leading to a **minor adverse** effect.
- Roger Street: Medium magnitude of impact on a medium receptor, leading to a **minor to moderate adverse** effect.
- Lord Street: Low magnitude of impact on a low receptor **negligible to minor adverse** effect.
- Dantzic Street: Low magnitude of impact of a medium receptor, leading to a **minor adverse** effect.

### Public Transport (Bus/Tram/Rail)

11.180 It is expected that the overall increase in public transport users during the operational phase, whilst high as a mode share of trips from the Site, would not be overly significant in the context of the city centre public transport network. It would therefore be readily accommodated within the available network capacity and would predominantly be undertaken outside of the peak periods. The magnitude of impact is therefore considered low.

11.181 The receptor sensitivity is also low, leading to a **negligible to minor adverse** effect on public transport users in the Study Area.

### Accidents and Safety

11.182 As set out in the Transport Assessment, a full analysis of existing highway accident patterns has been undertaken, including the links screened in to this ES chapter.

11.183 The highway accident patterns analysed in the Transport Assessment have shown no unusual pre-existing patterns of accidents in the Study Area which would be significantly exacerbated by the Proposed Development. However, additional traffic levels on the road links will inevitably lead to some impact on road safety. Accordingly, the magnitude of impact has been determined based upon the percentage change in traffic flows, in a similar manner to the Severance and Pedestrian Delay/Amenity assessments. This results in the following:

- Red Bank: Low magnitude of impact on a medium receptor, leading to a **minor adverse** effect.
- Roger Street: Medium magnitude of impact on a medium receptor, leading to a **minor to moderate adverse** effect.
- Lord Street: Low magnitude of impact on a low receptor **negligible to minor adverse** effect.
- Dantzic Street: Low magnitude of impact of a medium receptor, leading to a **minor adverse** effect.

## Phasing Effects (Applications 4 and 5)

11.184 No significant effects relating to phasing have been identified. The assessment work has tested the indicative phasing plan provided by the client team and the traffic capacity work has been based on the assumed completion years for applications 4 and 5 which are suggested by this phasing.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5)

11.185 Additional mitigation measures are as described under the assessments of the individual Applications 4 and 5.

### Demolition and Construction

11.186 The additional specific mitigation measures relate to Application 4 and additional specific mitigation measures relate to Application 5 and have been clearly set out relevant to each application at:

Application 4 Additional mitigation measure – Para 11.115

Application 5 Additional mitigation measures – Para 11.147

### The Completed and Operational Development

11.187 The additional specific mitigation measures relate to Application 4 and additional specific mitigation measures relate to Application 5 and have been clearly set out relevant to each application at:

Application 4 Additional mitigation measure – Para 11.116

Application 5 Additional mitigation measures – Para 11.148

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5)

11.188 The residual effects of Applications 4 and 5 combined are summarised in **Table 11.20** below.

***Table 11.20:*** *Residual Impacts Summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|
| *Completed Development* | | | |
| ***Severance*** | Red Bank: **minor adverse** effect. Roger Street: **minor to moderate adverse** effect. Lord Street: **negligible to minor adverse** effect. Dantzic Street: **minor adverse** effect. | Travel Plan. | Overall a **Minor adverse** effect in the long term at the local level |
| ***Driver Delay*** | Red Bank: **minor adverse** effect. | Travel Plan, Highway mitigation | Overall a **Minor adverse** effect in the |

| Description of Effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|
| | Roger Street: **minor adverse** effect.<br>Lord Street: **minor adverse** effect.<br>Dantzic Street: **minor adverse** effect. | | long term at the local level |
| ***Pedestrian Delay and Amenity (including Fear and Intimidation)*** | Red Bank: **minor adverse** effect.<br>Roger Street: **minor to moderate adverse** effect.<br>Lord Street: **negligible to minor adverse** effect.<br>Dantzic Street: **minor adverse** effect. | Travel Plan, EV charging, Highway mitigation | Overall a **Minor adverse** effect in the long term at the local level |
| ***Public Transport (Bus/Tram/Rail)*** | **Negligible to minor adverse** effect. | Travel Plan | A **Negligible to minor adverse** effect in the long term at the local level. |
| ***Accidents and Safety*** | Red Bank: **minor adverse** effect.<br>Roger Street: **minor to moderate adverse** effect.<br>Lord Street: **negligible to minor adverse** effect.<br>Dantzic Street: **minor adverse** effect. | Travel Plan, Highway mitigation | Overall a **Minor adverse** effect in the long term at the local level. |

## Conclusions (Applications 4 and 5)

11.189 The above table sets out the key findings of the ES chapter in relation to Application 4 and 5 combined, and concludes that there are no moderate or major (and therefore significant) adverse effects in either the short or long term.

## Assessment of Cumulative Effects with Identified Committed Schemes (Applications 4 and 5)

11.190 A review of committed developments in the local area has been undertaken and those developments forecast to result in an increase in vehicle trips on the local highway network have been included as part of the future year traffic assessments. Based on the trip generation and distribution included within the Transport Assessments/Transport Statements supporting the planning applications, the following committed developments have been included in the assessments within this ES chapter and the associated Transport Assessment:

- Meadowside (116366/FO/2017)
- New Victoria (111777/FO/2016/C1)
- Victoria Riverside (126944/FO/2020)

11.191 These committed schemes have been inherently assessed as part of the future baseline scenario, and thus included within all subsequent assessments which build on this future baseline.

# In Combination Effects of Applications 4 and 5 and SRF

11.192 Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 has been set out previously in this chapter.

## Assessment of Likely Significant Effects (Applications 4 and 5 and SRF)

### Approach

11.193 As the overall quantum and nature of development within the wider SRF remains to be fully determined, it has not been possible to undertake quantitative assessment of the traffic flow impact of the SRF proposals. It is envisaged this would be undertaken by the respective applicants as and when applications within the SRF area come forward.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

11.194 With the wider SRF development being located north and east of the application 5 site, and assuming the same principle of construction traffic is adopted (i.e. directed towards the key radial and orbital roads rather than through the city centre) it is not anticipated there would be a significant construction traffic impact from the SRF on the traffic network under consideration within the ES chapter.

#### The Completed and Operational Development

11.195 The overall principles of the SRF are in line with those adopted within applications 4 and 5, i.e. promoting best-practice walking and cycling infrastructure and high quality public transport links.

11.196 The SRF area as a whole benefits from being in an accessible location and on-site facilities will improve this and reduce the need to travel still further.

11.197 Accordingly, it is considered likely that the overall impacts of the SRF (once suitable mitigation is applied) will be similar in scale and nature to those identified for the Redbank and NT02 – NT04 applications.

### Phasing Effects (Applications 4 and 5 and SRF)

11.198 No significant effects relating to phasing have been identified. The assessment work has tested the indicative phasing plan provided by the client team and the traffic capacity work has been based on the assumed completion years for applications 4 and 5 which are suggested by this phasing.

11.199 In relation to the wider SRF, it has been assumed that this would be brought forward in a timeframe largely beyond completion of the application 4 and 5 proposals.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5 and SRF)

11.200 Additional mitigation measures are as described under the assessments of the individual Applications 4 and 5.

### Demolition and Construction

11.201 The additional specific mitigation measures relate to Application 4 and additional specific mitigation measures relate to Application 5 and have been clearly set out relevant to each application at:

Application 4 Additional mitigation measure – Para 11.115

Application 5 Additional mitigation measures – Para 11.147

### The Completed and Operational Development

11.202 The additional specific mitigation measures relate to Application 4 and additional specific mitigation measures relate to Application 5 and have been clearly set out relevant to each application at:

Application 4 Additional mitigation measure – Para 11.116

Application 5 Additional mitigation measures – Para 11.148

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5 and SRF)

11.203 In relation to the cumulative effects of the SRF in combination with Applications 4 and 5, the additional effects of the SRF have been assessed on the basis that the SRF proposals will mitigate their own transport impacts, through an EIA process similar to the one undertaken for Applications 4 and 5. Accordingly we consider the residual effects of the Application 4, 5 and SRF scenario will be the same as the Application 4 and 5 only scenario, on the basis the SRF effects are fully mitigated.

11.204 The residual effects will therefore be as set out in **Table 11.21.**

***Table 11.21:*** *Residual Impacts Summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|
| *Completed Development* | | | |
| ***Severance*** | Red Bank: **minor adverse** effect.<br>Roger Street: **minor to moderate adverse** effect. | Travel Plan. | Overall a **Minor adverse** effect in the long term at the local level |

| Description of Effect | Potential effect including significance | Mitigation | Residual effect including significance |
|---|---|---|---|
| | Lord Street: **negligible to minor adverse** effect.<br>Dantzic Street: **minor adverse** effect. | | |
| ***Driver Delay*** | Red Bank: **minor adverse** effect.<br>Roger Street: **minor adverse** effect.<br>Lord Street: **minor adverse** effect.<br>Dantzic Street: **minor adverse** effect. | Travel Plan, Highway mitigation | Overall a **Minor adverse** effect in the long term at the local level |
| ***Pedestrian Delay and Amenity (including Fear and Intimidation)*** | Red Bank: **minor adverse** effect.<br>Roger Street: **minor to moderate adverse** effect.<br>Lord Street: **negligible to minor adverse** effect.<br>Dantzic Street: **minor adverse** effect. | Travel Plan, EV charging, Highway mitigation | Overall a **Minor adverse** effect in the long term at the local level |
| ***Public Transport (Bus/Tram/Rail)*** | **Negligible to minor adverse** effect. | Travel Plan | A **Negligible to minor adverse** effect in the long term at the local level. |
| ***Accidents and Safety*** | Red Bank: **minor adverse** effect.<br>Roger Street: **minor to moderate adverse** effect.<br>Lord Street: **negligible to minor adverse** effect.<br>Dantzic Street: **minor adverse** effect. | Travel Plan, Highway mitigation | Overall a **Minor adverse** effect in the long term at the local level. |

## Conclusions (Applications 4 and 5 and SRF)

11.205 **Table 11.21** sets out the key findings of the ES chapter in relation to Application 4 and 5 combined, and concludes that there are no moderate or major (and therefore significant) adverse effects in either the short or long term.

## Assessment of Cumulative Effects with Identified Committed Schemes (Applications 4 and 5 and SRF)

### Approach

11.206 As set out in Para 11.180, a review of committed developments in the local area has been undertaken and those developments forecast to result in an increase in vehicle trips on the local highway network have been included as part of the future year traffic assessments. Based on the trip generation and distribution included within the Transport Assessments/Transport Statements supporting the planning applications, the following committed developments have been included in the assessments within this ES chapter and the associated Transport Assessment:

- Meadowside (116366/FO/2017)
- New Victoria (111777/FO/2016/C1)
- Victoria Riverside (126944/FO/2020)

11.207 These committed schemes have been inherently assessed as part of the future baseline scenario, and thus included within all subsequent assessments which build on this future baseline.

### Likely Residual Cumulative Effects and their Significance

11.208 Based on the above approach, the likely residual cumulative effects remain as set out in **Table 11.21.**

# 12. Air Quality and Dust

## Introduction

12.1 This chapter assesses the effects of the Proposed Development (Applications 4 and 5) on local air quality. In particular it considers effects that may arise as a result of the Proposed Development on nearby sensitive receptors from: dust and particulate matter generated during the construction phase; exhaust emissions from construction traffic and plant; and exhaust emissions from road traffic generated by the Proposed Development during the operational phase. It also considers the effect of existing air quality conditions and emissions from nearby land uses on future site users.

12.2 The chapter describes the methods used to assess the likely significant effects, the baseline conditions currently existing at the Site (Applications 4 and 5) and surroundings, the potential direct and indirect effects of the Proposed Development arising in terms of air quality, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It has been written by WSP.

12.3 This chapter is supported by figures which are located in **Volume 2a: Main Text Figures** and appendices which are located in **Volume 3: Appendices** of this ES.

## Assessment Methodology and Significance Criteria

### Legislative and Policy Framework

12.4 The legislative framework for air quality in the UK is established through the following:

- The Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland (Volumes 1 and 2)[1,2];
- The Air Quality (Miscellaneous Amendment and Revocation of Retained Direct EU Legislation) (EU Exit) Regulations 2018[3].
- The Environmental (Miscellaneous Amendments) (EU Exit) Regulations 2020[4].
- The Air Quality (England) Regulations 2000 - Statutory Instrument 2000 No.928[5].

[1] Defra and the Devolved Administrations, (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1).
[2] Defra and the Devolved Administrations, (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 2).
[3] Air Quality (Miscellaneous Amendment and Revocation of Retained Direct EU Legislation) (EU Exit) Regulations 2018 (SI 2018/1407)
[4] The National Archives, (2020). The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 – Statutory Instrument No.1313. Available at: The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (legislation.gov.uk).

- The Air Quality (England) (Amendment) Regulations 2002- Statutory Instrument 2002 No.3043[6].
- The Air Quality Standards Regulations 2010 – Statutory Instrument 2010 No.1001[7].
- Defra (January, 2019) Clean Air Strategy 2019[8].
- Environment Act 1995[9].
- Environment Act 2021[10].
- Environmental Protection Act 1991[11].
- Environmental Improvement Plan 2023[12].

12.5 Further details on the above legislation are provided in **Appendix 12.1**.

12.6 For many parts of the UK, the primary pollutants of concern are those relating to road traffic emissions and, to a lesser extent, heating and commercial sources. The key pollutants of concern are therefore typically nitrogen dioxide ($NO_2$) and particulate matter ($PM_{10}$ and $PM_{2.5}$).

## Air Quality Standards

12.7 A summary of the standards and objectives relevant to these pollutants and the protection of human health is provided in **Table 12.1** below. For $NO_2$ and $PM_{10}$ there are both long-term (annual mean) and short-term (24-hour or 1-hour mean) standards, which reflect the varying impacts on health of differing levels of exposure to these pollutants.

***Table 12.1:*** *Summary of Relevant Air Quality Standards (for the protection of human health)*

| Pollutant | Concentration (µg/m³) | Averaging Period | Objective |
|---|---|---|---|
| Nitrogen Dioxide ($NO_2$) | 40 | Annual Mean | Not to be exceeded |
| | 200 | 1-Hour Mean | Not to be exceeded more than 18 times per year |

[5] The National Archives, (2000). The Air Quality (England) Regulations 2000 – Statutory Instrument 2000 No.928. Available at: https://www.legislation.gov.uk/uksi/2000/928/contents/made.
[6] The National Archives, (2002). The Air Quality (England) (Amendment) Regulations 2002 – Statutory Instrument 2002 No.3043. Available at: https://www.legislation.gov.uk/uksi/2002/3043/contents/made
[7] The National Archives, (2010). The Air Quality Standards Regulations 2010 – Statutory Instrument 2010 No.1001. Available at: https://www.legislation.gov.uk/uksi/2010/1001/contents/made.
[8] Defra, (2019). Clean Air Strategy 2019. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770715/clean-air-strategy-2019.pdf..
[9] UK Government (1995) Environment Act 1995. [Online] https://www.legislation.gov.uk/ukpga/1995/25/contents
[10] UK Government (2021) Environment Act 2021. [Online] https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted#printLegislationModPdf
[11] Environmental Protection Acct 1990. Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents#printLegislationModPdf
[12] Defra (2023) Environmental Improvement Plan 2023. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1133967/environmental-improvement-plan-2023.pdf

| Pollutant | Concentration (µg/m$^3$) | Averaging Period | Objective |
|---|---|---|---|
| Particulate Matter ($PM_{10}$) | 40 | Annual Mean | Not to be exceeded |
| | 50 | 24-hour Mean | Not to be exceeded more than 35 times per year |
| Particulate Matter ($PM_{2.5}$) | 20 | Annual Mean | Not to be exceeded |

12.8 Some ecologically designated sites may also include features that may be sensitive to changes in air quality. As such, air quality standards (referred to as critical loads and critical levels) have also been established for several key pollutants, including oxides of nitrogen ($NO_X$), nutrient nitrogen deposition, and ammonia. As noted later in this chapter, ecologically designated sites are not scoped-in to the assessment and therefore no further discussion on the applicable legislation is provided here.

### Environmental Improvement Plan Targets and Commitments

12.9 The Environmental Improvement Plan 2023 sets out new legally binding, long-term targets that both reduce concentrations of, and drive down people's exposure to, $PM_{2.5}$. The interim and long-term targets are:

12.10 By the end of January 2028:

- The highest annual mean concentration in the most recent full calendar year must not exceed 12 µg/m$^3$ of $PM_{2.5}$.
- Compared to 2018, the reduction in population exposure to $PM_{2.5}$ in the most recent full calendar year must be 22% or greater.

12.11 By the end of 2040:

- By the end of 2040, we will achieve a maximum Annual Mean Concentration Target (AMCT) of 10 micrograms of $PM_{2.5}$ or below per cubic metre (µg/m$^3$).
- By the end of 2040, we will reduce population exposure to $PM_{2.5}$ by 35% compared to 2018 levels.

## Planning Policy Context

### National Planning Policy

12.12 The Government's overall planning policies for England are described in the National Planning Policy Framework (NPPF[13]). The core underpinning principle of the Framework is the presumption in favour of sustainable development, defined as: '… meeting the needs of the present without compromising the ability of future generations to meet their own needs'.

[13] Ministry of Housing, Communities and Local Government (July 2021) National Planning Policy Framework.

12.13 One of the three overarching objectives of the NPPF is that the planning system should seek 'to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.'

12.14 In relation to air quality, the following paragraphs in the document are relevant:

- Paragraph 55, which states 'Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition.';
- Paragraph 104, which relates to the need to consider transport related issues at the earliest stages of plan making and development proposals, so that '…c) opportunities to promote walking, cycling and public transport use are identified and pursued; d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains…';
- Paragraph 105, which states '…Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health….';
- Paragraph 174, which states 'Planning policies and decisions should contribute to and enhance the natural and local environment by: …e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans…';
- Paragraph 185, which states 'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development….';
- Paragraph 186, which states 'Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should

ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.'

## Local Planning Policy

12.15 The Core Strategy[14], adopted by Manchester City Council (MCC) on 11th July 2012, includes the following policies relevant to air quality and the Proposed Development:

12.16 Policy EN 16 Air Quality, which states:

"The Council will seek to improve the air quality within Manchester, and particularly within Air Quality Management Areas, located along Manchester's principal traffic routes and at Manchester Airport. Developers will be expected to take measures to minimise and mitigate the local impact of emissions from traffic generated by the development, as well as emissions created by the use of the development itself, including from Combined Heat and Power and biomass plant.

When assessing the appropriateness of locations for new development the Council will consider the impacts on air quality, alongside other plan objectives. This includes cumulative impacts, particularly in Air Quality Management Areas."

12.17 Policy DM 1 Development Management, which states:

"All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document:-

[...]

Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise.

[...]".

## Other Relevant Policy and Guidance

12.18 In addition to the above framework, the following guidance is also relevant and has been utilised within the assessment:

- Local Air Quality Management Review and Assessment Technical Guidance (LAQM.TG22) published by the Department for Environment, Food and Rural Affairs (Defra) (2022)[15].

[14] MCC (2012) Core Strategy. Available at: https://www.manchester.gov.uk/download/downloads/id/18981/final_core_strategy.pdf

- Land-Use Planning & Development Control: Planning for Air Quality[16] joint guidance published by Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) (2017).
- Guidance on the Assessment of Dust from Demolition and Construction[17]published by the IAQM (2014).
- National Planning Practice Guidance – Air Quality[18](updated in 2019).
- Manchester City Council (MCC) Air Quality and Planning Technical Guidance[19].
- IAQM Guidance on the Assessment of Odour for Planning[20] (2018).

## Red Bank Methodology (Outline Application 4)

### Study Area

12.19 For the assessment of the effects of dust and particulate matter generated during the demolition and construction phase on local air quality, the study area extends to 350m from the Application 4 site boundary and within 50m of the routes most likely to be used by construction traffic, up to 500m from the Site entrance, in accordance with the assessment guidance published by the IAQM[17].

12.20 The study area for the assessment of effects on local air quality due to emissions from road traffic associated with Application 4 once operational has been defined by the extent of traffic modelling (and baseline traffic data for the local road network) and scope of the Transport Assessment, which includes those roads most likely to be affected by development related traffic. The assessment considers the effects of the development on air quality at existing sensitive receptors (as defined later in this chapter) located near to the modelled road network. In addition, sensitive receptors have been located within the Application 4 site itself where there will be new exposure.

### Survey and Data Sources

12.21 The baseline air quality conditions for the study area have been established through a desktop study of publicly available data. The data sources considered as part of the study are summarised below:

- Local Air Quality Management Background Pollutant Mapping Data (2018-2030) published by Defra[21].

[15] Defra (2022) Part IV The Environment Act 1995 and Environment (Northern Ireland) Order 2002 Part III, Local Air Quality Management Technical Guidance (TG22)
[16] Environmental Protection UK and Institute of Air Quality Management (Version 1.2 Updated January 2017). Land Use Planning & Development Control: Planning for Air Quality
[17] Institute of Air Quality Management (Version 1.1 Updated June 2016). Guidance on the Assessment of Dust from Demolition and Construction
[18] Ministry of Housing, Communities & Local Government (2019). National Planning Practice Guidance
[19] Manchester City Council (2022) Air Quality and Planning Technical Guidance. Available at: https://www.manchester.gov.uk/download/downloads/id/28256/air_quality_and_planning_guidance.pdf
[20] IAQM (July 2018) Guidance on the assessment of odour for planning (version 1.1)
[21] Defra (2020) Background Mapping data for local authorities. Available at: https://uk-air.defra.gov.uk/data/laqm-background-home

- MCC's latest air quality monitoring data and review and assessment report[22].
- Additional air quality monitoring data from the Clean Air Greater Manchester[23] and Air Quality in England websites[24].
- Environment Agency Public Register for Authorised Processes[25].
- MCC's Environmental Permit Register[26].

## Construction Phase

### Construction Dust Assessment

12.22 A qualitative assessment of the likely significant impacts on local air quality due to the generation and dispersion of dust and particulate matter ($PM_{10}$) during the construction phase has been undertaken following the assessment methodology published by the IAQM[17], the available information for this phase of the Proposed Development provided by the Applicant and Project Team, and, professional judgement.

12.23 Dust comprises particles typically in the size range 1-75 micrometres (µm) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials. The larger dust particles fall out of the atmosphere quickly after initial release and therefore tend to be deposited in proximity to the source of emission. Dust is therefore unlikely to cause long-term or widespread changes to local air quality, although its deposition on property and cars can cause 'soiling' and discolouration. This may result in complaints of nuisance through amenity loss or perceived damage caused, which is usually temporary.

12.24 The smaller particles of dust (less than 10µm in aerodynamic diameter) are known as $PM_{10}$ and represent only a small proportion of total dust released; this includes a finer fraction, known as $PM_{2.5}$ (with an aerodynamic diameter less than 2.5µm). As these particles are at the smaller end of the size range of dust particles, they remain suspended in the atmosphere for longer periods of time than the larger dust particles and can therefore be transported by wind over a wider area. $PM_{10}$ and $PM_{2.5}$ are small enough to be drawn into the lungs during breathing, which in sensitive members of the public could have a potential impact on health. However, according to IAQM guidance, the majority of fugitive particulate emissions arising from construction sites are expected to relate to the coarser fractions (i.e. $PM_{2.5\text{-}10}$) with just 10-15% expected to comprise $PM_{2.5}$. Therefore, $PM_{10}$ is considered most relevant for the purposes of assessment.

12.25 The IAQM methodology assesses the risk of potential dust and $PM_{10}$ impacts from four key sources: demolition, earthworks, construction, and trackout[27]. It takes into account the nature and scale of the activities undertaken

[22] Greater Manchester Combined Authority (June 2022) 2021 Air Quality Annual Status Report
[23] Clean Air Greater Manchester website. Available at: https://cleanairgm.com/data-hub/
[24] Air Quality in England website. Available at: https://www.airqualityengland.co.uk/local-authority/data?la_id=219
[25] Environmental Permitting Regulations – Installations Public Register. Available at: https://environment.data.gov.uk/public-register/view/search-industrial-installations
[26] Manchester City Council Environmental Permit Register. Available at: https://www.manchester.gov.uk/info/500217/licence_-_public_registers/8272/environmental_permit_register

for each source to determine a dust emission magnitude and combines this with the sensitivity of receptors in the surrounding area to an increase in dust and $PM_{10}$ levels to define the potential for impacts to occur, which are described in terms of there being a 'low', 'medium' or 'high' risk of dust impacts. Once the level of risk has been ascertained, then site specific mitigation proportionate to the level of risk is identified, and the significance of residual effects determined.

12.26 A summary of the IAQM assessment methodology is provided in **Appendix 12.2**.

## Emissions from Construction Traffic and Plant

12.27 In addition to impacts on local air quality due to on-site construction activities, exhaust emissions from construction vehicles and plant may have an impact on local air quality adjacent to the routes used by these vehicles to access the Site and in the vicinity of the Site itself.

12.28 A semi-quantitative assessment of the impact of emissions from construction vehicles on local air quality has been undertaken using professional judgement and by considering the following:

- Modelled Do-Minimum modelling results at receptors adjacent to the identified construction routes in 2023 (Red Bank Outline Application 4) and 2029 (NT02-NT04 Full Application 5).
- Existing Heavy Goods Vehicle (HGV) traffic flows on the identified construction routes.
- The estimated number of on-road construction traffic movements generated by this phase of the Proposed Development.
- Consideration of the assessment on-road vehicle screening criteria contained within the EPUK/IAQM Planning for Air Quality guidance document, as appropriate.
- The number and type of construction plant and non-road mobile machinery likely to be utilised within the Site.
- The type, number and proximity of sensitive receptors to the Site and along the identified routes to be used by construction vehicles.
- The duration of the construction phase and the nature of the construction activities undertaken.

12.29 The focus of the assessment is generated HGVs. Although Light Goods Vehicles (LGV), such as employee car trips will also be generated during the construction phase, no employee parking will be provided on site. Employee trips are likely to disperse across network depending on parking locations available for employees. It is also anticipated some site staff will utilise public transport given the accessible location of the Site. The assessment of emissions from these vehicles is scoped-out of the assessment because the impact will be negligible in the context of existing traffic.

[27] Track-out is the transportation of dust and dirt from the construction site onto the public road network by construction vehicles, where it may be deposited and then re-suspended by vehicles using the road network.

## Operational Phase

### Road Traffic Emissions (Dispersion Modelling)

12.30 Once Application 4 becomes operational it will generate additional road traffic movements on the local road network. Exhaust emissions from these vehicles will contribute to ambient pollutant concentrations, which may have an effect on nearby sensitive uses (existing and proposed).

12.31 For the prediction of impacts due to emissions arising from road traffic generated by Application 4 once it becomes operational, the dispersion model ADMS Roads (version 5.0.0.1) has been used. This model uses detailed information regarding traffic flows on the local road network, surface roughness, and local meteorological conditions to predict pollutant concentrations at specific receptor locations, as determined by the user.

12.32 Traffic data for use in the assessment was provided by WSP, the project transport consultants. Traffic data was provided as Annual Average Daily Traffic (AADT) flows, vehicle speeds (in km/h), and the percentage of Heavy-Duty Vehicles (HDVs) across the local road network for the assessment scenarios considered.

12.33 For Outline Application 4 the following datasets were provided:

- 2019 existing baseline and model verification year.
- 2032 'Without Application 4'.
- 2032 'With Application 4'.

12.34 2019 is the assessed current baseline and model verification year (as this is the year in which the baseline traffic surveys were undertaken and the year for which suitable, pre-COVID air quality monitoring data is available). 2032 is the year in which Application 4 is anticipated to become fully operational.

12.35 The traffic flows for the future 'without Application 4' scenario include flows for relevant cumulative developments identified in the locality of the Site but do not include any contribution to road traffic from Application 4 itself. The traffic flows for the 'with Application 4' scenario include contributions to road traffic from Application 4 and the identified cumulative developments[28]. It is noted that Plot RB05 could be brought forward as either a primary school or a residential development. The traffic data has therefore been based on the highest trip generator (the school) to ensure a conservative approach to the assessment.

12.36 Traffic speeds used in the assessment were based on the speed limits provided by WSP, although they were reduced at junctions, and part of the network where traffic is likely to be slow-moving and congested, in line with technical guidance published by Defra (in LAQM.TG22[15]) and using professional judgement. The modelling also

[28] In the calculation of the traffic data, the list of identified cumulative developments was filtered to remove sites within minimal trip generation. The cumulative schemes identified for inclusion within the traffic data include: Victoria Meadowside, New Victoria, Victoria Riverside, Ancoats Mobility Hub and Cortland.

takes into account the proposed reduction in speed limit (to 20 mph) on the section of Dantzic Street within the site boundary.

12.37 Vehicle emission factors for use in the assessment have been obtained using the Emissions Factors Toolkit (EFT) version 11.0 (published in November 2021) available on the Defra website[29]. The EFT allows for the calculation of emission factors arising from road traffic for all years between 2018 and 2050. However, the emissions for the period 2031 to 2050 are a recent addition, following an update in 2021, and are provided for use in climate assessments and appraisals only. As such, 2019 emissions factors have therefore been adopted for the baseline / verification scenario and 2030 emission factors have been adopted for the future year assessment scenarios. This also ensures consistency with the remaining LAQM tools provided by Defra (such as the background maps) which only provide forecasts up to 2030.

12.38 A summary of the traffic data and vehicle emissions factors used in the assessment is provided in **Appendix 12.3**.

12.39 Meteorological data, such as wind speed and direction, is used by the model to determine pollutant transportation and levels of dilution by the wind. Meteorological data used in the model was obtained from the Met Office observing station at Rostherne for 2019. This station is considered to provide representative data for the assessment and was agreed with the Environmental Health Officer (EHO) for MCC during consultation. A copy of the 2019 wind rose for Rostherne is provided in **Appendix 12.4**.

12.40 Background pollutant concentrations used in the assessment have been taken from the national maps provided on the Defra website[30] , where background concentrations of those pollutants included within the AQS have been mapped at a grid resolution of 1x1km for the whole of the UK. Estimated concentrations are available for all years between 2018 and 2030. Inherent within the maps is the assumption that background concentrations will improve (i.e. reduce) over time, in line with the predicted reduction in vehicle emissions and emissions from other sources. Further information on the background concentrations utilised in the assessment is provided in Paragraph 12.88.

12.41 Given the built-up nature of the surrounding area, the ADMS Advanced Street Canyon module was used to account for the presence of any street canyons within the model network and to more accurately represent pollutant dispersion. Average building heights supplied with the OS Mastermap Topography dataset were used for this purpose.

12.42 An ArcGIS python tool is produced by CERC for the production of the street canyon inputs which requires the road network and building polygons for the calculation. Only those buildings within 30m of roads were used for

[29] Emissions Factors Toolkit. Available at: https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html

[30] Defra Background Pollutant Maps. Available at: https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

this calculation as a street canyon is typically defined as being enclosed by buildings with a height measurement equivalent to the road width. The position of canyons within the model from the python tool output was derived in QGIS using linear referencing in order to adjust the positions of relevant human receptors to the interior of the modelled canyon.

### Model Verification and Results Processing

12.43 The ADMS Roads dispersion model has been widely validated for this type of assessment and is considered to be fit for purpose.

12.44 Model validation undertaken by the software developer will not have included validation in the vicinity of the Site. To determine the performance of the model at a local level, a comparison of modelled results with the results of monitoring carried out within the study area was undertaken. This process of verification aims to minimise modelling uncertainty and systematic error by correcting modelled results by an adjustment (or 'verification') factor to gain greater confidence in the final results and was carried out following the methodology specified in Chapter 7, Section 4, of LAQM.TG22.

12.45 Details of the verification factor calculations are presented in **Appendix 12.5**. A factor of **1.28** was obtained during the verification process for $NO_X$, which indicated that the model was under-predicting concentrations of this pollutant. This factor was therefore applied to the model road-$NO_X$ outputs for each assessment receptor prior to conversion to annual mean $NO_2$ concentrations utilising the $NO_X$ to $NO_2$ calculator (version 8.1, released August 2020) and relevant background $NO_2$ concentrations provided by Defra.

12.46 LAQM.TG22 advises that exceedances of the 1 hour mean $NO_2$ objective are unlikely to occur where annual mean concentrations are below 60µg/m$^3$ (and it provides guidance on the approach that should be taken if either measured or predicted annual mean $NO_2$ concentrations are 60µg/m$^3$ or above). Use of this criterion has been adopted within the assessment.

12.47 As local roadside monitoring data are not available for $PM_{10}$ or $PM_{2.5}$ within the study area, the modelled road-$PM_{10}$ and road-$PM_{2.5}$ components have been adjusted using the verification factor obtained for $NO_X$ before addition of the appropriate background concentration. This approach is considered consistent with the LAQM.TG22 guidance[15]. The number of days with $PM_{10}$ concentrations greater than 50µg/m$^3$ was then estimated using the relationship with the annual mean concentration described in LAQM.TG22.

12.48 Once processed, the predicted concentrations were compared against the relevant AQS objective levels for $NO_2$, $PM_{10}$ and $PM_{2.5}$ set out in **Table 12.1**.

## Identification of Sensitive Receptors

12.49 Sensitive receptors are locations or places where the public or sensitive ecological habitats may be exposed to pollutants resulting from activities associated with the Proposed Development. These include locations sensitive

to an increase in dust deposition and $PM_{10}$ exposure resulting from construction activities and locations sensitive to exposure to airborne pollutants emitted from the exhausts of construction and operational phase traffic.

## Construction Phase Dust Assessment

12.50 For the assessment of construction dust and human health effects associated with $PM_{10}$ releases, existing (human) receptors were identified within the distances specified within the IAQM guidance[17] (i.e. within 350m of the Site boundary and within 50m of construction traffic routes, up to 500m from the site entrance) using data from Ordnance Survey open map local[31] and openstreetmap.org[32]. In addition, the assessment has considered sensitive receptors within those cumulative / committed developments located within the defined distances that are likely to become operational during the construction phase (i.e. Victoria Riverside). The sensitivity of the receptors was determined following the IAQM guidance. Generally, residential properties and schools have been classed as 'high sensitivity' receptors for both dust and particulate matter. Places of work, retail areas and non-residential uses, where public exposure would be shorter-term, range from 'medium' to 'low sensitivity'.

12.51 In addition, due to the duration of the construction phase, it is likely that parts of the Proposed Development will become operational whilst construction is ongoing elsewhere within the Site. Therefore, consideration has also been given to new sensitive receptors that may be introduced at locations within 350m of dust generating activities. All proposed sensitive receptors have been classed as 'high-sensitivity'.

12.52 There are no ecological designated sites located within the specified distances and therefore ecological receptors are not considered within the construction phase assessment.

## Operational Road Traffic Emissions Assessment - Human Health Receptors

12.53 Locations sensitive to airborne pollutants emitted from engine exhausts include places (outside of buildings / structures) where members of the public are likely to be regularly present over the period of time prescribed in the AQS. Box 1.1 of LAQM.TG22[15] provides examples of the locations where the air quality objectives should and should not apply.

12.54 To complete the assessment of operational phase impacts, a desk study was undertaken, using Ordnance Survey open map local[31] and openstreetmap.org[32] data to identify sensitive assessment receptors located in the vicinity of the Site and adjacent to those road links likely to experience the greatest change in traffic flows or composition (and therefore the greatest change in pollutant concentrations), due to the Proposed Development. These locations include primarily the building facades of residential properties, schools, care homes and hospitals and building within the Greater Manchester AQMA. For completeness, they also include locations where exposure may be more short-term, for comparison with the short-term objectives. In total, predictions were made at 1,345 human receptors. The locations of the assessment receptors are illustrated on **Figure 12.1**.

[31] https://beta.ordnancesurvey.co.uk/products/os-open-map-local
[32] https://www.openstreetmap.org/#map=5/54.910/-3.432

Unless specified otherwise, the human health receptors have been modelled at a height of 1.5m from ground level.

12.55 The Proposed Development will introduce new sensitive receptors into the area. To assess the likely exposure of future site users, pollutant concentrations have also been predicted across the Site using a receptor grid with a resolution of 20 m.

12.56 For the purposes of the operational phase assessment, all human health receptors are classed as 'high' sensitivity[33].

### Operational Road Traffic Emissions Assessment - Ecological Receptors

12.57 Ecologically designated sites can include features that are sensitive to an increase in pollutant concentrations in the air and an increase in the direct deposition of pollutants to the ground and on plant surfaces (e.g. nitrogen deposition) due to exhaust emissions from road traffic. However, potentially significant (adverse) effects, requiring further assessment, are only likely to arise where these sensitive features are present within 200m of road that is likely to be notably 'affected' by development related traffic, as defined by specific changes in traffic flow and composition.

12.58 A review of the Defra MAGIC map[34] and Woodland Trust website[35] indicates that there are no designated sites which will be affected by the Application 4 traffic flow changes and as such ecological receptors are scoped out of the assessment.

## NT02 – NT04 Methodology (Full Application 5)

### Study Area

12.59 The study area for Application 5 has been established in the same way as described for Application 4 above (in Paragraphs 12.19 to 12.20).

### Survey and Data Sources

12.60 The baseline information sources used to inform the assessment for Application 5 are the same as those described for Application 4 in Paragraph 12.21.

[33] All of the assessed receptors are assumed to be representative of locations where members of the public would be present for the period of time relevant to the air quality objectives for $NO_2$ and particulate matter and therefore any increase in pollutant concentrations may have an effect on human health.
[34] https://magic.defra.gov.uk/magicmap.aspx
[35]https://ati.woodlandtrust.org.uk/?gclid=Cj0KCQjwk7ugBhDIARIsAGuvgPYOhpGQkxYymMOvSl03_9h6PmDEwRvwnxRzNQrRIT0AenCIz7sDMpoaArlbEALw_wcB

### Construction Phase

12.61 The methodology for the construction phase assessment is as described for the outline planning application in Paragraphs 12.22 to 12.26.

### Operational Phase

12.62 The methodology for the operational phase assessment is generally as described for Application 4 in Paragraphs 12.30 to 12.70.

12.63 In relation to the assessment of road traffic emissions for Application 5, traffic data was provided for the following assessment scenarios:

- 2019 existing baseline and model verification year.
- 2029 'Without Application 5'.
- 2029 'With Application 5'.

12.64 Where 2029 is the anticipated completion year for Application 5.

### Identification of Sensitive Receptors

12.65 The approach for identifying sensitive receptors remains as described for Application 4 above.

12.66 In relation to the assessment of operational road traffic effects, the extent of the modelled road network is the same for Applications 4 and 5 except for the addition of flows on Dulwich Street. Therefore, the majority of the existing receptors assessed are the same. In relation to the exposure of future site users, the assessment receptors of relevance to the detailed assessment will be the same as those illustrated in **Figure 12.1**.

## Significance Criteria (Outline Application 4 and Full Application 5)

### Demolition and Construction Phase

12.67 In relation to construction dust, the significance of effects for both Application 4 and Application 5 have been determined following the IAQM guidance[17]. For almost all construction activities, the application of effective mitigation should prevent any potentially significant effects occurring and therefore the residual effect will normally be negligible or 'not significant'. As the assessment is used to determine the mitigation that will be required and implementation of these measures will likely be secured by way of a planning condition, the IAQM methodology advises that it is not appropriate to determine the significance of effects without mitigation in place. Therefore, significance has only been determined following implementation of the necessary measures, which are tried and tested and the effectiveness of which is well known.

12.68 For the assessment of the impact of exhaust emissions from plant used on-site and construction vehicles accessing and leaving the Site on local concentrations of $NO_2$ and particulate matter, the significance of residual

effects has been determined using professional judgement and the principles outlined in the EPUK/IAQM guidance, which are described below.

## Operational Phase

12.69 The approach provided in the joint EPUK/IAQM guidance[16] has been used within this assessment (for both Application 4 and Application 5) to assist in describing the air quality effects of additional emissions from road traffic generated by the Proposed Development once it becomes operational.

12.70 This guidance recommends that the degree of an impact is described by expressing the magnitude of incremental change in pollution concentration as a proportion of the relevant assessment level and examining this change in the context of the new total concentration and its relationship with the assessment criterion, as summarised in **Table 12.2**.

***Table 12.2:*** *Impact Descriptors for Individual Receptors*

| Long term average concentration at receptors in assessment year | % Change in Concentration Relative to Air Quality Assessment Level (AQAL) | | | |
|---|---|---|---|---|
| | 1 | 2-5 | 6-10 | >10 |
| 75% or less of AQAL | Negligible | Negligible | Minor | Moderate |
| 76-94% AQAL | Negligible | Minor | Moderate | Moderate |
| 95-102% of AQAL | Minor | Moderate | Moderate | Major |
| 103-109% of AQAL | Moderate | Moderate | Major | Major |
| 110% or more of AQAL | Moderate | Major | Major | Major |

Notes

AQAL = Air Quality Assessment Level, which for this assessment related to the standards/objectives in **Table 12.1**.

Where the %change in concentrations is <0.5%, the change is described as 'Negligible' regardless of the concentration.

When defining the concentration as a percentage of the AQAL, 'without development' concentration should be used where there is a decrease in pollutant concentration and the 'with development' concentration where there is an increase.

Where concentrations increase, the impact is described as 'adverse', and where they decrease as 'beneficial'.

12.71 The EPUK/IAQM guidance notes that the criteria in **Table 12.2** should be used to describe impacts at individual receptors and should be considered as a starting point to make a judgement on significance of effects, as other influences may need to be accounted for. Overall significance should be based on professional judgement, taking into account several factors, including:

- The existing and future air quality in the absence of the development.

- The extent of current and future population exposure to the impacts.
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

12.72 The guidance states that for most road transport related emissions, long-term average concentrations are the most useful for evaluating the impacts. The guidance does not include criteria for determining the significance of the effect on hourly mean $NO_2$ concentrations or daily mean $PM_{10}$ concentrations. The significance of effects of hourly mean $NO_2$ and daily mean $PM_{10}$ concentrations arising from the operational phase have therefore been determined qualitatively using professional judgement and the principles described above.

12.73 The EPUK/IAQM guidance also says that 'Where the air quality is such that an air quality objective at the building facade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means. For people working at new developments in this situation, the same will not be true as occupational exposure standards are different, although any assessment may wish to draw attention to the undesirability of the exposure.'

## Assumptions/Limitations (Outline Application 4 and Full Application 5)

12.74 The construction phase assessment is subject to the following limitations and assumptions:

- The assessment has been completed using the available information from the project team, professional judgement on the likely scale of activity, the sensitivity of the receiving environment, and experience of working on similar schemes.
- Receptor counts were estimated using GIS, Google Maps and Google Street View. Address Base data was not utilised within the assessment.

12.75 For the operational phase, the following limitations and assumptions apply:

- There are uncertainties associated with both measured and predicted concentrations. The model used in this assessment (ADMS-Roads) relies on input data (including predicted traffic flows), which also have uncertainties associated with them. The model itself simplifies complex physical systems into a range of algorithms. In addition, local micro-climatic conditions may affect the concentrations of pollutants that the ADMS Roads model will not take into account.
- Traffic data for use in the assessment was provided by WSP. In the calculation of traffic flows the transport consultants will have made assumptions regarding trip generation, traffic distribution, and growth rates for the local area etc.
- Traffic data was provided for all roads covered by the Transport Assessment. However, to better enable consideration of the effect of the development generated traffic on the existing AQMA, the data was supplemented with additional information from the DfT's national database, where available.

- In order to reduce the uncertainty associated with predicted concentrations, model verification has been carried out following guidance set out in LAQM.TG22. As the model has been verified against local monitoring data and adjusted accordingly, there can be reasonable confidence in the predicted concentrations.

## Consultation (Outline Application 4 and Full Application 5)

12.76 **Table 12.3** provides an overview of the consultation that has been undertaken to inform the air quality assessment, in addition to the EIA scoping exercise (as set out in **Chapter 2: Approach**).

***Table 12.3:*** *Consultation*

| Consultee | Application | Date | Comments | Actions |
|---|---|---|---|---|
| **MCC, Environmental Health Officer** | Both | Sept. 2021 | A letter report was issued in September 2021 which provided a review of baseline conditions in the vicinity of the Site and identified that there is sufficient existing air quality monitoring data within the study area to inform the future detailed assessment, which would consider both pollutant concentrations within the Site itself in addition to impacts occurring off-site during the construction and operational phases. The need for any additional site-specific monitoring was therefore scoped out. | None |
| **MCC, Environmental Health Officer** | Both | Nov. 2022 | Consultation letter setting out the proposed scope and methodology for the air quality assessment and requesting details of any odour complaints data relating to nearby industrial uses / processes etc. | MCC generally accepting of the proposed approach and reiterated the need to address the following:<br>• Exposure of future occupants will need to be considered along with details of any mitigation measures that will be provided to protect future occupants from poor air quality (e.g. recommendations for the location of clean air intakes (if required), including specification and maintenance etc (as necessary).<br>• Recommendations for mitigation measures to control fugitive dust emissions during demolition |

| Consultee | Application | Date | Comments | Actions |
|---|---|---|---|---|
| | | | | and construction, demonstrating compliance with the IAQM principles of good practice.<br>• Compliance with MCC's Electric Vehicle (EV) charge point criteria, as outlined in their 'Air Quality and Planning Technical Guidance', published in August 2022.<br><br>No comment or complaints data was provided in relation to odour. |

# Red Bank (Outline Application 4)

## Baseline Conditions (Application 4)

### Local Air Quality Management

12.77 Under Part IV of the Environment Act 1995[9], local authorities must review and document local air quality within their area by way of staged appraisals and respond accordingly, with the aim of meeting the air quality objectives defined in the Regulations. Where the objectives are not likely to be achieved, they are required to designate an Air Quality Management Area (AQMA) and draw up an Air Quality Action Plan (AQAP) which sets out the measures they will take to improve air quality within the AQMA.

12.78 MCC has one AQMA within their administrative area. This is the Greater Manchester Combined Authority AQMA, which was declared in 2016 for exceedances of the objective for annual mean $NO_2$ concentrations, primarily attributable to road transport. The AQMA covers the 10 districts of Greater Manchester including arterial routes, district centres and Manchester Airport.

12.79 The southernmost extent of the Application 4 site falls within the AQMA. Furthermore, several road links (e.g. A664 and A665) that are likely to be impacted by traffic generated by Application 4 and/or which are likely to influence air quality at the Application 4 site are located within the AQMA.

### Local Emission Sources

#### Road Emissions

12.80 The Application 4 site is located in an area where air quality is mainly influenced by emissions from road transport using the local road network, including major roads such as the A664, A665 and minor roads such as Collyhurst Road, Red Bank and Dantzic Street.

#### Rail Emissions

12.81 Manchester Victoria Railway Station is located approximately 150 m southwest of the Application 4 site and the railway line runs adjacent to the southernmost boundary of the Application 4 site. The railway is known to carry diesel locomotives. Defra's 2022 Technical Guidance (TG22) states that:

12.82 "Diesel or coal fired stationary locomotives can give rise to high short-term $NO_2$ and sulphur dioxide ($SO_2$) concentrations near railway stations or depots. Additionally, moving locomotives can contribute to elevated short-term $NO_2$ and $SO_2$ concentrations close to the track."

12.83 TG22 also sets out screening criteria for determining when further consideration of rail emissions is required. As outlined in the EIA Scoping report (See **Appendix 2.1**), taking into account the distance of the Site from the station, the location of new receptors, and the low background concentrations applicable to the Site (see **Table 12.5** and **Figure 12.1**), the screening criteria are not likely to be exceeded and therefore the railway is unlikely to

have a significant influence on pollutant concentrations within the Site and does not require further consideration.

### Industrial Emissions and Odour Sources

12.84 A review of the Environment Agency's online public register for permitted installations[36] and MCC's public register[37] indicates that there are no large scale (Part A or Part A2) industrial processes present within the immediate vicinity of the Site (1km radius). With regards to smaller Part B processes (regulated by MCC with releases to air only) there are two processes located in the vicinity of the Site which could produce odour emissions. These are a bitumen coating process operated by Packaging Products Limited and a manufacture of coating materials process operated by HMG Paints Limited. Both processes are located off Collyhurst Road, immediately north/northeast of the Site.

12.85 The prevailing wind direction for the area is from the south and southeast, although some notable contributions may arise from the west and northwest (based on a review of recent data from the meteorological station at Rostherne, Manchester). As the potentially odorous processes are located upwind of the Site, any associated emissions to air or releases of odour generated from Packaging Products Limited and HMG paints, are likely be dispersed away from the Site for the majority of hours. Receptors located to the north of HMG paints are most likely to be impacted by potential odours.

12.86 On the basis Packaging Products Limited and HMG paints are permitted processes and that no odour complaints history has been provided by MCC, it is considered unlikely that odours associated with the paint facility would have an effect on the Proposed Development. Therefore, no further assessment is considered necessary.

## Background Air Quality Data

12.87 Mapped background pollutant concentrations for the Baseline year of 2019 are shown in **Figure 12.2** ($NO_2$), **Figure 12.5** ($NO_X$), **Figure 12.8** ($PM_{10}$) and **Figure 12.11** ($PM_{2.5}$).

12.88 The mapped background pollutant concentrations used in the assessment of Outline Application 4 are shown in **Figure 12.4** ($NO_2$), **Figure 12.7** ($NO_X$), **Figure 12.10** ($PM_{10}$) and **Figure 12.13** ($PM_{2.5}$).

12.89 **Figure 12.4** ($NO_2$), **Figure 12.10** ($PM_{10}$) and **Figure 12.13** ($PM_{2.5}$) show that annual mean background concentrations of $NO_2$, $PM_{10}$ and $PM_{2.5}$ are predicted to be well below the relevant air quality objectives in all assessment years. Furthermore, concentrations are predicted reduce over time, with the greatest improvement anticipated for $NO_2$.

[36] Environmental Permitting Regulations – Installations. Available at: https://environment.data.gov.uk/public-register/view/search-industrial-installations

[37] Manchester City Council Environmental permit register, available at: https://www.manchester.gov.uk/info/500217/licence_-_public_registers/8272/environmental_permit_register

## Local Authority Air Quality Monitoring Data

12.90 MCC undertakes monitoring of $NO_2$ using a combination of continuous automatic monitoring stations and a network of passive diffusion tubes.

12.91 There is one automatic monitor located within a 1 km radius of the Site. This is the MAN3 – Manchester Piccadilly monitor, located approximately 0.9 km to the south of the Site, within Manchester City Centre and within the Greater Manchester AQMA. Annual mean $NO_2$, $PM_{10}$ and $PM_{2.5}$ concentrations from this monitor are summarised in **Table 12.4.**

***Table 12.4:*** *MCC Nearby Continuous Air Quality Monitoring Data*

| Site Name and Type | Distance from Site (km) | Monitoring Result / Concentration | | | | | Objective (µg/m³) |
|---|---|---|---|---|---|---|---|
| | | 2017 | 2018 | 2019 | 2020 | 2021 | |
| MAN 3<br><br>Urban Centre | 0.9 | **$NO_2$ Annual mean (µg/m³)** | | | | | |
| | | 36 | 35 | 36 | 27 | 30 | 40 |
| | | **$NO_2$ Hourly mean (no. Hours >200µg/m³)** | | | | | |
| | | 1 | 0 | 0 | 0 | 0 | 200 (not to be exceeded > 18 times per year) |
| | | **$PM_{10}$ Annual mean (µg/m³)** | | | | | |
| | | 20 | 21 | 20 | 15 | 15 | 40 |
| | | **$PM_{10}$ Daily mean (No. Days >50µg/m³)** | | | | | |
| | | 3 | 2 | 7 | 1 | 2 | 50 (not to be exceeded > 35 times per year) |
| | | **$PM_{2.5}$ Annual mean (µg/m³)** | | | | | |
| | | 8 | 11 | 12 | 8 | 9 | 20 |

12.92 Data from **Table 12.4** show that between 2017 and 2021, there were no exceedances of the respective objectives at continuous monitor MAN3.

12.93 With regards to $NO_2$ diffusion tubes, **Table 12.5** presents annual mean $NO_2$ concentrations measured within a 1km radius of the Site.

***Table 12.5:*** *MCC Nearby $NO_2$ Diffusion Tube Monitoring Data*

| Grid Square (centred on O.S. Grid Reference) | Site Type | Distance from Site (km) | $NO_2$ (µg/m³) | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2017 | 2018 | 2019 | 2020 | 2021 |
| MA36NO | Roadside | 0.3 | 34.0 | 33.1 | 31.7 | 24.3 | 26.7 |
| MA88NO | Roadside | 0.3 | 57.9 | 46.8 (41.8*) | 45.2 (40.7*) | 30.1 | 36.8 |
| MA26ANO | Urban | 0.4 | 35.5 | 33.4 | 33.0 | 22.9 | 25.9 |

| Grid Square (centred on O.S. Grid Reference) | Site Type | Distance from Site (km) | $NO_2$ (µg/m³) | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2017 | 2018 | 2019 | 2020 | 2021 |
| | Background | | | | | | |
| MA59NO/MA60NO/ MA61NO (triplicate) | Urban Background | 0.9 | 35.7 | 31.6 | 33.1 | 22.3 | 22.3 |
| MA9ANO | Kerbside | 1.0 | 51.1 | 45.8 (42.8*) | 44.9 (34.2*) | 32.5 | 35.7 |

*Values in brackets represent concentrations when distance corrected to nearest relevant public exposure

12.94 The data from **Table 12.5** shows that up to and including 2019, $NO_2$ concentrations frequently exceeded the annual mean objective (40µg/m³) at MA88NO and MA9ANO. For all remaining tubes within 1km of the Site, concentrations consistently met the objective. In 2020 and 2021 concentrations were significantly reduced at all locations. However, this will be due to the influence of the travel restrictions and national lockdown measures implemented in response to the COVID-19 pandemic. Therefore, the data for 2020 and 2021 cannot be considered representative of a long-term improvement in air quality. Without COVID-19, it is likely that monitored concentrations would have been higher.

12.95 Although diffusion Tube MA88NO is located within 300 m south of the Site, it is a roadside tube and is located just 1 m from a major A road (Angel Street, A664). It is not therefore considered representative of conditions at the Site, which is located further from the city centre and approximately 80m from the nearest A road (A664 Rochdale Road), meaning there is a relatively greater distance over which emissions from vehicles utilising a major A road can disperse before reaching the Site.

12.96 Diffusion tube MA36NO is the closest monitor to the Proposed Development and, of the monitors listed in **Table 12.5**, is considered to be the most representative of air quality conditions at the Site. It is located 3m from the nearest A road (A664 Rochdale Road) and away from the city centre. Concentrations measured at this tube are consistently more than 10% below the annual mean objective.

12.97 For all diffusion tubes within 1km of the Site, the annual mean $NO_2$ concentrations are less than 60µg/m³. Therefore, in accordance with TG22, it can be assumed that the hourly mean objective for $NO_2$ is being achieved at the Site and in the surrounding area.

## Baseline Ambient Pollutant Predictions

12.98 The dispersion model predictions for the 2019 base year are summarised in **Table 12.6**.

***Table 12.6**: Dispersion Model 2019 Baseline Prediction Summary*

| Baseline Dispersion Modelling Results Summary Table | | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| Limit Value (µg/m³) | | 40 | 18 | 10 |
| Maximum Concentrations (µg/m³) | All Receptors | 60.4 | 19.6 | 12.5 |

| Baseline Dispersion Modelling Results Summary Table | | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| **Limit Value (µg/m³)** | | **40** | **18** | **10** |
| Number of Properties greater than UK limit value | All Receptors | 34 | 0 | 0 |

12.99 The summary in **Table 12.6** shows that there are 34 human receptor locations where the limit and objective value for $NO_2$ of 40 µg/m³ is predicted to be exceeded. The highest predicted concentration is also in excess of the value of 60 µg/m³ which implies that there is the possibility of an exceedance of the 1-hour limit and objective value of 200 µg/m³ for $NO_2$ at some locations.

12.100 Predicted concentrations for $PM_{10}$ and $PM_{2.5}$ are below the respective limit and objective values of 40 µg/m³ and 20 µg/m³.

12.101 Baseline predictions are represented in **Figure 12.15** ($NO_2$), **Figure 12.20** ($PM_{10}$) and **Figure 12.25** ($PM_{2.5}$).

## Embedded Mitigation (Application 4)

### Demolition and Construction

12.102 No embedded mitigation measures are included for the construction phase that are relevant to air quality.

### The Completed and Operational Development

12.103 Embedded mitigation as presented in Chapter 5: The Proposed Development would in summary comprise the following:

- Creation of a new network of pedestrian and cycle friendly streets and public realm within and in the vicinity of the site red line boundary.
- Provision of on-site facilities to minimise the need for travel off-site for purposes such as local shopping;
- Cycle parking provided in public realm areas, and associated secure and indoor cycle parking for residents and visitors in line with MCC and TfGM standards. Cycle parking will be provided to encourage the use of active travel to and from, and within the Application 4 site. The level of provision proposed for residents is 1 cycle space per residential property (up to 3,250 spaces) and is in accordance with MCC and TfGM standards.
- Disabled parking in line with relevant MCC and TfGM standards;
- The provision of car parking for which approval is sought as part of Application 4 is 12% and comprises:
    - Up to 325 spaces for the residential development proposed by the outline application of which up to 21 spaces would be accessible which amounts to 6.5% of the total number of spaces for the residential development;
    - Up to 25 spaces for the non-residential development proposed by the outline application including visitor and accessible spaces;

- Up to 52 car parking spaces to support the development proposed at Application 5. The intention is that the 52 car park spaces will be provided in a temporary location within the Application 4 area initially with a permanent solution provided in a centralised location as the residential led development proposed by Application 4 is brought forwards.

- Of the 12% car parking proposed by Application 4, the provision of residents' car parking (up to 325 spaces) amounts to 10%, in line with the principles set within the "Northern Gateway Initial Development Area Transport Strategy (March 2019)" which recommends a parking provision of no more than 10% for residential uses. The implications of this level of provision have been tested through the master planning process for the Red Bank neighbourhood which has informed the preparation of this full planning application.
- Given the highly accessible location of the Application 4 Site, the proposed on-site facilities, and the existing and proposed active travel infrastructure, it is considered the level of residents' car parking provision is suitable and appropriate. Residents' car parking provision at this level, will encourage active travel and public transport to be the mode of choice for new residents. Furthermore, all of the resident's car parking spaces proposed in Application 4 will provide electric vehicle (EV) charging facilities (with 20% active and 80% passive infrastructure for future connection).

## Assessment of Likely Significant Effects (Application 4)

### Demolition and Construction

#### Construction Dust Assessment

12.104 The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust and $PM_{10}$ sources: demolition; earthworks; construction; and trackout. The findings of the assessment are presented below.

#### Demolition

12.105 Total volume of buildings to be demolished on site is estimated to be between 20,000$m^3$ and 50,000$m^3$, with potentially dusty construction material, and with demolition activities occurring at heights up to 10m above ground level. Therefore, the potential dust emission magnitude is classed as 'medium' for demolition activities.

#### Earthworks

12.106 Most of the remediation and earthworks activities associated with reprofiling the Site and creating the development platforms for the Proposed Development are covered by HIF Application 2 (133143/VO/2022). Detailed information relating to any additional earthworks required for Application 4 is not currently available. To ensure a conservative assessment, based on the latest scheme information and parameter plans, it is assumed that the remaining earthworks activities will cover an area greater than 10,000$m^2$. The soil type is clay and therefore potentially dusty. The total volume of material that will be moved is again unknown at this time. To

ensure a conservative assessment, it is assumed to be more than 100,000 tonnes. It is also estimated that between 5 and 10 heavy earth moving vehicles could be active at any one time. Therefore, the potential dust emission magnitude is classed as 'large' for earthwork activities (although this will be revisited at the detailed design / reserved matters stage).

### Construction

12.107 The total volume of buildings to be constructed as part of Application 4 will be more than 100,000m$^3$ and will include potentially dusty construction materials. Concrete batching and sand blasting activities may be undertaken. Therefore, the potential dust emission magnitude is classed as 'large' for construction activities.

### Trackout

12.108 HDV movements will be variable throughout the construction phase. There will be periods where more than 50 HDV (>3.5t) outward movements a day will be generated, and these vehicles will travel on potentially dusty surface materials. Due to the size of the Site, the length of unpaved roads may exceed 100m. Therefore, the potential dust emission magnitude is classed as 'large' for trackout.

12.109 **Table 12.7** provides a summary of the potential dust emission magnitude determined for each construction activity considered.

***Table 12.7:*** *Potential Dust Emission Magnitude (Red Bank Outline Application 4)*

| Activity | Dust Emission Magnitude |
|---|---|
| Demolition | Medium |
| Earthworks | Large |
| Construction Activities | Large |
| Trackout | Large |

### Assessment of Sensitivity of the Study Area

12.110 The key receptors include existing residential properties and schools located to the west/northwest, south and east, the nearest of which are located within 20m of the site boundary. There are also numerous commercial, industrial, and retail uses located within a distance of 350m, along with short and long-term parking areas.

12.111 According to the IAQM guidance, residential properties and schools would be considered 'high sensitivity' receptors for both dust and particulate matter. Retail areas and places of work, where public exposure would be shorter-term, would be classed as 'medium sensitivity' for dust and $PM_{10}$. Car parks would range from 'low' to 'medium' sensitivity.

12.112 In addition, due to the duration of the construction phase, it is likely that parts of the proposed Application 4 development will become operational whilst construction is ongoing elsewhere within the Site. Therefore, new high sensitivity receptors will be introduced at locations within 350m of dust generating activities.

12.113 The prevailing wind direction in the study area is from the south and southwest. Therefore, receptors located to north and east of the Site are more likely to be affected by dust and particulate matter emitted and re-suspended during the construction stage. Under low wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the source.

12.114 Taking all the above into consideration, as there are more than 100 high sensitivity receptors within 50m of the site boundary, the overall sensitivity of the surrounding area to an increase in dust deposition is classed as 'high'.

12.115 With regards to the human health effects of $PM_{10}$, background concentrations for this pollutant are less than 24 $\mu g/m^3$ (see **Figure 12.8**). The overall sensitivity of the surrounding area to changes in ambient $PM_{10}$ concentrations is therefore classed as 'high'.

12.116 For track-out, construction vehicles will access the Site via Red Bank (after travelling on North Street and the A665 Cheetham Hill Road) and Dantzic Street (after travelling on Collyhurst Road and the A6010). There are residential receptors (including apartment buildings) and commercial properties located along these routes. As there are estimated to be more than 100 high-sensitivity receptors and more than 1 medium sensitivity located within 50m of these routes and 500m of the site access, the overall sensitivity of the area to track-out is classed as 'high' for dust and 'low' for $PM_{10}$. A summary of the sensitivity of the study area is shown in **Table 12.8** with a representation of banded receptors in **Figure 12.14**.

*Table 12.8: Sensitivity of the Study Area Results (Red Bank Outline Application 4)*

| Potential Impact | Sensitivity of the Surrounding Area | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| Dust Soiling | Medium | High | High | High |
| Human Health | Low | Low | Low | Low |

## Risk of Impacts

12.117 The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. **Table 12.9** below provides a summary of the risk of dust impacts for the Proposed Development. The risk category identified for each construction activity has been used to determine the level of mitigation required.

***Table 12.9:*** *Summary Dust Risk Table to Define Site Specific Mitigation Results (Red Bank Outline Application 4)*

| Potential Impact | Risk | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| Dust Soiling | Medium Risk | High Risk | High Risk | High Risk |

| Potential Impact | Risk | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| Human Health | Low Risk | Low Risk | Low Risk | Low Risk |

## Construction Traffic Assessment

12.118 Provisional information about the construction routes used for the Redbank Outline Application 4 and the NT02-NT04 Full Application 5 has been provided by the project team. At the time of writing, construction vehicle data was not available for Application 4 alone. Therefore, the assessment presented herein is worst-case, accounting for both applications. **Table 12.10** summarises the primary construction routes, predicted HGV traffic (peak construction day[1]), maximum predicted Do-Minimum receptor concentration on these routes, and the available 'headroom' or amount of $NO_2$ construction traffic would need to add to cause an exceedance of the $NO_2$ objective.

***Table 12.10:*** *Peak Construction Day HGV Impacts Red Bank Outline Application 4 and NT02-NT04 Full Application 5*

| Primary Construction Route | HGV AADT (2021) | DfT counter (2021) | Max. HGV AADT on construction days | Max predicted Do-Minimum $NO_2$ concentration (µg/m³) | Headroom under 40 µg/m³ objective (µg/m³) |
|---|---|---|---|---|---|
| Collyhurst Road (A6010) | 23 | 803843* | 60 | 17.9 | 22.1 |
| Cheetham Hill Road (A655) | 219 | 7428 | 64 | 19.0 | 21.0 |
| Queens Road (A6010) | 259 / 381 | 17936 / 37838 | 64 | 17.8 | 22.2 |

*latest available count 2019

12.119 **Table 12.10** shows that if HGV movements occurred on every day of the construction period, the EPUK/IAQM screening criteria for assessment within or adjacent to an AQMA (i.e. a change of 25 AADT or more) would be met. However, this maximum AADT will only occur on actual construction days and maximum Without-Development receptor predictions for the construction traffic routes are all below 50% of the limit and objective value of 40 µg/m³. Therefore, it is not expected that the worst-case maximum volumes of construction HGV traffic shown in **Table 12.10** would cause additional levels of air pollutants such that ambient concentrations at nearby receptors would increase by more than 20 µg/m³ to trigger an exceedance of the limit and objective value of 40 µg/m³. Furthermore, the worst-case maximum HGV AADT shown in **Table 12.10** is expected to only occur sporadically and be sustained over a short period of time such that the impact on annual average concentrations would be small.

12.120 With reference to the 1-hour limit and objective value of 200 µg/m³, it is not expected that the volumes of HGV traffic shown in **Table 12.10** would be sufficient to trigger an exceedance of this value, noting that within the Greater Manchester ASR automatic monitoring stations recorded only three (permitted) exceedances of the 1-hour limit and objective value in 2019 and at locations remote from the Proposed Development.

## The Completed and Operational Development

### Human Receptors

12.121 The results of the dispersion modelling assessment for the Without- and With-Development scenarios are summarised in **Table 12.11**. As noted previously, predictions were made at a total of 1,349 receptors based on identification of receptor locations using the OS OpenMap Local dataset.

***Table 12.11:*** *Dispersion Modelling Results Summary for Application 4*

| Dispersion Modelling Results Summary Table | | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| | **Limit Value (µg/m³)** | **40** | **40** | **20** |
| Maximum Annual Mean Concentrations (µg/m³) | Without-Development (2032) | 36.2 | 20.2 | 12.4 |
| | With-Development (2032) | 37.1 | 20.7 | 12.7 |
| Number of Properties greater than UK limit value | Without-Development (2032) Exceedances | 0 | 0 | 0 |
| | With-Development (2032) Exceedances | 0 | 0 | 0 |
| | Removed Exceedances | 0 | 0 | 0 |
| | New Exceedances | 0 | 0 | 0 |
| Total Number of Properties | Improvement | 0 | 0 | 0 |
| | No Change | 951 | 1,104 | 1,170 |
| | Deterioration | 394 | 241 | 175 |
| "With-Development" - "Without-Development" (µg/m³) | Max Improvement | 0.00 | 0.00 | 0.00 |
| | Max Worsening | 1.00 | 0.60 | 0.40 |

12.122 The information summarised in **Table 12.11** shows that for $NO_2$, $PM_{10}$ and $PM_{2.5}$ there are no predicted exceedances of the annual mean objective values of 40 µg/m³, 40 µg/m³ and 20 µg/m³ respectively in either the future Without-Development or the With-Development scenarios. Due to the addition of traffic to local roads, no receptors are predicted to experience an improvement in local air quality because of the Proposed Development. Without-development predictions are shown in **Figure 12.16**, **Figure 12.21** and **Figure 12.26**. Predicted changes in concentrations are shown in **Figure 12.17**, **Figure 12.20** and **Figure 12.23**.

12.123 For $NO_2$, the maximum predicted annual mean concentration in 2032 is 37.1 µg/m³ (±5.0 µg/m³), which is below the objective value of 40 µg/m³. This occurs at a single commercial receptor located at the AO Arena at the junction of the A34 Trinity Way and the A665 Cheetham Hill Road.

12.124 The largest predicted deterioration of 1.0 µg/m³ in the concentration of $NO_2$ occurs at a single residential receptor located at Britton House on Lord Street.

12.125 Given the predicted annual mean $NO_2$ concentrations are all below 60 µg/m³, following the guidance from paragraph 7.97 of LAQM.TG22[17] it is unlikely that the 1-hour objective of 200 µg/m³ will be exceeded at any modelled receptor location.

12.126 For $PM_{10}$, the maximum predicted annual mean concentration is 20.7 µg/m³ at a single commercial receptor located at the AO Arena at the junction of the A34 Trinity Road and A665 Cheetham Hill Road.

12.127 Of the 242 receptors predicted to experience a deterioration (i.e. an increase) in concentrations of $PM_{10}$, the largest deterioration of 0.6 µg/m³ was predicted to occur at a single residential receptor at Britton House on Lord Street, with a further three predicted to experience a deterioration of 0.5 µg/m³ at:

- The AO Arena at the junction of the A34 Trinity Road and A665 Cheetham Hill Road;
- The 4 Angle Square redevelopment located off Dantzic Street; and
- Forever Unique located at 98 Cheetham Hill Road.

12.128 The remaining receptors are predicted to experience a deterioration of 0.4 µg/m³ or less.

12.129 Analysis of the 90.41$^{th}$ percentile predictions shows that the 24-hour (daily mean) objective for $PM_{10}$ of 50 µg/m³ may be exceeded at some receptors however only for a maximum of four days, which is well within the 35 occasions allowable.

12.130 For $PM_{2.5}$, the maximum predicted annual mean concentration in the 2032 With-Development scenario is 12.7 µg/m³ which occurs at a single commercial receptor located at the AO Arena (at the junction of the A34 Trinity Road and A665 Cheetham Hill Road). The largest predicted deterioration of 0.4 µg/m³ occurs at Britton House on Lord Street.

12.131 For each of the three pollutants modelled, the receptors with the highest predictions are located either within urban street canyons or at locations where junctions cause the confluence of what are often multiple traffic flows. In each case predictions have been made at the worst-case location on the building façade except where a receptor was located within an urban canyon and the receptor was moved to the interior of the modelled canyon.

12.132 The changes according to the impact descriptors in **Table 12.2** are shown in **Table 12.12**.

***Table 12.12:*** *Impacts Summary for Outline Application 4*

| IAQM Impact | Change | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| Negligible | Beneficial | 0 | 0 | 0 |
| | No change | 951 | 1,104 | 1,170 |
| | Adverse | 390 | 241 | 175 |
| Minor | Beneficial | 0 | 0 | 0 |
| | Adverse | 4 | 0 | 0 |
| Moderate | Beneficial | 0 | 0 | 0 |
| | Adverse | 0 | 0 | 0 |
| Substantial | Beneficial | 0 | 0 | 0 |
| | Adverse | 0 | 0 | 0 |

12.133 The summary in **Table 12.12** shows that for all pollutants considered, the majority of receptors assessed are predicted to experience no discernible change in air quality due to Application 4. For $NO_2$, minor adverse impacts are predicted at just four receptors, notably:

- The Express Building commercial receptor on Great Ancoats Street;
- 66-68 Swan Street (commercial receptor);
- The AO Arena commercial receptor at the junction of the A34 Trinity Road and A665 Cheetham Hill Road; and
- The Oxygen Tower residential receptor on Great Ancoats Street.

12.134 Given all but four receptors are predicted to experience negligible impacts, and no exceedances of the respective objectives are predicted at the modelled receptors, it is determined that overall, Application 4 will have a direct, long-term, **negligible adverse** impact on local air quality (that is **not significant**).

## Proposed Development Receptors

12.135 As illustrated in Figure 12.1, to assess the likely exposure of future sites users, pollutant concentrations were predicted across the Site using a grid with a 20 m resolution. **Table 12.13** summarises the ten worst-case predictions (i.e highest pollutant concentrations) relevant to Application 4 site.

***Table 12.13:*** *Proposed Development Predicted Pollutant Concentrations for Application 4*

| Grid Max | Worst-Case Annual Mean Concentration (µg/m³) | | |
|---|---|---|---|
| | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| 1 | 18.7 | 13.2 | 8.5 |
| 2 | 18.5 | 13.1 | 8.4 |
| 3 | 18.5 | 13.0 | 8.3 |
| 4 | 18.3 | 12.9 | 8.2 |
| 5 | 18.3 | 12.8 | 8.2 |
| 6 | 18.3 | 12.8 | 8.2 |
| 7 | 18.2 | 12.8 | 8.2 |
| 8 | 18.2 | 12.5 | 8.0 |
| 9 | 18.2 | 12.5 | 8.0 |
| 10 | 18.2 | 12.5 | 8.0 |

12.136 The information in **Table 12.13** shows that the worst-case gridded predictions in the area of the Application 4 site are below the objective values for all of the modelled pollutants. Therefore, it can be concluded that the Application 4 site is suitable for the proposed end-use and future site users will not be exposed to unacceptable air quality.

## Additional Mitigation / Enhancement Measures (Application 4)

### Demolition and Construction

12.137 Based on the assessment results, mitigation will be required. Recommended mitigation measures appropriate to the identified levels of risk are summarised below and should be implemented by the appointed contractor as part of a Construction Environmental Management Plan (CEMP) or similar, which it is likely will be secured by planning condition.

#### General Communication

- A stakeholder communications plan that includes community engagement before work commences on site should be developed and implemented.
- The name and contact details of person(s) accountable for air quality and dust issues should be displayed on the site boundary. This may be the environment manager/engineer or the site manager. The head or regional office contact information should also be displayed.

#### General Dust Management

- A Dust Management Plan (DMP) or CEMP, which may include measures to control other emissions, in addition to the dust and $PM_{10}$ mitigation measures given in this report, should be developed and implemented, and approved by the Local Authority.

#### Site Management

- All dust and air quality complaints should be recorded, and causes identified. Appropriate remedial action should be taken in a timely manner with a record kept of actions taken including of any additional measures put in-place to avoid reoccurrence.
- The complaints log should be made available to the local authority on request.
- Any exceptional incidents that cause dust and/or air emissions, either on- or offsite should be recorded, and then the action taken to resolve the situation recorded in the log-book.
- Regular liaison meetings with other high risk construction sites within 500m of the site boundary should be held, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.

#### Monitoring

- Daily on-site and off-site visual inspections should be undertaken, where receptors (including roads) are nearby, to monitor dust. The inspection results should be recorded and made available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary.

- It is recommended that at least one visual inspection be undertaken per day. However, the frequency of site inspections should be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- The need or otherwise for site specific monitoring (e.g. dust deposition, dust flux, or real-time $PM_{10}$ continuous monitoring) should be discussed and agreed with the Local Authority. If required, baseline monitoring may also need to be undertaken up to three months before work commences on site.

### Preparing and maintaining the site

- Plan the site layout so that machinery and dust causing activities are located away from receptors, as far as is practicable.
- Where practicable, erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Where practicable, fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover appropriately.
- Where practicable, cover, seed or fence stockpiles to prevent wind whipping.

### Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

### Waste management

- Avoid bonfires and burning of waste materials.

## Measures Specific to Demolition

- Where possible, soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Ensure effective water suppression is used during demolition operations. Hand-held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

## Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Where practicable, only remove the cover in small areas during work and not all at once.
- Stockpile surface areas should be minimised (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce area of surfaces exposed to wind pick-up.
- Where practicable, windbreak netting/screening should be positioned around material stockpiles and vehicle loading/unloading areas, as well as exposed excavation and material handling operations, to provide a physical barrier between the Application Site and the surroundings.
- Where practicable, stockpiles of soils and materials should be located as far as possible from sensitive properties, taking account of the prevailing wind direction.
- During dry or windy weather, material stockpiles and exposed surfaces should be dampened down using a water spray to minimise the potential for wind pick-up. Measures Specific to Construction
- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

- All construction plant and equipment should be maintained in good working order and not left running when not in use.

### Measures Specific to Trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being in frequent use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. Record all inspections of haul routes and any subsequent action in a site log book.
- Where practicable, hard surfaced haul routes should be installed, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10m from receptors where possible.

### Operating vehicle/machinery, construction traffic and sustainable travel

- Ensure all vehicle operators switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
- A maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas should be imposed (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Identified routes for construction traffic should be agreed with the local authority prior to the commencement of works to reduce the likelihood of construction vehicles passing along sensitive roads.
- A Construction Traffic Management Plan (CTMP) and/or a Construction Logistics Plan (CLP) will be produced to manage construction traffic and the sustainable delivery of goods and materials.
- In addition, an Employee Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing) should be developed and implemented.
- Timing of large-scale vehicle movements to avoid peak hours on the local road network would also be beneficial.

- Consider driver training on how to minimise emissions through smoother driving techniques.

### The Completed and Operational Development

12.138 The following additional mitigation measures should be considered for adoption as part the proposed Application 4 development.

12.139 Consideration on the placement of properties should take account of the distance between nearby pollutant sources and receptors such that new properties are in areas where exposure to elevated concentrations of air pollutants can be minimised.

12.140 Travel Plans will be prepared for the Proposed Development (for both Applications 4 and 5) which will set out a range of measures that will be implemented at the Site to promote the use of public and sustainable transport by future site users and reduce the number of vehicle trips generated by the Proposed Development. The Travel Plan will cover all proposed land uses within the development and will be based on the Framework Travel Plan submitted in support of the planning application, as appended within **Appendix 11.2**.

12.141 In addition, Electric Vehicle (EV) parking/charging facilities will be provided for residents to encourage the use of low and zero emission vehicles. The type and level of EV charging provision will be subject to agreement with the local authority, however, it is recommended that this is provided in accordance with local policy requirements, including MCC's Air Quality and Planning Technical Guidance[19], which sets out the following recommendations:

- For Residential Use:
  - On-Site / allocated parking: 1 EV chargepoint (minimum 7kW) for each dwelling.
  - Unallocated parking: minimum 20% EV (minimum 7kW) chargepoints, and cables routes for all other spaces.

12.142 The results of the assessment indicate that pollutant concentrations within the Site will be below the relevant air quality standards and objectives and as such no other specific mitigation measures (such as mechanical ventilation) are considered necessary in relation to air quality and the exposure of future site users. This will be reviewed at the detailed design stage.

## Likely Residual Effects of the Development and their Significance (Application 4)

### Demolition and Construction

12.143 The residual effects of dust and $PM_{10}$ generated by construction activities following the application of the mitigation measures described above and good site practice will be direct, temporary, **negligible** and '**not significant**'.

12.144 The residual effects of emissions to air from construction vehicles and plant on local air quality is also considered to be direct, temporary, **negligible** and '**not significant**'.

## The Completed and Operational Development

12.145 Application 4 is predicted to have a direct, long-term, **negligible adverse** impact on local air quality (that is **not significant**). On this basis additional mitigation is unlikely to be required, however with inclusion of the measures in the Additional Mitigation/Enhancement Measures section the assessment of a **negligible adverse, permanent** impact on local air quality over the long term will be unchanged and is considered to be **not significant**.

12.146 The residual effects for the proposed Application 4 development are summarised in **Table 12.14**.

***Table 12.14:*** *Residual Effects Summary (Red Bank Outline Application 4)*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Construction Dust and $PM_{10}$ from on-site demolition and construction activities | Dust deposition / soiling on property within 350m of Site boundary and increases in ambient $PM_{10}$ concentrations. Pre-mitigation significance not defined in accordance with IAQM guidance | A CEMP will be implemented at the Site. This will include best practice mitigation measures to prevent dust and $PM_{10}$ being generated at source and dispersed beyond the Site boundary, including those measures identified within this chapter and in accordance with IAQM guidance. | **Negligible adverse**, **temporary** and **reversible** effect that is **not significant**. |
| Exhaust emissions from construction traffic and plant | Temporary increase in pollutant concentrations (including $NO_2$, $PM_{10}$ and $PM_{2.5}$) near Site boundary and along construction traffic routes. | Adoption of best practice measures, to include: Agreed routing of construction traffic to avoid travel along sensitive routes where possible. Timing of large-scale vehicle movements to avoid peak hours on the local road network where possible. No idling. CTMP and/or CLP. Sustainable Travel Plan / promotion of active and public transport for site staff. | **Negligible adverse**, **temporary** and **reversible** effect that is **not significant**. |
| ***Completed Development*** | | | |
| Exhaust emissions from development generated road traffic. | Long-term increase in $NO_2$, $PM_{10}$ and $PM_{2.5}$ concentrations at sensitive (human) receptors near to the Site and along those routes to be used by | Placement of properties remote from sources of air pollutants. Provision of a Travel Plan and travel advice to occupants of the Proposed Development. Provision of an adequate quality and quantity of cycle parking to | **Negligible adverse, permanent** effect that is **not significant**. |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| | development generated traffic. A **negligible adverse, permanent** effect that is **not significant** | aid active transport modal shift. Provision for EV charging. | |

## Conclusions (Application 4)

12.147 For the Red Bank Outline Application 4, it has been determined that MCC has responsibility for LAQM at the Site, of which the southernmost extent of the Site falls within the Greater Manchester Combined Authority AQMA. The Site is located in an area where air quality is mainly influenced by emissions from road transport using the local road network, including major roads such as the A664, A665 and minor roads such as Collyhurst Road, Red Bank and Dantzic Street.

12.148 No embedded mitigation measures are included for the construction phase that are relevant to air quality. However, for the Completed and Operational development, active travel to, from and within the Site will be encouraged and the whole development will be fully electrified.

12.149 Red Bank Outline Application 4 has the potential to impact on local air quality at sensitive human receptors during demolition, construction and from the Completed and Operational development.

12.150 For demolition and construction, a high risk of adverse impacts has been identified from dust soiling. Therefore, measures will be required to mitigate this impact. With the effective implementation of these measures, the impact will be **negligible** and the residual effect '**not significant'**.

12.151 For the Completed and Operational development, a **negligible adverse**, permanent effect is predicted which is **not significant** on the basis that no exceedances of the statutory air quality objectives will occur. However, best practice design and emissions management measures (including the implementation of a Travel Plan and provision of EV charging points) are recommended to ensure the development is compliant with the policies contained within the Manchester Core Strategy and the NPPF.

12.152 The permitted operations Packaging Products Limited and HMG Paints are potential sources of odour which could impact on the combined Application 4 and 5. However, as Outline Application 4 is upwind of these operators the risk of adverse odour impacts is considered to be very low.

## Cumulative Effects with Identified Committed Schemes (Application 4)

## Approach

12.153 There is the potential for cumulative effects to occur as a result of the Proposed Development and cumulative schemes identified in the surrounding area. Cumulative effects may arise during both the demolition and construction phase and the operational phase.

### Demolition and Construction

12.154 As outlined in the IAQM guidance on the assessment of dust from demolition and construction, when assessing the potential for dust impacts, consideration should be given to those receptors located within 350 metres of the development site boundary. Where one or more development sites are located in close proximity (i.e. within 700 metres of each other) and their construction periods overlap, there is the potential for cumulative effects to arise at those receptors located within a 350m radius of the identified sites.

12.155 In addition to the potential for cumulative effects to arise from activities undertaken within each respective development site, cumulative effects may also arise where construction traffic associated with each site travels along the same route on the local road network. Where sensitive receptors are located along routes shared by construction traffic, they may be exposed to a temporary increase in pollutants associated with the exhaust emissions.

12.156 A review of the Cumulative Schemes identified in **Table 2.4** of **Chapter 2: Approach** has been undertaken to determine the potential for cumulative effects to arise. **Table 12.15** below summarises the outcomes of this review and those sites which have been considered within the cumulative assessment of construction phase effects.

***Table 12.15:*** *Cumulative Effects Summary for Outline Application 4*

| Site Ref | Application Number | Proposal | Approx. Distance to Site | Status | Justification |
|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | Collyhurst Village | 650m north-east | Scoped In | As the scheme lies within 700m it has been scoped into the assessment, However, ground works have already commenced. Therefore, it is expected that the highest risk dust generating activities will be largely completed prior to the commencement of works at the Site. With the adoption of best practice mitigation, any cumulative construction effects will therefore be negligible. |
| 2 | 127971/FO/2020 | Osborne Yard | 950m east | Scoped out | >700m. No cumulative effects likely. |
| 3 | 128248/FO/2020 | The Gasworks | 45m south | Scoped In | Construction has yet to commence. Given the proximity to Site (<700m), there is the potential for cumulative effects to arise. With the adoption |

| Site Ref | Application Number | Proposal | Approx. Distance to Site | Status | Justification |
|---|---|---|---|---|---|
| | | | | | of best practice mitigation, any cumulative construction effects will be negligible. |
| 4 | 116366/FO/2017 | Victoria Meadowside | 90m south | Scoped In. | Three of the four buildings are complete and occupied. One building has yet to be constructed. The potential for cumulative effects is low but has been considered given the proximity to Site. With the adoption of best practice mitigation, any cumulative construction effects will be negligible. |
| 5 | 127537/FO/2020 | 25 Rochdale Road | 340m south | Scoped In | Construction has yet to commence. Given the proximity to Site (<700m), there is the potential for cumulative effects to arise. With the adoption of best practice mitigation, any cumulative construction effects will be negligible. |
| 6 | 124973/FO/2019 | 2 and 3 Angel Square | 260m south | Scoped In | Construction has yet to commence. Given the proximity to Site (<700m), there is the potential for cumulative effects to arise. With the adoption of best practice mitigation, any cumulative construction effects will be negligible. |
| 7 | 126944/FO/2020 | Victoria Riverside | 0m south (adjacent to Site boundary) | Scoped In | Given proximity to the Site there is the potential for cumulative effects to arise. However, Victoria Riverside is already under construction. The construction programme is understood to be less than three years, therefore the potential for construction activities to overlap is limited. With the adoption of best practice mitigation measures, any cumulative construction effects will be negligible. |
| 8 | 131708/FO/2021 | 87 Rochdale Road | 200m south | Scoped In | Construction has yet to commence. Given the proximity to Site (<700m), there is the potential for cumulative effects to arise. With the adoption of best practice mitigation, any cumulative construction effects will be negligible. |
| 9 | 128997/FO/2020 | 40 Swan Street | 560m south | Scoped In | Construction has yet to commence. Given the proximity to Site (<700m), there is the potential for cumulative effects to arise. With the adoption of best practice mitigation, any cumulative construction effects will be negligible. |

| Site Ref | Application Number | Proposal | Approx. Distance to Site | Status | Justification |
|---|---|---|---|---|---|
| 10 | 121380/FO/2018 | Swan House | 510m south | Scoped In | Given the proximity to Site (<700m), this scheme has been scoped in. However, construction is already underway and will likely be largely completed prior to the commencement of the Proposed Development. With the adoption of best practice mitigation, any cumulative construction effects will therefore be negligible. |
| 11 | 124888/FO/2019 | New Cross Central | 665m south | Scoped Out | Construction is already underway and is expected to be completed prior to the commencement of works for the Proposed Development. No cumulative effects likely. |
| 12 | 121375/FO/2018 | 20 – 36 High Street | 720m south | Scoped Out | >700m. No cumulative effects likely. |
| 13 | 125678/FO/2019 | Peeler's Yard | 480m south | Scoped In | Construction has yet to commence. Given the proximity to Site (<700m), there is the potential for cumulative effects to arise. With the adoption of best practice mitigation, any cumulative construction effects will be negligible. |
| 14 | 132416/FO/2021 | Great Ducie Street | 390m south-east | Scoped In | Construction has yet to commence. Given the proximity to Site (<700m), there is the potential for cumulative effects to arise. With the adoption of best practice mitigation, any cumulative construction effects will be negligible. |
| 15 | 122280/FO/2019 | Mirabel Street | 450m south-east | Scoped In | Construction has yet to commence. Given the proximity to Site (<700m), there is the potential for cumulative effects to arise. With the adoption of best practice mitigation, any cumulative construction effects will be negligible. |
| 16 | 127901/FO/2020 | Manchester Arena Expansion | 290m south-east | Scoped In | Construction has yet to commence. Given the proximity to Site (<700m), there is the potential for cumulative effects to arise. With the adoption of best practice mitigation, any cumulative construction effects will be negligible. |
| 17 | 131314/FO/2021 | 39 Deansgate (Speaker's House) | 820m south-east | Scoped Out | >700m. No cumulative effects likely. |
| 18 | 130553/FO/2021 | Island, John Dalton Street | 1.1km south-east | Scoped Out | >700m. No cumulative effects likely. |
| 19 | 130354/FO/2021 | Eliza Yard | 870m | Scoped | >700m. No cumulative effects likely. |

| Site Ref | Application Number | Proposal | Approx. Distance to Site | Status | Justification |
|---|---|---|---|---|---|
| | | | south-east | Out | |
| 20 | 130627/FO/2021 | Ancoats Mobility Hub | 770m south-east | Scoped Out | >700m. No cumulative effects likely. |
| 21 | 113914/FO/2016 | 1 Lord Street | 140m west | Scoped In | Construction has yet to commence. Given the proximity to Site (<700m), there is the potential for cumulative effects to arise. With the adoption of best practice mitigation, any cumulative construction effects will be negligible. |
| 22 | 18/71330/FUL | Uptown | 850m south-west | Scoped Out | >700m. No cumulative effects likely. |
| 23 | 20/76134/FUL | Maldron Hotel, Chapel Street | 1km south-west | Scoped Out | >700m. No cumulative effects likely. |
| 24 | 19/74465/HYBEIA | Cortland at Collier's Yard / Bankside | 960m south-west | Scoped Out | >700m. No cumulative effects likely. |
| 25 | 15/66806/FUL | Embankment Exchange | 640m south-west | Scoped In | As the scheme lies within 700m it has been scoped in to the assessment, However, it is understood construction is already underway and will likely be largely completed prior to the commencement of the Proposed Development. With the adoption of best practice mitigation, any cumulative construction effects will therefore be negligible. |
| 26 | 19/74205/FULEIA | Waterloo Place | 620m south-west | Scoped In | Construction has yet to commence. Given the proximity to Site (<700m), there is the potential for cumulative effects to arise. With the adoption of best practice mitigation, any cumulative construction effects will be negligible. |

## Completed and Operational Development

12.157 Once the proposed Application 4 development becomes operational, it will generate additional traffic on the local road network. Where one or more developments are in close proximity, traffic generated by each development may be distributed onto the same roads within the local network. The greatest effects will therefore be on sensitive receptors located adjacent to those roads likely to experience a change in traffic volume or composition as a result of the operation of the developments, in-combination.

12.158 Traffic data used in the assessment of operational phase effects takes into consideration traffic growth on the local road network. In the calculation of the traffic data, the Project Transport Consultants have reviewed the list

of identified cumulative developments to filter out those with minimal / negligible trip generation or that are located at a distance where they would not impact the same road network as the Proposed Development. The cumulative schemes identified for inclusion within the traffic data included: Meadowside, Victoria Riverside, Ancoats Mobility Hub and Cortland. The future year modelling results are therefore inherently cumulative as they take into account the contributions to total pollutant concentrations associated with the identified cumulative schemes. A separate cumulative assessment is not therefore required.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

12.159 With the implementation of best practice mitigation measures, as set out in Paragraph 12.137, the residual cumulative effects during demolition and construction would be direct, temporary, **negligible**, and **not significant**.

#### The Completed and Operational Development

12.160 As noted above, a separate cumulative assessment is not required for the operational phase as the traffic data used in the assessment, and therefore the modelling results, are inherently cumulative. The cumulative effect will therefore remain as reported for the development in Paragraph 12.158 i.e. direct, permanent**, negligible adverse** and **not significant**.

## Cumulative Effects with Identified Committed Schemes + SRF (Application 4)

### Approach

12.161 There is the potential for cumulative effects to occur as a result of the proposed Application 4 development, the identified cumulative schemes in the surrounding area, and the wider SRF. Cumulative effects may arise during both the demolition and construction phase and the operational phase.

#### Demolition and Construction

12.162 As per the above cumulative assessment (Paragraphs 12.153 to 12.156) and guidance published by the IAQM, where one or more construction sites are located in close proximity and the construction periods overlap, there is the potential for cumulative effects associated with releases of dust and particulate matter to arise at sensitive receptors located within 350m of each site. Cumulative effects may also arise at receptors located near to shared construction routes due to a cumulative increase in vehicle emissions, and therefore local pollutant concentrations.

12.163 Those committed developments located in proximity to the Site that are likely to overlap with the proposed Application 4 development are summarised in Table 12.15. It is assumed that each Site will implement appropriate mitigation, by way of a CEMP or similar, to ensure any dust and pollutant releases are kept to a minimum. In relation to the wider SRF, detailed information regarding the proposals for each development

parcel and the timescales for implementation are not currently available. It is assumed that demolition and construction works associated with Application 4 would be largely completed prior to the development of the wider SRF. Where any other SRF developments that are brought forward prior to the completion of the Proposed Development, it is again assumed that they will be required to undertake a dust risk assessment in accordance with current best practice guidance and to implement construction mitigation measures proportionate to the identified level of risk.

12.164 Application of the identified mitigation measures will help to prevent and/or minimise pollutant releases, certainly beyond the construction site boundary, and therefore any cumulative effects are likely to be direct, temporary, short-medium term, **negligible** and **not significant**.

### The Completed and Operational Development

12.165 Once the surrounding committed developments and the wider SRF become operational, there is the potential for each development to generate additional road traffic movements on the local road network. Exhaust emissions from these vehicles will subsequently contribute to local ambient pollutant concentrations, potentially impacting air quality at nearby sensitive receptors.

12.166 The traffic data used in the assessment of operational effects includes contributions from those committed developments that are likely to generate traffic on the same road network as Application 4. Therefore, they already take into account the cumulative effect of these schemes. In relation to the wider SRF, the overall quantum and nature of development has yet to be fully defined. As such, trip generation and distribution data are not currently available for the SRF. It is expected that detailed analysis will be undertaken by the relevant applicant as each development parcel is brought forward. Where an increase in vehicle movements is predicted, there is the potential for impacts on local air quality. Given the scale of the wider SRF, it is anticipated that trip generation will be greater than assessed for the Proposed Development and the identified committed developments. Therefore, the cumulative effects may be of greater significance than reported within this chapter.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

12.167 With the implementation of best practice mitigation measures, the residual effects are likely to remain the same as reported above i.e., direct, temporary, **negligible**, and **not significant**.

### The Completed and Operational Development

12.168 At the time of writing, insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF. Therefore, it is not currently possible to define the likely residual effects on local air quality associated with Application 4 and the identified committed developments in-combination with the SRF.

# NT02-NT04 (Full Application 5)

## Baseline Conditions (Application 5)

### Local Air Quality Management

12.169 For Full Application 5, the baseline conditions with respect to LAQM are the same as those described for Red Bank Outline Application 4 (paragraphs 12.77 to 12.79). However, the Application 5 Site lies outside of the Greater Manchester AQMA and is located approximately 0.12 km from the AQMA boundary (at its nearest point).

### Local Emission Sources

12.170 For Full Application 5, all baseline conditions with respect to Local Emission Sources are the same as those described for Red Bank Outline Application 4 (paragraphs 12.80 to 12.86).

### Background Air Quality Data

12.171 The mapped background pollutant concentrations used in the assessment of NT02-NT04 Full Application 5 are shown in **Figure 12.4** ($NO_2$), **Figure 12.7** ($NO_X$), **Figure 12.10** ($PM_{10}$) and **Figure 12.13** ($PM_{2.5}$).

### Baseline Ambient Pollutant Predictions

12.172 Baseline ambient pollutant concentrations for NT02-NT04 (Full Application 5) for the year 2019 are the same as those described for Outline Application 4 in Paragraphs 12.98 to 12.101.

## Embedded Mitigation (Application 5)

### Demolition and Construction

12.173 No embedded mitigation measures are included for the construction phase that are relevant to air quality.

### The Completed and Operational Development

12.174 Application 5 proposes the following cycle and car parking provision:

- Creation of a new network of pedestrian and cycle friendly streets and public realm within and in the vicinity of the site red line boundary;
- Provision of on-site facilities to minimise the need for travel off-site for purposes such as local shopping;
- Significant changes to Dantzic Street including narrowing of the carriageway and improved walking and cycling routes, to improve active travel conditions whilst not preventing car movement;
- Cycle parking will be provided to encourage the use of active travel to and from, and within the Application 5 site. The level of provision proposed is 1 cycle space per residential property (1,551 cycle spaces).

- 10% car parking for residents of the development totalling 155 onsite and offsite car parking spaces comprising:
    - 7% car parking for residents of the development on site and within the podiums and on Dulwich Street totalling 104 car parking spaces. Of these 104 car parking spaces, 10 are accessible which equates to 6.5% of the overall car parking proposed by the proposed development (155 car parking spaces) and will be provided on site.
    - 3% car parking for residents of the development off site in a location within the Application 4 area to be identified totalling 52 car parking spaces. Initially, the offsite car park will be temporary in a secure and well-lit car park until the permanent solution is delivered as part of Application 4 as described at paragraph 12.105. It is proposed that the location, design and specification of the temporary offsite car parking area will be secured by condition.
- 13 car parking spaces on site are proposed at Dulwich Street, Dantzic Street and Dalton Street (including 4 accessible spaces) for visitors to residents and users of the non-residential uses proposed by the development located in close proximity to main residential and non-residential entrances.

## Assessment of Likely Significant Effects (Application 5)

### Demolition and Construction

12.175 The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust and $PM_{10}$ sources: demolition; earthworks; construction; and trackout.

#### Risk of Impacts

12.176 The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. **Table 12.16** provides a summary of the risk of dust impacts for the NT02-NT04 Full Application 5, which, aside from demolition, are the same as for Red Bank Outline Application 4. In relation to demolition activities, these will be limited to a warehouse structure in the southwest corner of the Application 5 Site and several wall structures. The total volume of buildings to be demolished will be small (<20,000$m^3$) and at heights <10m. However, whilst the overall dust emission magnitude is 'small', given the proximity of the Victoria Riverside receptors, the overall risk of impacts (pre-mitigation) remains as reported for Application 4 (i.e. 'medium' for dust and 'low' for human health/$PM_{10}$). The risk category identified for each construction activity has been used to determine the level of mitigation required.

***Table 12.16:*** *Summary Dust Risk Table to Define Site Specific Mitigation Results (NT02-NT04 Full Application 5)*

| Potential Impact | Risk | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| Dust Soiling | Medium Risk | High Risk | High Risk | High Risk |
| Human Health | Low Risk | Low Risk | Low Risk | Low Risk |

### Construction Traffic Assessment

12.177 Provisional information about the construction routes used for the Redbank Outline Application 4 and the NT02-NT04 Full Application 5 has been provided by the project team. At the time of writing, construction vehicle data was not available for Application 5 alone. Therefore, the assessment presented herein is worst-case, accounting for construction traffic generated by both applications. **Table 12.10** shows the primary construction routes, maximum predicted Do-Minimum receptor concentration on these routes and the available 'headroom' under the objective.

12.178 **Table 12.10** shows predicted annual mean $NO_2$ concentrations along the construction routes are well below the objective level of 40µg/m$^3$. It is not expected that the worst-case maximum volumes of construction HGV traffic shown in **Table 12.10** would cause additional levels of air pollutants such that ambient concentrations at receptors would be raised in excess of 20 µg/m³ in order that an exceedance of the limit and objective value of 40 µg/m³ would be triggered. Furthermore, the worst-case maximum HGV AADT shown in **Table 12.10** is expected to only occur sporadically and be sustained over only a short period of time such that the impact on annual mean concentrations would be small.

12.179 With reference to hourly mean $NO_2$ concentrations, again it is not expected that the volumes of HGV traffic shown in **Table 12.10** would be sufficient to trigger an exceedance of the objective value of 200 µg/m³ (noting that within the Greater Manchester ASR, automatic monitoring stations recorded only three exceedances of the 1-hour limit and objective value in 2019 and at locations remote from the Proposed Development).

## The Completed and Operational Development

### Human Receptors

12.180 The dispersion modelling results for NT02-NT04 Full Application 5 are summarised in **Table 12.17**.

***Table 12.17**: Dispersion Modelling Summary for NT02-NT04 Full Application 5*

| Dispersion Modelling Results Summary Table | | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| | **Limit Value (µg/m³)** | **40** | **40** | **20** |
| Maximum Annual Mean Concentrations (µg/m³) | Without-Development (2029) | 38.3 | 20.0 | 12.3 |
| | With-Development (2029) | 38.7 | 20.2 | 12.4 |
| Number of Properties greater than UK limit value | Without-Development (2029) Exceedances | 0 | 0 | 0 |
| | With-Development (2029) Exceedances | 0 | 0 | 0 |
| | Removed Exceedances | 0 | 0 | 0 |
| | New Exceedances | 0 | 0 | 0 |
| Total Number of Properties | Improvement | 0 | 0 | 0 |
| | No Change | 1,120 | 1,206 | 1,272 |
| | Deterioration | 225 | 139 | 73 |
| "With-Development" - "Without-Development" (µg/m³) | Max Improvement | 0.00 | 0.00 | 0.00 |
| | Max Worsening | 0.60 | 0.30 | 0.10 |

12.181 The information summarised in **Table 12.17** show that for all modelled pollutants there are no predicted exceedances of the objective values for $NO_2$, $PM_{10}$ or $PM_{2.5}$ in either the 'Without-Development' or 'With-Development' scenarios. Due to the addition of traffic to local roads, there are no receptors predicted to experience improvements in local air quality as a result of the Proposed Development. Predicted changes in concentrations are shown in **Figure 12.18**, **Figure 12.23** and **Figure 12.28**.

12.182 For $NO_2$, the maximum predicted concentration in 2029 is 38.7 µg/m³ (±5.0 µg/m³) which is below the objective value of 40 µg/m³. This occurs at a single commercial receptor located at the AO Arena at the junction of the A34 Trinity Way and the A665 Cheetham Hill Road.

12.183 For annual mean $NO_2$, the largest predicted deterioration (i.e. increase in concentrations) of 0.6 µg/m³ occurs at a single receptor located at the 4 Angle Square commercial redevelopment off Dantzic Street.

12.184 Given annual mean $NO_2$ concentrations are all below 60 µg/m³, following the guidance in paragraph 7.97 of LAQM.TG22[17], it is unlikely that the 1-hour mean objective of 200 µg/m³ will be exceeded at any modelled receptor location.

12.185 The maximum predicted concentration of 20.2 µg/m³ for $PM_{10}$ occurs at the AO Arena at the junction of the A34 Trinity Way and the A665 Cheetham Hill Road. The largest predicted deterioration of 0.3 µg/m³ in concentrations of $PM_{10}$ occurs at the 4 Angle Square commercial redevelopment off Dantzic Street and the Manchester Court residential receptor on Dantzic Street. The remaining receptors are predicted to experience a deterioration of 0.1µg/m³ or less.

12.186 Analysis of the 90.41$^{th}$ percentile predictions shows that the 24-hour (daily mean) objective for $PM_{10}$ of 50 µg/m³ may be exceeded at human receptor locations for a period of up to four days, which is still well within the 35 occasions allowable.

12.187 For $PM_{2.5}$, the maximum predicted annual mean concentration in the 2029 With-Development scenario is 12.4 µg/m³ which occurs at the AO Arena commercial receptor at the junction of the A34 Trinity Way and the A665 Cheetham Hill Road. The maximum predicted deterioration of 0.1 µg/m³ occurs at a total of 74 of the modelled receptors.

12.188 The changes according to the impact descriptors in **Table 12.2** are shown in **Table 12.18.**

***Table 12.18:*** *Impacts Summary for NT02-NT04 Full Application 5*

| IAQM Impact | Change | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| Negligible | Beneficial | 0 | 0 | 0 |
| | No change | 1,120 | 1,206 | 1,272 |
| | Adverse | 224 | 139 | 73 |
| Minor | Beneficial | 0 | 0 | 0 |
| | Adverse | 0 | 0 | 0 |
| Moderate | Beneficial | 0 | 0 | 0 |

| IAQM Impact | Change | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| | Adverse | 1 | 0 | 0 |
| Substantial | Beneficial | 0 | 0 | 0 |
| | Adverse | 0 | 0 | 0 |

12.189 The impact summary in **Table 12.18** shows that the majority of predicted impacts at all modelled receptors are negligible apart from a single moderate adverse impact for $NO_2$ which occurs at the AO Arena commercial receptor at the junction of the A34 Trinity Way and the A665 Cheetham Hill Road. However, given the nature of the assessment receptor, the annual mean objective would not technically apply at this location. Overall, Application 5 is therefore determined to have a direct, long-term, **negligible adverse** impact on local air quality (that is **not significant**).

## Proposed Development Receptors

12.190 Receptors were plotted in a grid over the area of the Proposed Development and surrounding development plots with a resolution of 20 m as shown in **Figure 12.36, Figure 12.38 and Figure 12.40**. The worst-case predictions within the receptor grid applicable to the Application 5 site are shown in **Table 12.19**.

***Table 12.19:*** *Proposed Development Predicted Pollutant Concentrations for NT02-NT04 Full Application 5*

| Grid Max | Worst-Case Annual Mean Concentration (µg/m³) | | |
|---|---|---|---|
| | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| 1 | 18.6 | 13.0 | 8.3 |
| 2 | 18.4 | 13.0 | 8.3 |
| 3 | 18.2 | 12.9 | 8.3 |
| 4 | 17.8 | 12.6 | 8.1 |
| 5 | 17.5 | 12.4 | 8.0 |
| 6 | 17.1 | 12.1 | 7.9 |
| 7 | 16.8 | 12.1 | 7.8 |
| 8 | 16.8 | 12.1 | 7.8 |
| 9 | 16.8 | 12.1 | 7.8 |
| 10 | 16.8 | 12.1 | 7.8 |

12.191 The information in **Table 12.19** shows that the worst-case gridded predictions in the area of Application 5 are below the objective values for all of the modelled pollutants. **Figure 12.36** shows the distribution of $NO_2$ in the area of Application 5 and demonstrates that the highest concentrations are located in the south, closest to Red Bank and the Manchester Victoria railway line. Therefore, it can be concluded that the Application 5 site is suitable for the proposed end-use and future site users will not be exposed to unacceptable air quality.

## Road Isopleths

12.192 **Figure 12.30** shows that concentrations of $NO_2$ across the modelled road network are generally below the limit and objective value for $NO_2$ of 40 µg/m³. Exceptions to this include complex junctions such as those on the Ring Road, Rochdale Road and Oldham Road. Elevated concentrations are also present at the junction of the A665

Cheetham Hill Road and A6010 Queens Road, and the junction of the A576 Great Cheetham Street East and Great Cheetham Street West with the A56 Bury New Road.

12.193 The distributions of $PM_{10}$ and $PM_{2.5}$ on the modelled road network are shown in **Figure 12.32** and **Figure 12.34** respectively.

## Additional Mitigation / Enhancement Measures (Application 5)

### Demolition and Construction

12.194 The risk of impacts for construction of the NT02-NT04 Full Application 5 is described in **Table 12.16.** The assessed impacts are the same as described for Redbank Outline Application 4. As such, the additional mitigation / enhancement measures required are the same as those described in Paragraph 12.137.

### The Completed and Operational Development

12.195 NT02-NT04 Full Application 5 is determined to have a direct, long-term, negligible adverse impact on local air quality (that is not significant), which is the same as Red Bank Outline Application 4. The mitigation measures described for Application 4 therefore also apply to NT02-NT04 Full Application 5.

## Likely Residual Effects of the Development and their Significance (Application 5)

### Demolition and Construction

12.196 The residual effects of dust and $PM_{10}$ generated by construction activities following the application of the mitigation measures described above and good site practice will be direct, temporary, **negligible** and '**not significant'**.

12.197 The residual effects of emissions to air from construction vehicles and plant on local air quality is also considered to be direct, temporary, **negligible** and '**not significant'**.

### The Completed and Operational Development

12.198 NT02-NT04 Full Application 5 is predicted to have a direct, long-term, **negligible adverse** impact on local air quality. On this basis specific mitigation is unlikely to be required, however with inclusion of the measures identified in the 'Additional Mitigation/Enhancement Measures' section, the assessment of a **negligible adverse**, permanent impact on local air quality over the long term will be unchanged (i.e. **not significant**).

12.199 The residual effects for the development are summarised in ***Table 12.20.***

***Table 12.20:*** *Residual Effects Summary (NT02-NT04 Full Application 5)*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|

| | | | |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Construction Dust and $PM_{10}$ from on-site demolition and construction activities | Dust deposition / soiling on property within 350m of Site boundary and increases in ambient $PM_{10}$ concentrations. Pre-mitigation significance not defined in accordance with IAQM guidance | A CEMP will be implemented at the Site. This will include best practice mitigation measures to prevent dust and $PM_{10}$ being generated at source and dispersed beyond the Site boundary, including those measures identified within this chapter and in accordance with IAQM guidance. | **Negligible adverse**, **temporary and reversible** effect that is **not significant**. |
| Exhaust emissions from construction traffic and plant | Temporary increase in pollutant concentrations (including $NO_2$, $PM_{10}$ and $PM_{2.5}$) near Site boundary and along construction traffic routes. | Adoption of best practice measures, to include: Agreed routing of construction traffic to avoid travel along sensitive routes where possible.<br>Timing of large-scale vehicle movements to avoid peak hours on the local road network where possible.<br>No idling.<br>Implementation of a CTMP and/or CLP.<br>Sustainable Travel Plan / promotion of active and public transport for site staff. | **Negligible adverse**, **temporary and reversible** effect that is **not significant**. |
| ***Completed Development*** | | | |
| Exhaust emissions from development generated road traffic. | Long-term increase in $NO_2$, $PM_{10}$ and $PM_{2.5}$ concentrations at sensitive (human) receptors near to the Site and along those routes to be used by development generated traffic.<br>A **negligible adverse, permanent** effect that is **not significant** | Placement of properties remote from sources of air pollutants.<br>Provision of a Travel Plan and travel advice to occupants of the Proposed Development.<br>Provision of an adequate quality and quantity of cycle parking to aid active transport modal shift.<br>EV charging provision. | **Negligible adverse, long-term, permanent** effect that is **not significant**. |

## Conclusions (Application 5)

12.200 For the NT02-NT04 Full Application 5, it has been determined that MCC has responsibility for LAQM at the Site, of which the southernmost extent falls within the Greater Manchester Combined Authority AQMA. The Site is located in an area where air quality is mainly influenced by emissions from road transport using the local road network, including major roads such as the A664, A665 and minor roads such as Collyhurst Road, Red Bank and Dantzic Street.

12.201 No embedded mitigation measures are included for the construction phase that are relevant to air quality. However, for the Completed and Operational development, active travel to, from and within the Site will be encouraged and provision for electric vehicle charging will be made.

12.202 NT02-NT04 Full Application 5 has the potential to impact on local air quality at sensitive human receptors during demolition, construction and from the Completed and Operational development.

12.203 For demolition and construction, a high risk of adverse impacts has been identified from dust soiling. Therefore, measures will be required to mitigate this impact. With the effective implementation of these measures, the residual impact will be **negligible** and the effect '**not significant'**.

12.204 For the Completed and Operational development, a **negligible adverse**, permanent effect is predicted, which is **not significant** on the basis that no exceedances of the statutory air quality objectives will occur. However, best practice design and emissions management measures are recommended to ensure the development is compliant with the policies contained within the Manchester Core Strategy and the NPPF.

12.205 The permitted operations Packaging Products Limited and HMG Paints are potential sources of odour which could impact on the combined Application 4 and 5. However, as NT02-NT04 Full Application 5 is upwind of these operators the risk of adverse odour impacts is considered to be very low.

## Cumulative Effects with Identified Committed Schemes (Application 5)

### Approach

12.206 There is the potential for cumulative effects to occur as a result of the proposed Application 5 development and cumulative schemes identified in the surrounding area. Cumulative effects may arise during both the demolition and construction phase and the operational phase.

#### Demolition and Construction

12.207 **Table 12.15** above summarises the outcomes of this review and those sites which have been considered within the cumulative assessment of construction phase effects.

#### Completed and Operational Development

12.208 As noted for the assessment of Red Bank Outline Application 4, the cumulative schemes identified for inclusion within the traffic data included: Meadowside, Victoria Riverside, Ancoats Mobility Hub and Cortland. The future year modelling results are therefore inherently cumulative as they take into account the contributions to total pollutant concentrations associated with the identified cumulative schemes, in addition to vehicle movements generated by Application 5. A separate cumulative assessment is not therefore required.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

12.209 With the implementation of best practice mitigation measures, as set out in Paragraph 12.137, the residual cumulative effects during demolition and construction would be direct, temporary, **negligible**, and **not significant**.

### The Completed and Operational Development

12.210 As noted above, a separate cumulative assessment is not required for the operational phase as the traffic data used in the assessment, and therefore the modelling results, are inherently cumulative. The cumulative effect will therefore remain as reported for the development in Paragraph 12.158 i.e., direct, permanent, **negligible adverse** and **not significant**.

## Cumulative Effects with Identified Committed Schemes + SRF (Application 5)

### Approach

12.211 There is the potential for cumulative effects to occur as a result of the proposed Application 5 development, the identified cumulative schemes in the surrounding area, and the wider SRF. Cumulative effects may arise during both the demolition and construction phase and the operational phase.

### Demolition and Construction

12.212 As per the above cumulative assessment (Paragraphs 12.153 to 12.156) and guidance published by the IAQM, where one or more construction sites are located in close proximity and their construction periods overlap, there is the potential for cumulative effects associated with releases of dust and particulate matter to arise at sensitive receptors located within 350m of each site. Cumulative effects may also arise at receptors located near to shared construction routes due to a cumulative increase in vehicle emissions, and therefore local pollutant concentrations.

12.213 Those committed developments located in proximity to the Site that are likely to overlap with the proposed Application 4 development are summarised in Table 12.14. It is assumed that each Site will implement appropriate mitigation, by way of a CEMP or similar, to ensure any dust and pollutant releases are kept to a minimum. In relation to the wider SRF, detailed information regarding the proposals for each development parcel and the timescales for implementation are not currently available. It is assumed that demolition and construction works associated with Application 4 would be largely completed prior to the development of the wider SRF. Where any other SRF developments that are brought forward prior to the completion of the Proposed Development, it is again assumed that they will be required to undertake a dust risk assessment in accordance with current best practice guidance and to implement construction mitigation measures proportionate to the identified level of risk.

12.214 Application of the identified mitigation measures will help to prevent and/or minimise pollutant releases, certainly beyond the construction site boundary, and therefore any cumulative effects are likely to be direct, temporary, short-medium term, **negligible** and **not significant**.

### The Completed and Operational Development

12.215 Once the surrounding committed developments and the wider SRF become operational, there is the potential for each development to generate additional road traffic movements on the local road network. Exhaust emissions from these vehicles will subsequently contribute to local ambient pollutant concentrations, potentially impacting air quality at nearby sensitive receptors.

12.216 The traffic data used in the assessment of operational effects includes contributions from those committed developments that are likely to generate traffic on the same road network as Application 5. Therefore, they already take into account the cumulative effect of these schemes. In relation to the wider SRF, the overall quantum and nature of development has yet to be fully defined. As such, trip generation and distribution data are not currently available for the SRF. It is expected that detailed analysis will be undertaken by the relevant applicant as each development parcel is brought forward. Where an increase in vehicle movements is predicted, there is the potential for impacts on local air quality. Given the scale of the wider SRF, it is anticipated that trip generation will be greater than assessed for the Proposed Development and the identified committed developments. Therefore, the cumulative effects may be of greater significance than reported within this chapter.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

12.217 With the implementation of best practice mitigation measures, the residual effects are likely to remain the same as reported above i.e., direct, temporary, **negligible**, and **not significant**.

### The Completed and Operational Development

12.218 At the time of writing, insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF. Therefore, it is not currently possible to define the likely residual effects on local air quality associated with Application 5 and the identified committed developments in-combination with the SRF.

# In Combination Effects of Applications 4 and 5

12.219 This section reports the results of the in-combination assessment of Red Bank Outline Application 4 and NT02-NT04 Full Application 5. The baseline conditions and embedded mitigation for the in-combination assessment are the same as those reported for Red Bank Outline Application 4 and NT02-NT04 Full Application 5.

## Assessment of Likely Significant Effects (Applications 4 and 5)

### Demolition and Construction

12.220 The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. The results of the in-combination effects of demolition and construction are the same as those reported for Application 4 and Application 5 in **Table 12.9** and **Table 12.15**.

#### Construction Traffic Assessment

12.221 Provisional information about the construction routes used for the Redbank Outline Application 4 and the NT02-NT04 Full Application 5 has been provided by the project team. **Table 12.10** shows the primary construction routes, maximum predicted Do-Minimum concentration for receptors along the identified construction routes and the available 'headroom', before the objective is met. It is not expected that the worst-case maximum volumes of construction HGV traffic shown in **Table 12.10** would cause additional levels of air pollutants such that ambient concentrations at nearby receptors would be raised in excess of the available headroom (i.e. >20 µg/m³) to trigger an exceedance of the limit and objective value of 40 µg/m³. Furthermore, the worst-case maximum HGV AADT trips shown in **Table 12.10** are expected to only occur sporadically and to be sustained over only a short period of time such that the impact on annual mean concentrations would be small.

### The Completed and Operational Development

#### Human Receptors

12.222 The dispersion modelling results for the in-combination effects of Red Bank Outline Application 4 and NT02-NT04 Full Application 5 are summarised in **Table 12.21**.

***Table 12.21:*** *Dispersion Modelling Summary In-Combination Effects of Applications 4 and 5*

| Dispersion Modelling Results Summary Table | | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| | Limit Value (µg/m³) | 40 | 40 | 20 |
| Maximum Annual Mean Concentrations (µg/m³) | Without-Development (2032) | 36.2 | 20.2 | 12.4 |
| | With-Development (2032) | 37.4 | 20.9 | 12.7 |
| Number of Properties greater than UK limit value | Without-Development (2032) Exceedances | 0 | 0 | 0 |
| | With-Development (2032) Exceedances | 0 | 0 | 0 |
| | Removed Exceedances | 0 | 0 | 0 |

| Dispersion Modelling Results Summary Table | | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| | Limit Value (µg/m³) | 40 | 40 | 20 |
| | New Exceedances | 0 | 0 | 0 |
| Total Number of Properties | Improvement | 0 | 0 | 0 |
| | No Change | 857 | 1,039 | 1,170 |
| | Deterioration | 488 | 306 | 175 |
| "With-Development" - "Without-Development" (µg/m³) | Max Improvement | 0.00 | 0.00 | 0.00 |
| | Max Worsening | 1.20 | 0.80 | 0.40 |

12.223 The information summarised in **Table 12.21** shows that for all pollutants considered, no exceedances of the respective objective values are predicted, either 'with' or 'without' the Proposed Development in operation.

12.224 Due to the addition of traffic to local roads, there are no receptors predicted to experience improvements in local air quality as a result of the Proposed Development. Predicted changes in concentrations are shown in **Figure 12.19**, **Figure 12.24** and **Figure 12.29**.

12.225 For $NO_2$, the maximum annual mean concentration predicted in 2032 is 37.4 µg/m³ (±5.0 µg/m³), which occurs at a single receptor located at the AO Arena commercial receptor at the junction of the A34 Trinity Way and the A665 Cheetham Hill Road.

12.226 The largest deterioration in $NO_2$ concentrations is 1.2 µg/m³ and is predicted to occur at three receptors located at:

- The AO Arena commercial receptor at the junction of the A34 Trinity Way and the A665 Cheetham Hill Road;
- The 4 Angle Square commercial redevelopment off Dantzic Street; and
- Britton House residential receptor on Lord Street.

12.227 Given the predicted annual mean $NO_2$ concentrations are all below 60 µg/m³, following the guidance from paragraph 7.97 of LAQM.TG22[17], it is unlikely that the 1-hour objective of 200 µg/m³ will be exceeded at any modelled receptor location.

12.228 Of the 307 receptors predicted to experience a deterioration in annual mean $PM_{10}$ concentration, the largest deterioration of 0.8 µg/m³ was predicted to occur at 1 receptor with a further 20 predicted to experience deteriorations of between 0.4 µg/m³ and 0.7 µg/m³. The remaining receptors are predicted to experience a deterioration of 0.3 µg/m³ or less.

12.229 The maximum predicted concentration of 20.9 µg/m³ for $PM_{10}$ occurs at the AO Arena commercial receptor at the junction of the A34 Trinity Way and the A665 Cheetham Hill Road. The largest predicted deterioration of 0.8 µg/m³ in concentrations of $PM_{10}$ occurs at the 4 Angle Square commercial redevelopment off Dantzic Street.

12.230 Analysis of the 90.41th percentile predictions shows that the 24-hour objective for $PM_{10}$ of 50 µg/m³ may be exceeded at human receptor locations for a period not exceeding five separate occasions which is less than the 35 occasions allowable.

12.231 For $PM_{2.5}$, the maximum predicted annual mean concentration (in 2032 in the With-Development scenario) is 12.7 µg/m³, which occurs at the AO Arena commercial receptor at the junction of the A34 Trinity Way and the A665 Cheetham Hill Road. The maximum predicted deterioration of 0.4 µg/m³ occurs at the Britton House residential receptor on Lord Street. Two receptors, the AO Arena commercial receptor at the junction of the A34 Trinity Way and the A665 Cheetham Hill Road and the 20 Lord Street commercial receptor are predicted to experience deteriorations of 0.3 µg/m³. A further 16 receptors are predicted to experience a deterioration of 0.2 µg/m³ and the remaining 156 deteriorations are predicted to be 0.1 µg/m³ or less.

12.232 The changes according to the impact descriptors in **Table 12.2** are shown in **Table 12.22**.

***Table 12.22:*** *Impact Summary In-Combination Effects of Applications 4 and 5*

| IAQM Impact | Change | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| Negligible | Beneficial | 0 | 0 | 0 |
| | No change | 857 | 1,039 | 1,170 |
| | Adverse | 473 | 306 | 175 |
| Minor | Beneficial | 0 | 0 | 0 |
| | Adverse | 15 | 0 | 0 |
| Moderate | Beneficial | 0 | 0 | 0 |
| | Adverse | 0 | 0 | 0 |
| Substantial | Beneficial | 0 | 0 | 0 |
| | Adverse | 0 | 0 | 0 |

12.233 The impact summary in **Table 12.22** shows that for the majority of modelled receptors, the predicted impacts are negligible. Although minor adverse impacts are predicted for $NO_2$ at 15 receptors, no exceedances of the respective objectives for any pollutant were predicted at any of the modelled receptors. As such, in-combination, Application 4 and Application 5 are determined to have a **negligible adverse, permanent** impact on local air quality over the long term (that is **not significant**).

## Proposed Development Receptors

12.234 Receptors were plotted in a grid over the area of the Proposed Development and surrounding development plots with a resolution of 20 m as shown in **Figure 12.37, Figure 12.39** and **Figure 12.41**. The worst-case predictions within the receptor grid are shown in **Table 12.23**.

***Table 12.23:*** *Proposed Development Predicted Pollutant Concentrations*

| Grid Max | Worst-Case Annual Mean Concentration (µg/m³) | | |
|---|---|---|---|
| | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| 1 | 18.8 | 13.4 | 8.6 |
| 2 | 18.7 | 13.3 | 8.5 |

| Grid Max | Worst-Case Annual Mean Concentration (µg/m³) | | |
|---|---|---|---|
| | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| 3 | 18.6 | 13.2 | 8.5 |
| 4 | 18.5 | 13.2 | 8.5 |
| 5 | 18.5 | 13.1 | 8.4 |
| 6 | 18.4 | 13.0 | 8.3 |
| 7 | 18.4 | 12.9 | 8.3 |
| 8 | 18.3 | 12.8 | 8.2 |
| 9 | 18.3 | 12.8 | 8.2 |
| 10 | 18.3 | 12.8 | 8.2 |

12.235 The information in **Table 12.23** shows that the worst-case gridded predictions in the area of the Proposed Development are well below the limit and objective values for all of the modelled pollutants. **Figure 12.33** shows the distribution of $NO_2$ in the area of the Proposed Development and demonstrates that the highest concentrations are located in the south of the Site, close to Red Bank and the Manchester Victoria railway line. Therefore, it can be concluded that the Site is suitable for the proposed end-uses and future site users will not be exposed to unacceptable air quality. In relation to the 'swing plot' (Plot RB05), both residential and educational uses would be acceptable.

### Road Isopleths

12.236 **Figure 12.31** shows that concentrations of $NO_2$ across the modelled road network are generally below the limit and objective value for 40 µg/m³. Exceptions to this include complex junctions such as those on the Ring Road, Rochdale Road and Oldham Road. Elevated concentrations are also present at the junction of the A665 Cheetham Hill Road and A6010 Queens Road, and the junction of the A576 Great Cheetham Street East and Great Cheetham Street West with the A56 Bury New Road.

12.237 The predicted distributions for $PM_{10}$ and $PM_{2.5}$ on the modelled road network are shown in **Figure 12.33** and **Figure 12.35** respectively.

## Phasing Effects

12.238 The Proposed Development will be constructed over a period of approximately nine years and will therefore be brought forward in phases. Parts of the development are therefore likely to be completed and occupied whilst development is ongoing elsewhere within the Site.

12.239 In the completion of the dust assessment, a conservative approach has been adopted that considers the Site as a whole and assumes all activities within the Site boundary will be undertaken concurrently (thereby giving rise to the highest likely dust emission magnitude for each key dust source). The resolution of construction phase data available at each interim phase was not available at the time of the assessment to allow individual assessments to be completed. However, the potential for early phases of the development to introduce new high-sensitivity receptors in proximity to on-going construction activities has been taken into consideration when determining

the overall sensitivity of the area to construction phase effects and the overall risk of impacts arising. This has informed the recommendations for mitigation that should be implemented at the Site for the duration of the construction phase. In relation to construction traffic, the assessment has again adopted a conservative approach, assessing the overall peak construction traffic flows, rather than the flows for each specific phase (although the calculation of these traffic flows will have been informed by the indicative phasing plan).

12.240 With the effective implementation of appropriate best practice mitigation measures, it is possible to adequately control on-site releases of dust and particulate matter such that no significant effects will arise at any of the nearby sensitive receptors, existing or proposed.

12.241 In relation to the assessment of road traffic emissions, the traffic data provided for the assessment of operational phase effects is based on the completion years for Applications 4 and 5 respectively. Detailed traffic data was not available for any other interim/phasing scenario.

12.242 The results of the detailed modelling indicate that, in the existing baseline scenario (2019), concentrations of $NO_2$, $PM_{10}$ and $PM_{2.5}$ are predicted to meet the statutory air quality objectives at the majority of assessment receptors located in the immediate vicinity of the Site (as illustrated on **Figures 12.15**, **12.20**, and **12.25**). Furthermore, in all future assessment scenarios, concentrations of $NO_2$, $PM_{10}$ and $PM_{2.5}$ predicted across the Site (as illustrated in **Figures 12.37, 12.39** and **12.41**) are also well below the respective air quality objectives. As such, it can be assumed that the Site is suitable for the proposed uses and any new receptors introduced within the Site in the interim years will not be exposed to levels of air pollution in excess of the air quality objectives.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5)

### Demolition and Construction

12.243 The additional mitigation / enhancement measures required are the same as those previously reported in Paragraph 12.137.

### The Completed and Operational Development

12.244 The results of the modelling demonstrate that, in-combination, Application 4 and Application 5 will have a direct, long-term, negligible adverse impact on local air quality (that is not significant). Furthermore, air quality within the Site will be acceptable for the proposed end use. The additional mitigation / enhancement measures are therefore as described in Paragraphs 12.138 to 12.140.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5)

### Demolition and Construction

12.245 With the implementation of best practice mitigation measures, as set out in Paragraph 12.137, the residual cumulative effects during demolition and construction would be direct, temporary, **negligible**, and **not significant**.

### The Completed and Operational Development

12.246 A summary of residual in-combination effects for Applications 4 and 5 is shown in **Table 12.24**.

***Table 12.24:*** *Residual Effects Summary (Applications 4 and 5)*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Construction Dust and $PM_{10}$ from on-site demolition and construction activities. | Dust deposition / soiling on property within 350m of Site boundary and increases in ambient $PM_{10}$ concentrations. Pre-mitigation significance not defined in accordance with IAQM guidance | A CEMP will be implemented at the Site. This will include best practice mitigation measures to prevent dust and $PM_{10}$ being generated at source and dispersed beyond the Site boundary, including those measures identified within this chapter and in accordance with IAQM guidance. | **Negligible adverse**, **temporary and reversible** effect that is **not significant**. |
| Exhaust emissions from construction traffic and plant | Temporary increase in pollutant concentrations (including $NO_2$, $PM_{10}$ and $PM_{2.5}$) near Site boundary and along construction traffic routes. | Adoption of best practice measures, to include: Agreed routing of construction traffic to avoid travel along sensitive routes where possible.<br>Timing of large-scale vehicle movements to avoid peak hours on the local road network where possible.<br>No idling.<br>Implementation of a CTMP and/or CLP.<br>Sustainable Travel Plan / promotion of active and public transport for site staff. | **Negligible adverse**, **temporary and reversible** effect that is **not significant**. |
| ***Completed Development*** | | | |
| Exhaust emissions from development generated road traffic. | Long-term increase in $NO_2$, $PM_{10}$ and $PM_{2.5}$ concentrations at sensitive (human) receptors near to the Site and along those routes to be used by development generated traffic. A **negligible** | Placement of properties remote from sources of air pollutants.<br>Provision of a Travel Plan and travel advice to occupants of the Proposed Development.<br>Provision of an adequate quality and quantity of cycle parking to aid active transport modal shift.<br>Provision for EV charging. | **Negligible adverse, long-term, permanent** effect that is **not significant**. |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| | **adverse, long-term, permanent** effect that is **not significant** | | |

## Conclusions (Applications 4 and 5)

12.247 The Site is located in an area where air quality is mainly influenced by emissions from road transport using the local road network, and in particular, major roads such as the A664, A665 and minor roads such as Collyhurst Road, Red Bank and Dantzic Street. As described earlier in this Chapter, MCC has responsibility for LAQM in the vicinity of the Site. As a consequence of the LAQM process, in 2016 the Greater Manchester Combined Authority AQMA was declared for exceedances of the objective for annual mean $NO_2$ concentrations, primarily attributable to road traffic emissions. The southernmost extent of the Site falls within the AQMA.

12.248 The Proposed Development has the potential to generate impacts on air quality during the demolition and construction phase and once it is completed and becomes operational. No embedded mitigation measures are included for the construction phase that are relevant to air quality. For the operational phase, the Proposed Development has been designed to encourage connectivity with the surrounding area and encourage active and sustainable transport choices.

12.249 For the demolition and construction phase, the assessment identified a high risk of adverse impacts associated with dust soiling. Therefore, control measures will be required to mitigate these impacts. With the effective implementation of these measures, any releases should be prevented and/or minimised such that the residual effects on nearby sensitive receptors (both existing and proposed) will be direct, temporary, **negligible adverse** and '**not significant'**.

12.250 For the Completed and Operational phase, the detailed model ADMS Roads was used to predict the impact of emissions from development generated traffic on local air quality. The results of the modelling showed that whilst the Proposed Development would increase pollutant concentrations at many of the assessment receptors, in accordance with the assessment criteria, the increases would be small in the context of total pollutant concentrations and the overall effect would be direct, long-term, **negligible adverse** and '**not significant'**. Furthermore, no exceedances of the relevant air quality objectives were predicted at any of the assessment receptors, existing or proposed. The adoption of best practice design and emissions management measures, including the adoption of a Travel Plan and the provision of electric vehicle recharging facilities, are recommended to ensure the development is compliant with MCC's local planning policies and the NPPF.

12.251 The permitted operations Packaging Products Limited and HMG Paints are potential sources of odour which could impact on the combined Application 4 and 5. However, as the combined Application 4 and 5 is upwind of these operators the risk of adverse odour impacts is considered to be very low.

## Cumulative Effects with Identified Committed Schemes (Applications 4 and 5)

### Approach

12.252 There is the potential for cumulative effects to occur as a result of Application 4, Application 5 and cumulative schemes identified in the surrounding area. Cumulative effects may arise during both the demolition and construction phase and the operational phase.

#### Demolition and Construction

12.253 As noted earlier in this chapter, in accordance with guidance published by the IAQM, demolition and construction activities have the potential to generate releases of dust and particulate matter to air, which may have an adverse effect on sensitive receptors in the surrounding area (up to a distance of 350m from the site boundary). Where one or more construction sites are located in close proximity (i.e. within 700m of one another) cumulative effects associated with dust and particulate matter may arise at those sensitive receptors located within 350m of each site. Cumulative effects may also arise due to exhaust emissions from construction traffic and plant. The key receptors are likely to include existing residential, education, community and employment uses located in the surrounding area. Additional receptors may also be introduced if early phases of the developments become operational whilst works is ongoing elsewhere.

12.254 The cumulative schemes present within 700m of the Site and requiring consideration will be the same as those identified in **Table 12.15**.

#### The Completed and Operational Development

12.255 Where one or more developments are in close proximity, traffic generated by each development may be distributed onto the same roads within the local network. Cumulative effects may therefore arise at sensitive receptors located near to those roads likely to experience a change in traffic volume or composition as a result of the operation of the Proposed Development in-combination with other nearby committed / cumulative schemes.

12.256 Traffic data provided for use in the assessment of operational phase effects includes trip generation associated with Application 4 and Application 5 in addition to contributions from those cumulative developments identified near to the Site and expected to generate traffic movements on the same network as the Proposed Development (see 12.158 for further information). The future year modelling results are therefore inherently cumulative, as they take into account the contributions to total pollutant concentrations associated with the identified cumulative schemes, and a separate cumulative assessment is therefore not required.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

12.257 With the implementation of best practice mitigation measures, as set out in Paragraph 12.137, the residual cumulative effects during demolition and construction would be direct, temporary, negligible, and **not significant**.

### The Completed and Operational Development

12.258 As noted above, a separate cumulative assessment is not required for the operational phase as the traffic data used in the assessment, and therefore the modelling results, are inherently cumulative. The cumulative effect will therefore remain as reported for the development in Paragraph 12.158 i.e. **direct, permanent, negligible adverse** and **not significant**.

# In Combination Effects of Applications 4 and 5 and SRF

12.259 Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 has been set out previously in this chapter.

## Assessment of Likely Significant Effects (Applications 4 and 5 and SRF)

### Demolition and Construction

12.260 As noted for the earlier assessments of Applications 4 and 5, in accordance with guidance published by the IAQM, demolition and construction activities have the potential to generate releases of dust and particulate matter to air, which may have an adverse effect on sensitive receptors in the surrounding area (up to a distance of 350 m from the site boundary). Where one or more construction sites are located in close proximity (i.e. within 700 m of one another) cumulative effects associated with dust and particulate matter may arise at those sensitive receptors located within 350m of each site. Cumulative effects may also arise due to exhaust emissions from construction traffic and plant. The key receptors are therefore likely to include existing residential, education, community and employment uses located in the surrounding area. Additional receptors may also be introduced if early phases of either development become operational whilst works is ongoing elsewhere.

12.261 It is assumed that demolition and construction works associated with the Proposed Development would be largely complete prior to the development of the wider SRF. Where any other SRF developments that are brought forward prior to the completion of the Proposed Development, it is assumed that they will be required to undertake a dust risk assessment in accordance with current best practice guidance and to implement construction mitigation measures proportionate to the identified level of risk.

12.262 Application of the identified mitigation measures will help to prevent and/or minimise pollutant releases, certainly beyond the construction site boundary, and therefore any in-combination effects are likely to be direct, temporary, short-medium term, **negligible** and **not significant**.

### The Completed and Operational Development

12.263 Once the wider SRF is operational, there is the potential for each development area within the SRF to generate additional road traffic movements on the local road network. Exhaust emissions from these vehicles will subsequently contribute to local ambient pollutant concentrations, potentially impacting air quality at nearby sensitive receptors.

12.264 The overall quantum and nature of development within the wider SRF area has yet to be fully defined. As such, trip generation and distribution data are not currently available for the SRF. It is expected that detailed analysis will be undertaken by the relevant applicant as each development parcel is brought forward. Where an increase in vehicle movements is predicted, and where this increase exceeds the relevant screening criteria published by EPUK and the IAQM, there is the potential for impacts on local air quality.

12.265 Given the limited information available in relation to trip generation associated with the SRF, it is not currently possible to determine the likely significance of potential impacts on air quality. In light of the scale of the SRF, it is anticipated that trip generation will be greater than assessed for the Proposed Development. Therefore, the cumulative increase in traffic on the local road network associated with the Proposed Development and the SRF may result in impacts on air quality at nearby sensitive receptors greater than reported within this chapter.

12.266 The SRF is located near to the centre of Manchester, within a highly accessible and sustainable location. The key development principles for the SRF will be consistent with those adopted for the Proposed Development and will help to minimise trip generation and reduce reliance on the private car (in particular those with petrol/diesel engines) i.e., the SRF will be designed to enhance connectivity with the surrounding area, promote development with low levels of car parking, provide a safe and attractive environment for pedestrians and cyclists, encourage a shift towards active and sustainable transport choices, and support the use of low and zero-emission vehicles (notably through the provision of infrastructure to enable electric vehicle charging). The SRF also aims to reduce emissions from buildings associated with heating and energy, for example through the use of district heating systems and renewable energy sources.

## Phasing Effects (Applications 4 and 5 and SRF)

12.267 No significant effects have been identified in relation to phasing. It is assumed that the Proposed Development would be largely complete prior to the development of the wider SRF. Any construction phase effect can be managed through the application of best practice mitigation measures, to ensure no significant effects arise at nearby receptors, existing or proposed.

12.268 The Proposed Development will be constructed over a period of approximately nine years and will therefore be brought forward in phases. Parts of the development are therefore likely to be completed and occupied whilst development is ongoing elsewhere within the Site.

12.269 In relation to the assessment of road traffic emissions, the traffic data provided for the assessment of operational phase effects is based on the completion years for Applications 4 and 5 respectively. Detailed traffic data was not available for any other interim/phasing scenario.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5 and SRF)

### Demolition and Construction

12.270 The additional mitigation / enhancement measures required are the same as those previously reported in Paragraph 12.137.

### The Completed and Operational Development

12.271 The additional mitigation / enhancement measures are as described in Paragraphs 12.138 to 12.140.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5 and SRF)

### Demolition and Construction

12.272 For the demolition and construction phase, with the implementation of best practice mitigation measures, the residual effects would remain the same as reported above i.e., direct, temporary, **negligible**, and **not significant**.

### The Completed and Operational Development

12.273 At the time of writing, insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF. Therefore, it is not currently possible to define the likely residual effects on local air quality associated with Applications 4 and 5 in-combination with the SRF.

## Conclusions (Applications 4 and 5 and SRF)

12.274 The application of the identified mitigation measures will help to prevent and/or minimise pollutant releases, certainly beyond the construction site boundary, and therefore any in-combination effects are likely to be direct, temporary, short-medium term, negligible and not significant.

12.275 It is not currently possible to determine the likely significance of potential impacts on air quality due to a lack of trip generation data. However, in light of the scale of the SRF, it is anticipated that trip generation will be greater than assessed for the Proposed Development. Therefore, the cumulative increase in traffic on the local road network associated with the Proposed Development and the SRF may result in impacts on air quality at nearby sensitive receptors greater than reported for all other assessment scenarios.

12.276 No significant effects have been identified in relation to phasing. It is assumed that the Proposed Development would be largely complete prior to the development of the wider SRF.

## Cumulative Effects with Identified Committed Schemes (Applications 4 and 5 and SRF)

12.277 It is assumed that most of the cumulative developments identified within **Table 12.15** will be completed or largely completed prior to the development of the wider SRF. Trip generation associated with these developments will therefore form part of the future baseline and will be assessed as part of the detailed assessments for each subsequent development plot.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

12.278 With the implementation of appropriate best practice mitigation measures, the residual cumulative effects would remain the same as reported above i.e., direct, temporary, **negligible**, and **not significant**.

### The Completed and Operational Development

12.279 Again, in the absence of appropriate information regarding trip generation associated with the SRF, it is not currently possible to define the likely cumulative residual effects on local air quality associated with Applications 4 and 5 in-combination with the SRF and the identified cumulative schemes.

# 13. Noise and Vibration

## Introduction

13.1 This chapter assesses the effects of the Proposed Development (as defined in **Volume 2: Main Text, Chapter 1: Introduction** as the combined proposals of Application 4 and 5) on noise and vibration considerations. In particular it considers effects that may arise as a result of the Proposed Development on existing and proposed sensitive receptors in the surrounding area, and the suitability of the Site (as defined in **Volume 2: Main Text, Chapter 1: Introduction** as the combined area contained within the red line boundaries of Application 4 and 5) for the development proposals.

13.2 The chapter describes the methods used to assess the likely significant effects; the baseline conditions currently existing at the Site and surroundings; the potential direct and indirect effects of the Proposed Development arising in terms of noise and vibration considerations; the mitigation measures required to prevent or reduce the identified significant effects; and the residual effects. It has been written by WSP UK Ltd.

13.3 This chapter is supported by figures which are located in **Volume 2a: Main Text Figures** and the following appendices which are located in **Volume 3: Appendices** of this ES:

- **Appendix 13.1:** Glossary of Acoustic Terminology
- **Appendix 13.2:** Legislation, Policy and Guidance
- **Appendix 13.3:** Determining the Magnitude of Impact
- **Appendix 13.4:** Baseline Noise Survey
- **Appendix 13.5:** Demolition / Construction Stage Noise and Vibration Assessment
- **Appendix 13.6:** Operational Stage Noise Assessment
- **Appendix 13.7:** Noise Model Parameters
- **Appendix 13.8:** Noise Sources Contributing to the Prevailing Sound Environment Across the Site

13.4 This chapter is necessarily technical in nature, so to assist the reader, a glossary of acoustic terminology is present in **Appendix 13.1**.

## Assessment Methodology and Significance Criteria

13.5 The following assessment methodology and significance criteria has been adopted for the assessments carried out for Application 4, Application 5 and the Proposed Development.

## Legislative and Policy Context

13.6 **Appendix 13.2** includes a summary of the noise and vibration legislation, policy and guidance which is relevant to this assessment. Policy and guidance from these, and other documents (such as relevant British Standards etc.) have been described at the appropriate points in this chapter. The following legislation and policy have informed the assessment of effects within this Chapter:

- Environmental Protection Act 1990[1];
- Control of Pollution Act 1974 (CoPA)[2];
- Noise Policy Statement for England (NPSE)[3];
- National Planning Policy Framework (NPPF)[4];
- Manchester City Council's (MCC) Core Strategy 2012-2027[5] and
- MCC's Unitary Development Plan [6].

13.7 The following guidance has informed the assessment of effects within this Chapter, and is detailed further in **Appendix 13.2:**

- BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites. Part 1: Noise (BS 5228-1)[7];
- BS 5228-2:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites. Part 2: Vibration (BS 5228-2)[8];
- Calculation of road traffic noise memorandum 1988 (CRTN)[9];
- Design Manual for Roads and Bridges (DMRB) (2020), Volume 11: Environmental assessment, Section 3: Environmental assessment techniques: Part 7: LA 111 – Revision 2 Noise and vibration (LA 111)[10];
- BS 4142:2014+A1:2019: Methods for rating and assessing industrial and commercial sound (BS 4142)[11];
- The noise section of the Planning Practice Guidance (PPracG)[12];

[1] HM Government (1990). Environmental Protection Act 1990 (as amended). London: HMSO.
[2] HM Government (1974). Control of Pollution Act 1974.
[3] Department for Environment, Food and Rural Affairs (DEFRA) (2010). Noise Policy Statement for England.
[4] Ministry of Housing, Communities & Local Government (2021). National Planning Policy Framework
[5] Manchester City Council (2012) Core Strategy 2012-2017
https://www.manchester.gov.uk/info/200074/planning/6573/core_strategy_2012-2027
[6] Manchester City Council (1995) Unitary Development Plan
https://www.manchester.gov.uk/info/500207/planning_and_regeneration/2148/unitary_development_plan_udp
[7] Subcommittee B/564/1. (2009). BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Part 1: Noise. London: BSi.
[8] Subcommittee B/564/1. (2009). BS 5228-2:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration. London: BSi.
[9] Department of Transport and Welsh Office (1988). Calculation of Road Traffic Noise.
[10] Highways England, Design Manual for Roads and Bridges, LA 111, Revision 2, 2020, Noise and Vibration
[11] Technical Committee EH/1 and subcommittee EH/1/3. (2019). BS 4142:2014+A1:2019: Method for Rating and Assessing Industrial and Commercial Sound. London: BSi.
[12] Ministry of Housing, Communities & Local Government (2019). Planning Practice Guidance. Noise.

- ProPG: Planning and noise - Professional practice guidance on planning and noise - New residential development 2017 (ProPG)[13];
- British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings (BS 8233)[14];
- World Health Organisation (WHO) (1999) Guidelines for community noise[15];
- Acoustics Ventilation and Overheating Residential Design Guide (AVO Guide), Institute of Acoustics and Association of Noise Consultants (January 2020)[16];
- Building Bulletin (BB) 93: Acoustic Design of Schools (2015) (BB93)[17]; and
- MCC's Planning and Noise Technical Guidance 2022[18].

## Scope of Assessment

13.8 The scope of the assessment for Application 4 and Application 5 remains unchanged from that detailed within the EIA Scoping Report submitted to MCC in January 2023, as provided in **Appendix 2.1** of this ES.

13.9 The potential effects that have been scoped-in and scoped out of the assessment are detailed below, including the evidence base for those effects that are scoped-out.

### Insignificant Effects

13.10 The following effects were not considered significant as part of the EIA Scoping Report and are not considered further in this noise and vibration assessment:

- Vibration effects during the operational phase of the Proposed Development. Given the residential led use of the Proposed Development, it is not expected to generate significant vibration levels following occupation.

### Likely Significant Effects

13.11 The following effects were considered to have the potential to be significant and have therefore been 'scoped-in' to the noise and vibration assessment:

- Site Preparation, Earthworks and Construction Phase
    - Disturbance as a result of noise generated by on-site construction activities of the Proposed Development on sensitive receptors surrounding the Site and, where necessary, sensitive receptors within the Proposed Development.

[13] Association of Noise Consultants, Institute of Acoustics and the Chartered Institute of Environmental Health (2017). ProPG: Planning & Noise – Professional Practice Guidance on Planning and Noise – New Residential Development.
[14] Technical Committee B/564 and sub committee EH/16. (2014). BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings. London: BSi.
[15] World Health Organisation (WHO) (1999) Guidelines for Community Noise.
[16] Institute of Acoustics and Association of Noise Consultants (2020), Acoustics Ventilation and Overheating Residential Design Guide (AVO Guide).
[17] Department for Education (Feb 2015): Acoustic design of schools: performance standards. Building bulletin 93.
[18] Manchester City Council (2022) Planning and Noise Technical Guidance https://www.manchester.gov.uk/downloads/download/5199/information_for_developers

- Disturbance as a result of vibration generated by on-site construction activities of the Proposed Development on sensitive receptors surrounding the Site and, where necessary, sensitive receptors within the Proposed Development.
- Changes in road traffic noise as a result of construction phase development-generated traffic on the local road network.

- Operational Phase
  - Changes in road traffic noise as a result of operational phase development-generated traffic on the local road network.
  - Disturbance to existing sensitive receptors and future proposed noise sensitive uses from noise generated by fixed plant comprised in, and commercial activities associated with, the Proposed Development.
  - Disturbance to future noise sensitive uses from the prevailing environment (e.g. existing rail movements, road traffic on the local road network and operational activities associated with the existing commercial and industrial units adjacent to the Site).

## Extent of the Study Area

13.12 The scope of this chapter relates to human response to noise and vibration. The following study areas have been adopted for the assessment of the Application 4 and Application 5:

- Noise arising from the construction of the Proposed Development has been assessed at selected noise sensitive receptors within a study area of approximately 300m from the main phases of work which are shown on the Phasing Plan in **Figure 5.13**.
- Vibration arising from the construction of the Proposed Development has been assessed at selected vibration sensitive receptors within a study area of approximately 100m of the Site.
- Operational noise from commercial activities has been assessed at selected sensitive receptors within a study area of approximately 100m from the Site.
- Development-generated road traffic noise is assessed for the existing road network. The adopted study area includes all routes in the traffic model developed for the Transport Assessment submitted in support of the planning application. The study area is also described in **Chapter 11 Transport and Access**.

13.13 The following existing and future noise sensitive receptors (NSRs) within the study area are those closest to the Proposed Development and which therefore have the greatest potential to be subject to significant effects:

- NSR1 (Application 4 and 5): Representative of existing residential receptors situated of the Fairholme Caravan Site on Collingham Street to the north of the Site.

- NSR2 (Application 4 only): Representative of the Eden Boys Leadership Academy situated on Rayburn Way to the north-west of the Site.
- NSR3 (Application 4 and 5): Representative of existing residential receptors of Emmeline Tower flats situated on Dalton Street to the east of the Site.
- NSR4 (Application 4 and 5): Representative of existing residential receptors of No 19 to 35 Dalton Street to the east of the Site.
- NSR5 (Application 4 and 5) : Representative of existing residential receptors of Sylvia Tower flats situated on Dalton Street to the east of the Site.
- NSR6 (Application 4 only): Representative of existing residential receptors of Christabel Tower flats on Dalton Street to the east of the Site.
- NSR7 (Application 4 and 5): Representative of future residential receptors of the Victoria Riverside development situated on Dantzic Street to the west of the Site (application ref: 126944/FO/2020).
- NSR8 (Application 4 and 5): Representative of future residential receptors of The Gas Works development situated on Gould Street to the south of the Site (application ref: 128248/FO/2020).
- NSR9 (Application 4 and 5): Representative of future residential receptors of the side development situated on Aspin Lane to the southwest of the Site (application ref: 116366/FO/2017).
- NSR10 (Application 4 and 5): Representative of the King of Kings School situated on Aspin Lane to the southwest of the Site.
- NSR11 (Application 4 Only): Representative of the Homes for Students accommodation situated on Dantzic Street to the southwest of the Site.
- NSR12 (Application 4 only): Representative of existing residential receptors of the Vallea Court flats on Red Bank Road to the west of the Site.
- NSR13 (Application 4 only): Representative of existing residential receptors of the Masson Place flats on Red Bank Road to the west of the Site.
- NSR14 (Application 4 and 5): Representative of existing residential receptors of the Melia House flats on Red Bank Road to the west of the Site.
- NSR15 (Application 4 and 5): Representative of existing residential receptors of the Lincoln Gate flats on Red Bank Road to the west of the Site.
- NSR16 (Application 4 only): Representative of future residential receptors of Phase 1 of the Proposed Development, i.e. Application 5.
- NSR17 (Application 4 only): Representative of future residential receptors of Phase 2 of the Proposed Development, i.e. RB06, RB07, RB10, RB16 and RB17 of Application 4.

13.14 The sensitive receptors are identified on **Figure 13.1**.

13.15 The future noise sensitive receptors include consented residential schemes surrounding the Site and within the study area, as well as phases of the Proposed Development as appropriate. All of the above receptors are classed as 'High' sensitivity as these are places of residential occupation or locations where a low noise environment is desirable.

### Site Visits and Baseline Noise Surveys

13.16 A series of baseline noise surveys have been undertaken on and in the vicinity of the Site. The purpose of these baseline noise surveys was:

- to determine the prevailing noise environment at sample locations across the Site;
- to determine the noise levels generated by key sources contributing to the on-site noise environment, and facilitate a detailed noise modelling exercise for the Site; and
- to determine the prevailing ambient and background noise levels at a sample of locations selected as representative of existing and proposed noise sensitive receptors.

13.17 The noise survey measurement positions are shown in **Figure 13.2**. Full details of the baseline noise surveys including the obtained measurement results are provided in **Appendix 13.4** of **ES Volume 3.**

## Assessment Methodology

13.18 The adopted assessment methodology has been applied to demonstrate compliance with national policy and allow determination of whether significant environmental effects are likely to arise as a result of the Proposed Development. The adopted assessment methodology draws upon the policies and guidance set out above as applicable to each impact being assessed.

### Construction Stage

13.19 The assessment of construction noise has been undertaken based on the guidance contained within BS 5228-1. Drawing upon the results of the baseline noise survey, a series of construction noise assessment criteria have been determined following the ABC method detailed within Annex E Section E3.2 of BS 5228-16 (see **Appendix 13.2**). A series of example construction noise level predictions have then been undertaken, with the results of these predictions compared against the derived assessment criteria. The margin of compliance/exceedance of the assessment criteria has been used to determine whether a significant effect would arise.

13.20 The assessment of construction vibration has been undertaken based on the guidance contained within BS 5228-2 (see **Appendix 13.2**). Drawing upon the historic ground-borne vibration measurement data, and vibration prediction methods contained within this Standard, a series of typical set-back distances have been determined, at which different degrees of human exposure to ground-borne vibration arise. Set-back distances

have been determined for a sample of different vibration generating construction operations. The distances of vibration sensitive receptors have then been compared against the derived set-back distances to determine whether resulting effects would be significant or not.

13.21 The assessment of construction phase traffic noise has been undertaken based on the scheme traffic data. For the baseline year (that with the greatest potential for a significant noise level change), Basic Noise Level (BNL) calculations have been undertaken in general accordance with CRTN (see **Appendix 13.2**). Calculations have been undertaken for 'without construction traffic' and 'with construction traffic' scenarios, to allow determination of the noise level change associated with the addition of construction traffic movements. Two access points, via Red Bank Road and Collyhurst Road, have been considered for the 'with construction traffic' scenarios. The significance of the identified noise level changes has then been determined and assessed by application of the magnitude of impact at noise sensitive receptors of construction traffic adopted from LA 111 (see **Appendix 13.2**).

## Operational Stage

13.22 The impact of noise from proposed fixed/mechanical plant that would be introduced as a result of the Proposed Development has been based on BS 4142. At this stage, the precise details and location of any such plant are not known. Therefore, a series of plant noise level limits have been determined based on the results of the baseline noise surveys. It is anticipated that, at the detailed design stage, relevant plant will be designed to comply with these noise level limits.

13.23 The impact of noise caused by Proposed Development generated road traffic using the existing road network, has been undertaken following the same approach as applied for the construction traffic noise assessment. The build-out programme extends over 8 years for Application 4 and over 6 years for Application 5. The Proposed Development will be occupied incrementally over the 9 year period. The approach to construction is such that only very gradual road traffic noise levels would arise (i.e. there would be no sudden or abrupt short-term noise level changes due to there being no sudden 'opening' of the full scheme). To reflect this, BNL calculations have been undertaken for the relevant assessment scenarios. The noise level change between the assessment scenarios has then been determined and assessed for each considered road link, by application of the long-term impact magnitude scale adopted from LA 111 (See **Appendix 13.2**), to reflect the fact that such changes would be gradual over time.

13.24 The impact of the existing noise environment on residential aspects of the Proposed Development has been based on the results of the detailed modelling exercise. This has included an assessment of the on-site noise levels against guidance criteria adopted from BS 8233, WHO and the MCC Planning and Noise Technical Guidance (see **Appendix 13.2**), as required.

13.25 For each area of assessment, results are compared against impact magnitude criteria which have been derived based on appropriate technical guidance and British Standards specific to that impact, e.g. the impact magnitude

scale of construction noise has been determined based on BS 5228-1 (see **Appendix 13.2**), and Proposed Development- generated road traffic noise has been determined based on LA 111 (see **Appendix 13.2**). These criteria are detailed below, including the approach to the subsequent determination of associated effects.

13.26 As required by the EIA Regulations[19], it has been determined whether identified effects are significant or not. Where a significant adverse effect is identified, consideration has been given to mitigation measures. The residual effect with the identified mitigation measures in place has then been determined, and the significance reappraised. Residual effects have also been appraised in terms of policy compliance (i.e. in terms of the No Observed Effect level (NOEL), Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL)) as required by the NPSE.

## Assessment Modelling

### Construction Noise

13.27 To inform the assessment of construction noise levels, a series of construction noise level predictions have been carried out for the nearest existing and future noise sensitive receptors. The methodology adopted for the prediction of construction noise levels follows that set out in BS 5228-1. The noise predictions have been made in accordance with the BS 5228-1 methodology. The BS 5228-1 calculation methods allow noise levels to be determined for various construction activities. However, the accuracy of such predictions is necessarily limited by assumptions that have to be made regarding the number and type of plant used, their location and detailed operating arrangements.

13.28 It has therefore been necessary to perform a construction phase noise assessment, focussing on key activities, and based on certain assumptions regarding the number and type of plant used, their location and detailed operating arrangements (referred to above), with the aim of identifying whether significant temporary noise effects are likely to arise at sensitive receptors. The plant types, quantities and utilisations adopted in the completed noise level predictions are detailed in **Appendix 13.5**. The accuracy of predictions is necessarily limited by the assumptions that have to be made regarding the number and type of plant used, their location and detailed operating arrangements. Whilst this information would be clarified as the detailed design progresses and when resources are mobilised, other information (such as exactly where the plant operates and for how long) would remain uncertain, even after works have commenced.

### Construction Vibration

13.29 The methodology adopted for the prediction of construction noise levels follows that set out in BS 5228-2. The vibration predictions have been made using calculations which have been developed in-house (by WSP) based on with BS 5228-2 methodologies.

[19] European Commission (2009) Environmental Impact Assessment (EIA). Available at: http://ec.europa.eu/environment/eia/eia-legalcontext.htm

13.30 The vibration predictions have been made using empirical data provided in BS 5228-2. However, the accuracy of such predictions is necessarily limited by assumptions that have to be made regarding the number and type of plant used, their location, detailed operating arrangements, and the ground conditions. Whilst this information would be clarified as the detailed design progresses and when resources are mobilised, other information (such as exactly where the plant operates and for how long) would remain uncertain, even after works have commenced.

13.31 It has therefore been necessary to perform a construction phase vibration assessment, focussing on key activities, with the aim of identifying whether significant temporary vibration effects are likely to arise at the closest sensitive receptors. The plant types, quantities and utilisations adopted in the completed vibrations level predictions are detailed in **Appendix 13.5**.

### Proposed Development-Generated Road Traffic

13.32 To inform the assessment of Proposed Development-generated traffic, a series of BNL calculations have been carried out drawing on the Proposed Development traffic data. The methodology adopted for the prediction of road traffic noise generally follows that set out in CRTN (see **Appendix 13.2**). Calculations have been undertaken for 'with' and 'without' the Proposed Development scenarios, to allow determination of the noise level change associated with the addition traffic movements during the construction and operational phases. The significance of the identified noise level changes has then been determined and assessed by application of the impact magnitude scale adopted from LA 111 (see **Appendix 13.2**).

### On-Site Noise Environment

13.33 To inform the assessment of the potential impact on noise sensitive aspects of the Proposed Development, a detailed noise model has been prepared for the Site and surrounding areas. This noise model has been developed to include the local transportation noise sources as identified and measured during the baseline noise surveys, and to predict the future levels of road traffic noise across the Site taking into account natural traffic growth and the proposed reduction in speed along Dantzic Street from 30mph to 20mph.

13.34 The noise model has been generated using the CadnaA® noise modelling software and has been used to determine future daytime and night-time noise levels across the site. Noise modelling parameters are detailed in **Appendix 13.6**.

## Significance Criteria

13.35 The assessment of likely significant environmental effects as a result of the Proposed Development has taken into account the construction and operational stages. The following sections define the approach adopted within the assessment for the determination of sensitivity (or value/importance), magnitude of impact, the level of effect and significance.

13.36 The duration of the effect has been assessed as either '*short-term*', '*medium-term*' or '*long-term*'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

## Determining Sensitivity of Receptor

13.37 The sensitivity of affected receptors has been considered on a scale of **high**, **medium**, **low** or **negligible**. The closest noise sensitive receptors to the Proposed Development have been identified to be of '**High**' sensitivity as these are existing and proposed dwellings and existing schools.

## Determining the Impact Magnitude

13.38 The impact magnitude has been determined on a scale of **high**, **medium**, **low** or **negligible**. The impact magnitude has been determined drawing upon the applicable guidance in each case, as summarised in **Appendix 13.3**.

## Determining the Level of Effect

13.39 The level of effect has been informed by the impact magnitude due to the Proposed Development and the evaluation of the sensitivity of the affected receptor, as well as a number of other factors outlined in more detail in **Chapter 2 Approach**. The matrix used to determine the significance of effects is set out in the **Table 13.1** below.

***Table 13.1:*** *Matrix for Determining the Significance of Effects*

| Impact Magnitude | Sensitivity | | | |
|---|---|---|---|---|
| | High | Medium | Low | Negligible |
| High | Major | Moderate | Minor-Moderate | Negligible |
| Medium | Moderate | Minor-Moderate | Minor | Negligible |
| Low | Minor | Minor | Negligible-Minor | Negligible |
| Negligible | Negligible | Negligible | Negligible | Negligible |

13.40 Impacts can be beneficial or adverse. The various noise and vibration impact magnitudes have been determined drawing upon the applicable guidance in each case, as summarised in the relevant subsections of this chapter.

13.41 An effect of Moderate or Major has been considered to be '*significant*' in EIA terms, with effects of Minor and Negligible considered to be '*not significant*'.

13.42 The scale of the effect will be further reviewed against a number of additional factors to assess the final scale and significance of any identified adverse effects. These additional factors will include:

- Number of receptors likely to be affected (e.g. the significance of an effect may increase if a large number of receptors are affected);
- Any specialist features of the receptor (e.g. some receptors may have specific features that alter the scale of an effect); and
- Duration of the adverse effect (e.g. effects that occur for an extended period of time may be more significant than short term effects of a similar impact magnitude).

13.43 Separate to the above, which covers the requirement of EIA to determine significant effects, as stipulated under the EIA Regulations, noise-related planning policy also references the need to consider significance in terms of effect levels (the NOEL, LOAEL, and SOAEL descriptors). The impact magnitude scales presented in the following subsections also therefore detail how the NOEL, LOAEL and SOAEL descriptors have been determined within the assessment as part of testing against the policy requirements of the NPSE.

## Assumptions/Limitations

13.44 As is typical at the planning stage, the precise details of the construction plant, plant number, programme and working methodologies are unknown and will only be finalised once a contractor is appointed, post planning approval. The construction noise level predictions have therefore been undertaken based upon the Applicant's experience of similar schemes. Whilst more detailed calculations may be required at a later stage, the completed calculations are considered appropriate to provide an appreciation of any potentially significant effects and identify measures to mitigate effects as far as is reasonably practicable.

13.45 The assessment of vibration from construction activities has been undertaken based on vibration levels associated with a small range of key ground-borne vibration generative construction activities. It is possible that activities other than those presented may take place, whilst, similarly, some of those presented may not be applicable to the activities specific to the Site at the time of construction. The conclusions drawn from this assessment, however, provide an indication of the potential effects that could arise during the construction phase. This assessment has assumed that piled foundation works will be required.

13.46 At this stage the routes that will be used by construction traffic to access the Site are yet to be finalised, but construction traffic flows will be greater closer to the Site (being dispersed across the network at distance) and when the Proposed Development is being constructed. Over the course of the build-out of the Proposed Development, typical daily construction traffic flows have been advised to be up to 256 (128 in and 128 out) light vehicles and 256 (128 in and 128 out) heavy vehicles on Red Bank Road and up to 216 (108 in and 108 out) light vehicles and 216 (108 in and 108 out) heavy vehicles along Collyhurst Road. In applying these worst case traffic figures, i.e. when both Application 4 and Application 5 are being constructed, to the likely construction traffic routes in the immediate vicinity of the Site, a number of assumptions have been incorporated, the precise details of these assumptions are presented within **Chapter 11 Transport and Access**.

13.47 The results of the Transport Assessment (TA), in particular the traffic flow data, have been used as the basis for the assessment of noise level changes that could arise from construction traffic noise during the construction phase, and Proposed Development-generated road traffic noise during the operational phase. In applying these traffic figures, a number of assumptions have been incorporated, the precise details of these assumptions are presented within **Chapter 11 Transport and Access**.

13.48 At this stage, detailed information on fixed building services plant that may be introduced at the Proposed Development, and future tenants of commercial units, is not available. The approach has therefore been to set noise level limits for existing and proposed sensitive receptors, and demonstrate how those limits could be enforced by means of appropriately-worded planning conditions to ensure a commensurate level of protection to nearby sensitive receivers, and avoid giving rise to any significant effect.

## Consultation

13.49 **Table 13.2** provides an overview of the consultation that has been undertaken in support of the preparation of this assessment.

***Table 13.2:*** *Consultation*

| Consultee | Application | Date | Comments | Actions |
|---|---|---|---|---|
| Environmental Health / Manchester City Council | Application 4 and 5 | November 2021 | Consultation on proposed scope of baseline noise survey. | None |
| Manchester City Council | Application 4 and 5 | January 2023 | Scoping document submitted to outline proposed scope of EIA | None |
| Manchester City Council | Application 4 and 5 | February 2023 | Acceptance of proposed scope.<br>In addition:<br>• The commercial and fixed plant assessment will also need to consider plant associated with the residential properties, such as ASHP / GSHP/Ventilation etc.<br>• Other buildings such as commercial or office will also need to be considered a sensitive receptors with regard to the criteria and not just existing and proposed residential uses.<br>• An AVO overheating assessment will be required and assessment / recommendations would | See Operational Phase Assessment<br>See site suitability assessment<br>See Appendix 13.8 |

| Consultee | Application | Date | Comments | Actions |
|---|---|---|---|---|
| | | | be required to ensure the internal noise criteria will be met without residents relying on openable windows for ventilation. | |

# Red Bank (Application 4)

## Baseline Conditions (Application 4)

### Baseline Information

13.50 Existing noise sources contributing the prevailing noise levels across the Application 4 area of the Site include:

- Road traffic noise from Red Bank Road to the West of the Site, Dantzic Street and Collyhurst Way to the south of the Site and, to a lesser extent, the wider road network;
- Noise from passenger and freight train movements along the Victoria Railway Line to the south of the Application 4 part of the Site; and to a lesser extent
- Potential distant noise from operational activities associated with the commercial/industrial premises on Honey Street to the north of the Application 4 part of the Site, HMG Paint Complex on Collyhurst Street to the east of the Application 4 part of the Site and on Redbank to the west of the Application 4 part of the Site.

13.51 Details of the baseline noise survey are presented in **Appendix 13.4**. The measurement locations are shown in **Figure 13.2** and a summary of the measurement data is presented in **Table 13.6** in **Appendix 13.4**.

### Future Baseline

13.52 Where road and rail traffic noise is a key contributor to the prevailing noise environment, it is anticipated that small increases in the baseline conditions may arise as a result of natural traffic growth over time or changes in rail traffic movement numbers. Future road traffic noise levels across the Application 4 part of the Site have been modelled taking into account natural traffic growth and the proposed reduction in speed along Dantzic Street from 30mph to 20mph.

13.53 When considering the potential impacts on existing receptors, adopting the current baseline noise environment in the determination of the background sound levels for assessment, represents a worst case as prevailing levels can reasonably be expected to be lower than those that will be arise in the future.

## Embedded Mitigation (Application 4)

### Demolition and Construction

13.54 Generic safeguards exist to minimise the effects of construction noise, these include:

- The various UK Statutory Instruments that limit noise emissions of a variety of construction plant; and
- The powers that exist for local authorities under Sections 60 and 61 of the Control of pollution act to control noise from construction Sites.

13.55 The adoption of Best Practicable Means (BPM), as defined in Section 72 of the Control of Pollution Act 1974, is usually the most effective means of controlling noise from construction Sites. Appropriate measures include:

- The contractor and their sub-contractors will at all times apply the principle of BPM as defined in Section 72 of the Control of pollution act 1974 and carry out all work in such a manner as to avoid or reduce any disturbance from noise (and vibration) as far as is practicable.
- Guidance given in BS 5228-1 (Section 8: Control of noise and Annex B: Noise sources, remedies and their effectiveness) will be followed as far as is practicable and advice and training on noise minimisation given to staff during Site induction procedures.
- All plant brought on to Site will comply with the relevant EC/UK noise limits applicable to that equipment or should be no noisier than would be expected based on the noise levels quoted in BS 5228-1. Each plant item will be well maintained and operated in accordance with manufacturers' recommendations and in such a manner as to minimise noise emissions.
- Electrically powered plant will be preferred, where practicable, to mechanically powered alternatives.
- The use of sound reduced plant fitted with suitable silencers, or operated within enclosures will be preferred.
- Pneumatic tools will be fitted with silencers or mufflers.
- Deliveries to Site will be programmed and routed to minimise disturbance to local residents.
- Items of plant operating intermittently will be shut down in the periods between use.
- Where feasible, all stationary plant will be located so that the noise effect at receptors is minimised and, if practicable, every item of static plant, when in operation, will be noise attenuated using methods based on the guidance and advice given in BS 5228-1.
- Careful selection of construction methods and plant will be implemented and utilised, for example, breaking-out of concrete structures using, where possible, low noise methods such as munching or similar, rather than percussion breaking.

- Temporary acoustic barriers and other noise containment measures such as screens, sheeting and acoustic hoarding at the Site boundary (and where required around individual plant) will be erected where appropriate to minimise noise breakout and reduce noise levels at potentially affected receptors.
- There will be a considerate and neighbourly approach to relations with local residents.
- The site manager, or other appointed site representative, will be responsible for logging all received environmental noise and vibration comments/complaints, as well as the action that is taken in response to each point raised, and whether this was successful. Where not successful, supplementary actions will be carried out and resulting effects logged. The contact details for the site representative will be openly advertised so that local residents have a point of contact in case of any issues arising. The site representative will be responsible for keeping an open line of contact with local residents and advising the timing and programming of potentially noisy works.

13.56 With the above measures in place, as much as a 10dB noise reduction can typically be achieved and this benefit has been assumed in determining the predicted construction noise levels. For the purpose of this assessment a more conservative 5dB benefit has been assumed in determining the likely significant effects.

### The Completed and Operational Development

13.57 No primary and tertiary mitigation has been identified.

## Assessment of Likely Significant Effects (Application 4)

### Demolition and Construction

#### Construction Noise

13.58 It is inevitable with any proposed major development that there will be some disturbance caused to those nearby during the construction works. However, disruption due to construction is localised and temporary in nature.

13.59 At this stage, the precise details of the noise generating sources during construction are not confirmed. Therefore, based on information provided by the Applicant's experience of similar schemes, predictions of the likely noise impacts from anticipated construction activities have been made which are indicative of the likely noise levels during the works. A more detailed assessment will be undertaken at a later stage (a requirement of the CEMP), once the principal Contractor has been appointed and detailed construction method statements are available.

13.60 Standard construction working hours are assumed to be:

- Monday to Friday: 07:30 to 18:00 hours;
- Saturday: 08:30 to 14:00 hours; and
- No working on Sundays or Bank Holidays.

13.61 It is possible that some working may be required outside of these hours, but where necessary, the appropriate permissions and notifications would be sought in advance with MCC.

13.62 It is anticipated that Application 4 would be delivered in 2 phases, over an 8 year construction programme commencing in 2025, i.e. after the HIF Works have been completed. The phasing plan for the development can be seen on the Phasing Plan in **Figure 5.13**, and the associated programme is summarised as follows:

- Phase 2:RB01-05 and RB12b: Quarter 1 2025 to Quarter 4 2029 i.e. Application 4; and
- Phase 3:RB16 / 17 / 06 / 07 / 10: Quarter 3 2027- Quarter 4 2032 i.e. Application 4.

13.63 For the purpose of this assessment it has been assumed that construction operations will be the same for each of the two phases, and can be broadly split into the following works:

- Activity 1 – Site preparation and remediation.
- Activity 2 – Foundations and piling.
- Activity 3 – Erection of structure.
- Activity 4 – External and internal fitting out.
- Activity 5 - Groundworks and landscaping.

13.64 The assumed type and number of plant items associated with key construction working stages are presented in **Appendix 13.5**. In practice, the activities would take place at different times and durations, and would move around the Application 4 site; consequently, construction noise at any receptor is likely to vary. Calculations have been undertaken based on all plant items positioned at a single location for the closest phase of work and at points considered to be the 'worst' and 'average' locations undertaken for each receptor. The worst case assumes all plant items for each construction activity are located at the nearest development plot of the closest phase of development. The average case considers that all plant are located at the approximate centre of that phase of development.

13.65 The high-level construction programme indicates that some of the Phases of works will overlap. For the purpose of this assessment, it is assumed that the construction works taking place in the phase closest to the noise sensitive receptors will dominate the construction noise levels generated. Therefore, for each receptor location, the predicted construction noise levels are presented for the works within the closest proposed phase of development.

13.66 **Table 13.3** sets out the range of construction noise levels calculated for each adopted receptor location. The range extends from the average case to the worst-case scenarios as described above.

***Table 13.3:*** *Predicted 'Average' and 'Worst' Case Construction Noise Levels for Application 4 – Façade $L_{Aeq,10h}$ (dB)*

| Receptor | Construction Phase Considered | Activity 1: Site Preparation and Remediation | Activity 2: Foundations and Piling | Activity 3: Erection of Structure | Activity 4: External and internal fitting out | Activity 5: Groundworks and landscaping |
|---|---|---|---|---|---|---|
| NSR1 | 3 | 62-65 | 70-73 | 63-66 | 53-56 | 62-65 |
| NSR2 | 3 | 55-57 | 63-64 | 56-57 | 46-48 | 55-57 |
| NSR3 | 2 | 55-56 | 62-64 | 55-57 | 46-47 | 55-56 |
| NSR4 | 2 | 54-55 | 62-63 | 55-56 | 45-46 | 54-55 |
| NSR5 | 2 | 52-54 | 60-61 | 53-55 | 43-45 | 52-54 |
| NSR6 | 2 | 52-54 | 60-61 | 53-54 | 43-44 | 52-54 |
| NSR7 | 2 | 65-67 | 72-75 | 65-68 | 55-58 | 65-67 |
| NSR8 | 2 | 62-63 | 69-71 | 62-64 | 53-54 | 62-63 |
| NSR9 | 2 | 60-63 | 68-70 | 61-63 | 51-53 | 60-62 |
| NSR10 | 2 | 60-62 | 67-70 | 60-63 | 50-53 | 59-62 |
| NSR11 | 2 | 54-65 | 61-72 | 54-65 | 44-55 | 54-65 |
| NSR12 | 2 | 56-70 | 63-78 | 56-71 | 46-61 | 56-70 |
| NSR13 | 2 | 59-70 | 67-78 | 60-71 | 50-61 | 59-70 |
| NSR14 | 2 | 59-60 | 67-68 | 60-61 | 50-51 | 59-60 |
| NSR15 | 2 | 61-64 | 69-72 | 62-65 | 52-55 | 61-64 |
| NSR16 | 2 | 62-74 | 70-82 | 63-75 | 53-65 | 62-74 |
| NSR17 | 2 | 62-70 | 70-78 | 63-71 | 53-61 | 62-70 |

13.67 It is recognised that occasionally, higher construction noise levels could arise, for example, if works are required between the nearest development plot and the closest point of the red line boundary to sensitive receptors. However, it is anticipated that such works would be occasional and of short duration. The likelihood of significant effects is based on the predicted construction noise levels for the 'average' location of plant. The predicted construction noise levels for the 'average' case for the relevant Phase, as detailed in **Table 13.3**, have been compared against threshold criteria for each receptor. The results are given in **Table 13.4**. A negative value represents compliance, a positive value represents an exceedance.

***Table 13.4:*** *Construction Noise Compliance for the Average Case for Application 4, dB*

| Receptor | Activity 1: Site Preparation and Remediation | Activity 2: Foundations and Piling | Activity 3: Erection of Structure | Activity 4: External and internal fitting out | Activity 5: Groundworks and landscaping |
|---|---|---|---|---|---|
| NSR1 | -3 | +5 | -2 | -12 | -3 |
| NSR2 | -10 | -2 | -9 | -19 | -10 |
| NSR3 | -10 | -3 | -10 | -19 | -10 |
| NSR4 | -11 | -3 | -10 | -20 | -11 |
| NSR5 | -13 | -5 | -12 | -22 | -13 |
| NSR6 | -13 | -5 | -12 | -22 | -13 |
| NSR7 | 0 | +7 | 0 | -10 | 0 |
| NSR8 | -3 | +4 | -3 | -12 | -3 |

| Receptor | Activity 1: Site Preparation and Remediation | Activity 2: Foundations and Piling | Activity 3: Erection of Structure | Activity 4: External and internal fitting out | Activity 5: Groundworks and landscaping |
|---|---|---|---|---|---|
| NSR9 | -5 | +3 | -4 | -14 | -5 |
| NSR10 | -5 | +2 | -5 | -15 | -6 |
| NSR11 | -11 | -4 | -11 | -21 | -11 |
| NSR12 | -14 | -7 | -14 | -24 | -14 |
| NSR13 | -11 | -3 | -10 | -20 | -11 |
| NSR14 | -11 | -3 | -10 | -20 | -11 |
| NSR15 | -9 | -1 | -8 | -18 | -9 |
| NSR16 | -3 | +5 | -2 | -12 | -3 |
| NSR17 | -3 | +5 | -2 | -12 | -3 |

13.68 It can be seen from **Table 13.4** that for all working stages, the construction noise assessment criteria are met for receptors NSR2 to NSR6 and NSR11 to NSR15. Where the predicted noise levels do not exceed the assessment thresholds, the magnitude of impact is negligible and the NPSE classification is NOEL. The sensitivity of these receptors is considered to be high. There is likely to be a direct, temporary, medium-term, adverse effect which is considered to be negligible.

13.69 For receptor NRS1, NSR8, NSR9, NSR10, NSR16 ad NSR17 (Activity 2: Foundations and piling only), an exceedance of up to +5dB is identified. The magnitude of impact is low to medium and the NPSE Classification is LOAEL. The sensitivity of these receptors is considered to be high. Therefore, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be minor to moderate.

13.70 For receptors NSR7 (Activity 2: Foundations and piling only), an exceedance of up to +7dB is identified. For the future receptors of NRS7, it should be noted that once the nearest phase of the Proposed Development is built out, i.e. Phase 2, the development itself would screen the activities of Phase 3 of the Proposed Development. For NSR7, it has been assumed that the nearest residential properties of this committed development would have been built out and be occupied by the time the nearest phase of the proposed Application 4 development is under construction.

13.71 For NSR7, the magnitude of impact is medium and the NPSE Classification is SOAEL. The sensitivity of these receptors is considered to be high. Therefore, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be moderate.

13.72 The assessment of construction noise has identified that there would be exceedances in the noise assessment criteria. At this stage a detailed construction programme is not available. It is assumed that the duration of exceedances would be short, i.e. not in excess of a period of 10 or more days in 15 consecutive days or for a total number of days exceeding 40 in a six month period. However this will need to be confirmed once the final construction programme is available.

## Construction Vibration

13.73 At this stage, the type and number of vibration-generating construction plant items, the programme and working methodologies to be applied are not known; these would be based on the final design, the ground conditions, and selected by the Contractor, who would be appointed after planning approval.

13.74 Percussive piling techniques can generate high levels of ground-borne vibration. It is not anticipated that piling would be required within 30m of the nearest sensitive receptors. With the potential exception of limited driven piles associated with the river works, it is understood that non-percussive techniques such as continuous flight auger (CFA) will be employed across the majority of the proposed Application 4 development. As such, vibration from piling will not be considered further.

13.75 Ground-borne vibration calculations have been performed for construction activities typically required for similar developments. The calculations are based on the empirical prediction procedures presented within BS 5228-2. The distances at which vibration levels are predicted to meet the criteria thresholds, based on a specified confidence limit (where applicable) are set out in **Appendix 13.5**.

13.76 The results of the assessment show that for vibration to be just perceptible within residential properties (PPV <0.3mm/s), vibration generating works would need to take place at distances within 80m of the closest sensitive receptors surrounding the Application 4 area of the Site. For all vibration generating activities which occur at more than 80m from sensitive receptors, vibration levels are predicted to not be perceptible (i.e. <0.3mm/s) and the magnitude of impact would be negligible. A direct, temporary, short-term, adverse negligible effect is predicted.

13.77 For the majority of vibration generating activities which take place within 80m of sensitive receptors the impact magnitude would be low. A direct, temporary, short-term adverse minor effect is predicted.

13.78 When vibratory rollers are used within 30m of the closest sensitive receptor the impact magnitude would be medium. A direct, temporary, short-term adverse moderate effect is predicted and therefore has the potential to give rise to a significant effect at NSR16. The duration of exceedance would be short and would not be in excess of a period of 10 or more days in 15 consecutive days or for a total number of days exceeding 40 in a six month period.

## Construction Phase Development-Generated Road Traffic Noise

13.79 The results of the Transport Assessment have been used as the basis for determining the change in noise levels arising on existing roads as a result of construction traffic. BNL calculations have been carried out in general accordance with CRTN, being undertaken for a notional receptor location 10m from the edge of the carriageway of each road considered. A notional receptor has been used because the change in traffic noise level adjacent to any given road will be the same at all distances where noise from that route is dominant. Traffic noise calculations have been undertaken to establish the change in the daytime $L_{A10,18hr}$ noise level for the worst case

number of daily trips for each construction route during the construction of Application 4 and Application 5, i.e. Q1-Q2 in 2026 for construction traffic accessing the Site via Red Bank Road and Q1-Q2 in 2027 for construction traffic accessing the Site via Collyhurst Road.

13.80 Predictions have been undertaken for the following scenarios:

- Scenario C1: 2019 Baseline Without Application 4; and
- Scenario C2: 2019 Baseline With Application 4.

13.81 The changes in road traffic noise have been determined by subtracting the noise level determined for Scenario C1, from that determined for Scenario C2. The resulting change is therefore that associated with the additional construction traffic movements.

13.82 In practice, construction traffic will not occur until the year of commencement. Prevailing flows in that year are expected to be greater than the baseline year. Adopting the baseline year represents a worst case in terms of the potential noise level changes that could arise.

13.83 The predicted road traffic noise levels and changes in road traffic noise due to construction traffic for each considered link is set out in full in **Appendix 13.6**. The links subject to the highest noise level changes, at worst, range between +1.2dB to +2.8dB, on Red Bank Road and Collyhurst Road respectively. The noise level changes on these routes due to construction traffic remain less than +3dB and the absolute noise level is below the SOAEL therefore the magnitude of impact is low. An indirect, temporary, medium-term, adverse minor effect is predicted.

13.84 For all remaining routes noise level changes range from 0.0dB to +0.6dB at worst and the magnitude of impact is negligible. An indirect, temporary, medium-term, adverse negligible effect is predicted.

13.85 In the Baseline 2019 scenario, the absolute noise levels (at nominal 10m distances from each route section), range from 62.0 to 70.4dB $L_{A10,18hr}$. With respect to the NPSE, and based on **Table 13.24** in **Appendix 13.3**, these levels range from the LOAEL to SOAEL. This range of effect levels remains unchanged when considering the with construction scenarios and therefore no change in significance occurs.

## The Completed and Operational Development

### Development-generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.86 The proposed Application 4 development is anticipated to include fixed plant items with the potential to generate noise. At this stage, details of the type, number and location of any such plant are yet to be confirmed. Therefore, it is appropriate to specify suitable noise limits to which any such plant or operations should conform.

## Operational Phase Development-Generated Road Traffic Noise

13.87 The assessment of development generated road traffic noise has followed the same principle of approach as the construction traffic noise assessment, only with the following scenarios considered:

- Scenario O1: 2019 Baseline Without Application 4.
- Scenario O4: 2032 Future Year –With Application 4
- Scenario O5: 2032 Future With Application 4 and cumulative developments'

13.88 The changes in road traffic noise have been determined by subtracting the noise level determined for Scenario O1, from that determined for Scenario O4 and Scenario O5. The resulting change is therefore that associated with the additional development generated traffic movements associated with Application 4.

13.89 The predicted road traffic noise levels and changes in road traffic noise due to development generated traffic noise for each considered link is set out in full in **Appendix 13.6**. The links subject to the highest noise level change of +3.1dB, occur on Roger Street and the magnitude of impact is low. An indirect, permanent, long-term, adverse minor effect is predicted.

13.90 For all remaining routes noise level changes range from -0.2dB to +2.0dB at worst and the magnitude of impact is negligible. An indirect, permanent, long-term, adverse negligible effect is predicted.

13.91 In the Baseline 2019 scenario, the absolute noise levels (at nominal 10m distances from each route section), range from 59.6 to 83.0dB $L_{A10,18hr}$. With respect to the NPSE, and based on Table 13.10 in **Appendix 13.3**, these levels range from the LOAEL to the SOAEL. This range of effect levels remains unchanged when considering the development generated scenarios and therefore no change in significance occurs.

## Noise sources contributing to the prevailing sound environment across the Site

Proposed Residential

13.92 The dominant existing noise sources affecting the Application 4 site are road traffic and rail movements on the Victoria Station railway line. The highest calculated levels of road traffic noise on each building façade, together with the minimum sound performance requirements to be achieved, are presented in **Table 13.5**. The calculated values are the highest free-field noise levels at 1 m from each façade for the day and night-time assessment scenarios.

***Table 13.5:*** *Predicted daytime and night-time noise levels at the external façades of sensitive areas of development in Application 4 and minimum sound insulation performance requirements, free-field*

| Development Plot | Façade with the Highest Noise Level | Day (0700 – 2300 hrs) $L_{Aeq,\ 16\ hours}$ dB | Night (2300 -0700 hrs $L_{Aeq,\ 8\ hours}$ dB | Typical Night-time Maximum Noise Level $L_{AFMax}$ dB | Minimum Sound Reduction Required, dB |
|---|---|---|---|---|---|
| RB01 | Northern | 53 | 45 | 56 | 18 |
| RB02 | Southern | 52 | 43 | 53 | 17 |
| RB03 | Southern | 49 | 42 | 53 | 14 |
| RB04 | Southern | 50 | 43 | 53 | 15 |
| RB05A | Western | 45 | 48 | 56 | 18 |
| RB05B | Southern | 54 | 46 | 52 | 19 |
| RB05C | Southern | 50 | 43 | 51 | 15 |
| RB06 | South-eastern | 58 | 50 | 65 | 23 |
| RB07 | South-eastern | 57 | 50 | 63 | 22 |
| RB10 | Southern | 68 | 63 | 81 | 36 |
| RB12B | North-western | 65 | 57 | 79 | 34 |
| RB16 | Southern | 62 | 54 | 74 | 29 |
| RB17 | Southern | 62 | 54 | 74 | 29 |

13.93 Details and specifications of the external cladding systems and other façade elements are not confirmed at this stage. The sound insulation performance of the glazing and method of ventilation, i.e. the weakest elements of the building façade, will be particularly important for development plots RB10, RB12B, RB16 and RB17.

Proposed School – Development Plot RB05B

13.94 The prevailing noise environment at the proposed school site, i.e. development plot RB05B, is dominated by distant road traffic on Dantzic Street and Collyhurst Road. The highest calculated levels of road traffic noise at the development plot are in the region of 54dB $L_{Aeq,\ 16\ hour}$.

13.95 **Table 13.6** compares the calculated daytime noise level at the southern boundary of the school development plot with the adopted assessment criterion taken from **Table 13.7** in **Appendix 13.2**. Also presented is the calculated façade attenuation requirement necessary to achieve the adopted internal noise level criterion.

***Table 13.6****: Predicted daytime noise levels at the Proposed School Site in Application 4 and minimum sound insulation performance requirements, free-field*

| Development Plot | Façade with the Highest Noise Level | Day (0700 – 2300 hrs) $L_{Aeq,\ 16\ hours}$ dB | Internal Assessment Criteria $L_{Aeq,30mins}$ dB | Minimum Sound Reduction Required, dB |
|---|---|---|---|---|
| RB05B | Southern | 54 | 32 | 22 |

13.96 Drawing upon the internal criteria for schools as set out in **Appendix 13.2**, the required façade attenuation performance is likely to be achieved through the use of closed thermal double glazing and acoustically attenuated trickle ventilators.

13.97 In order to meet the requirement for at least one external teaching area to have a noise level below 50dB $L_{Aeq,30mins}$, a reduction of up to 4dB will be required. This can be easily achieved and is considered further within the mitigation section.

13.98 The above assessment has demonstrated that the adopted assessment criteria can be easily achieved with appropriate consideration to building fabrication and site layout design etc. In accordance with **Table 13.15** in **Appendix 13.3** this corresponds to a Low impact. For High sensitivity receptors, as present in this case, this corresponds to a Minor adverse effect at worst (not significant). This effect would be long-term, direct, local and permanent.

13.99 With respect to the NPSE, and based on **Table 13.15** in **Appendix 13.3**, this corresponds to LOAEL.

## Additional Mitigation / Enhancement Measures (Application 4)

### Demolition and Construction

#### Construction Noise and Vibration

13.100 BPM measures would be secured through the Construction Environmental Management Plan (CEMP) which would be prepared and submitted to MCC for approval. The need for noise and vibration monitoring and the setting of trigger action levels to assist in controlling noise and vibration at potentially sensitive receptor locations would be identified during the preparation of the CEMP and would also form a committed mitigation measure where identified as necessary.

#### Construction Phase Development Generated Traffic

13.101 No secondary mitigation or enhancement has been identified at this stage.

### The Completed and Operational Development

#### Development-generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.102 Plant noise level limits could be incorporated into an appropriately worded planning condition thereby ensuring subsequent compliance and an appropriate means of control. It is assumed that the location of plant will be well removed from any existing noise sensitive receptors, but adjacent to proposed new residential development.

13.103 The short-term unattended baseline measurement locations, ML2 to ML5, are considered to be representative of the proposed dwellings. The representative background sound levels for these locations (taken from **Appendix**

**13.4**) have been used to set the allowable plant noise level. The allowable fixed plant noise level limit has been set 5dB below the background noise level, which corresponds to an impact magnitude of negligible.

13.104 The allowable plant noise level limits have been set in terms of the Rating Level ($L_{Ar,Tr}$). This is the allowable level after applying any acoustic character corrections.

13.105 The resulting plant noise level limits are presented in **Table 13.7** below.

***Table 13.7:*** *Receptor Noise Limits for Proposed Fixed Plant, dB*

| Location | Time-Period | Representative Background Sound Level ($L_{A90,T}$) | Proposed Fixed Plant Noise Rating Level Limit ($L_{Ar,Tr}$) |
|---|---|---|---|
| Proposed Residential Dwellings | Daytime | 41 | 36 |
| | Night-time | 39 | 34 |

13.106 The above limits apply to the cumulative noise emission from all fixed plant at the receptor location.

## Operational Phase Development-Generated Road Traffic Noise

13.107 No secondary mitigation or enhancement has been identified at this stage.

## Noise sources contributing to the prevailing sound environment across the Site

Proposed Residential

13.108 **Appendix 13.8** provides further details on the possible façade configurations capable of meeting the sound insulation performances required to achieve the adopted internal criteria across the development. Configurations are for guidance only, to demonstrate that the specified minimum sound reduction indices are achievable. Other configurations could be used, providing that they meet the required minimum sound reduction indices.

13.109 The need to agree façade configurations with MCC prior to the construction of each phase of the proposed Application 4 development could be incorporated in an appropriate planning condition, thereby ensuring subsequent compliance with the internal noise criteria and an appropriate means of control.

Proposed School – Development Plot RB05B

13.110 The completed assessment has identified that with due consideration to the fabrication of the school building façade, and scheme layout design, the adopted internal noise assessment criteria can be achieved across the proposed school development plot.

13.111 With regards to the external noise levels, it has been identified that the parts of the site that are exposed to the highest road traffic noise levels require mitigation to address potential significant adverse effects at proposed external teaching spaces.

13.112 In order to achieve the BB93 requirement that at least one teaching space has noise levels below 50dB $L_{Aeq,30mins}$, a minimum noise attenuation of 4dB will be required. This can be achieved by the provision of external teaching spaces located on the northern and screened side of the school building, for which daytime noise levels of 50dB are predicted.

13.113 It can therefore be seen that sufficient measures are available for adoption at the detailed design stage to ensure that both internal and external assessment criteria can be achieved across the educational parameter area.

## Likely Residual Effects of the Development and their Significance (Application 4)

### Demolition and Construction

#### Construction Noise

13.114 The sensitivity of the receptors is considered to be high. The magnitude of impact, following secondary mitigation ranges from negligible to medium. Therefore, there is likely to be direct, temporary and medium-term, adverse residual effects ranging from negligible to moderate.

13.115 With regards to the NPSE, the applicable effects levels would be NOEL and SOAEL at worst.

13.116 For the nearest future residential receptors on Dantzic Street (i.e. NSR7) the effect is considered to be Significant when the foundations and piling works (i.e. Activity 2) are undertaken. However, generally and for the remaining receptors the effect is considered to be Not Significant.

#### Construction Vibration

13.117 The sensitivity of the receptors is considered to be high. The magnitude of impact, following secondary mitigation ranges from negligible to medium. Therefore, there is likely to be direct, temporary short-term, adverse residual effects ranging from negligible to moderate.

13.118 With regards to the NPSE, the applicable Effect Levels would be NOEL and SOAEL.

13.119 For the nearest proposed residential receptors of the Proposed Development (i.e. NSR16) the effect is considered to be Significant when vibratory rollers are used within 30m of the receptor. However, generally and for the remaining receptors the effect is considered to be Not Significant.

### Construction Phase Development-Generated Road Traffic Noise

13.120 The sensitivity of the receptors is considered to be high. The magnitude of impact, in the absence of secondary mitigation remains from negligible to low. Therefore, there is likely to be direct, temporary medium-term, adverse residual effects ranging from negligible to minor.

13.121 NPSE effect level range is NOEL to SOAEL, these are unchanged by development generated traffic. This effect is considered to be Not Significant.

## The Completed and Operational Development

### Development generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.122 The sensitivity of the receptors is considered to be high. The magnitude of impact, following secondary mitigation remains negligible. Therefore, there is likely to be direct, permanent, long-term, negligible effect.

13.123 With regard to the NPSE, compliance with the derived noise level limits corresponds to NOEL.

13.124 This effect is considered to be Not Significant.

### Operational Phase Development-Generated Road Traffic Noise

13.125 The sensitivity of the receptors is considered to be high. The magnitude of impact, in the absence of secondary mitigation ranges between negligible and low. Therefore, there is likely to be direct, permanent, long-term, adverse residual effect ranging from negligible to minor.

13.126 NPSE effect level range is NOEL to SOAEL, these are unchanged by development generated traffic.

13.127 This effect is considered to be Not Significant.

### Noise sources contributing to the prevailing sound environment across the Site

Proposed Residential

13.128 The sensitivity of the proposed residential spaces within the proposed Application 4 development is considered to be High and the magnitude of impact is considered to be negligible. Therefore, there is likely to be a direct, permanent, long term negligible effect on the proposed residential receptors.

13.129 With respect to the NPSE, this corresponds to LOAEL.

13.130 This effect is considered to be Not Significant.

Proposed School – Development Plot RB05B

13.131 The sensitivity of the proposed school within the proposed Application 4 development is considered to be High and the magnitude of impact is considered to be negligible. Therefore, there is likely to be a direct, permanent, long term negligible effect on the proposed residential receptors.

13.132 With respect to the NPSE, this corresponds to LOAEL.

13.133 This effect is considered to be Not Significant.

***Table 13.8:*** *Residual Effects Summary for Application 4*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Construction noise from the Application 4 | For receptors NSR2 to NSR6 and NSR11 to NSR15, there is likely to be a direct, temporary, medium-term, adverse effect which is considered to be negligible.<br><br>For receptors NRS1, NSR8 to NSR10, NSR16 and NSR17, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be minor to moderate.<br><br>For NSR7 there is likely to be a direct, temporary, short-term, adverse effect which is considered to be moderate and therefore has the potential to give rise to a significant effect. | No mitigation or enhancement has been identified. | Direct, temporary, **adverse** residual effects ranging from **negligible to moderate.**<br>For NSR7, the effect is considered to be **significant.** For all other receptors, the effect is considered to be **not significant**. |
| Construction vibration from Application 4 | For the majority of vibration generating activities which take place within 80m of sensitive receptors the impact magnitude would be low. A direct, temporary, short-term adverse minor effect | No mitigation or enhancement has been identified. | Direct, temporary short-term, **adverse** residual effects ranging from **negligible to moderate.**<br>For NSR16, the effect is considered to be **significant.** For all other receptors, the effect is considered to be **not** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| | is predicted.<br><br>For the receptor NSR16, when vibratory rollers are used within 30m of the closest sensitive receptor the impact magnitude would be medium. A direct, temporary, short-term adverse moderate effect is predicted and therefore has the potential to give rise to a significant effect. | | **significant.** |
| Changes in road traffic noise as a result of construction phase development generated traffic. | Direct, temporary medium-term, adverse residual effects ranging from negligible to minor. | No mitigation or enhancement has been identified. | Direct, temporary medium-term, **adverse** residual effects ranging from **negligible to minor**. This effect is considered to be **not significant.** |
| ***Completed Development*** | | | |
| Development generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant. | Direct, temporary medium-term, adverse residual effects ranging from negligible to minor. | Plant noise level limits could be incorporated into an appropriately worded planning condition thereby ensuring subsequent compliance and an appropriate means of control. | Direct, permanent, **negligible** residual effects. This effect is considered to be **not significant.** |
| Changes in road traffic noise as a result of operational phase development generated traffic. | Direct, temporary long-term, adverse residual effects ranging from negligible to minor. | No mitigation or enhancement has been identified. | Direct, permanent, long-term, **adverse** effect ranging from **negligible to minor.** This effect is considered to be **not significant** |
| Noise sources contributing to the prevailing sound environment across the Site, i.e. road traffic on the existing local road network | Direct, permanent, long term negligible effect on the proposed residential receptors. | **Appendix 13.8** provides further details on the possible façade configurations capable of meeting the sound insulation performances required to achieve the adopted internal criteria across the development. | Direct, permanent, long term **negligible** effect on the proposed residential receptors. This effect is considered to be **not significant** |

## Conclusions (Application 4)

13.134 This chapter has considered the potential significant noise and vibration related effects that could arise as a result of the proposed Application 4 development. Consideration has been given to both the construction and operational phases of the development and the impact that could arise on existing local receptors. Consideration has also been given to the on-site noise environment, its suitability for the proposed noise sensitive uses (residential and a school) and whether there is the scope for appropriate noise mitigation measures to be incorporated at the detailed design stage where this is necessary.

13.135 The completed assessment work has been undertaken in accordance with national and local planning policy as well as applicable British Standards and best practice guidance, and draws upon the results of the baseline noise surveys undertaken on and in the vicinity of the site and the future baseline assessment.

13.136 With respect to construction noise and vibration, a number of best practice mitigation measures have been presented to minimise construction noise and vibration levels, for incorporation into the proposed Construction Environmental Management Plan (CEMP).

13.137 The assessment of construction traffic noise has identified that level changes on local road traffic routes range between +1.2 and +2.8dB. Such level changes are not sufficient to give rise to any significant effects, or the need for additional mitigation.

13.138 The assessment of operational phase development-generated road traffic noise has identified that level changes on the surrounding network due to both the proposed Application 4 development and other committed developments would range between -0.2 and +3.1dB in the future opening year of 2032. Such level changes are not sufficient to give rise to any significant effects, or the need for additional mitigation.

13.139 The assessment has included the determination of appropriate limits for the control of mechanical/fixed plant. These limits have been set based on the results of the baseline noise survey, at a level sufficiently low that significant effects would not be anticipated to arise. It has been demonstrated how compliance with such limits could be ensured with the use of an appropriate planning condition.

13.140 The assessment of potential noise impact on the noise sensitive aspects of the scheme (residential and school) has identified that across the residential and potential school development areas, applicable internal noise level criteria can be achieved with due consideration to building fabrication and scheme layout design considerations.

13.141 The assessment of external noise levels has identified that for the parts of the potential school site subject to the highest transportation noise levels, mitigation is required in the form of acoustic screening (bunds/acoustic barriers etc.) with associated increased separation distances and careful layout design. It has been demonstrated with the incorporation of such measures at the detailed design stage, noise levels can be controlled to appropriate levels within primary teaching spaces.

13.142 With these measures in place, the resulting impact is identified to be low, and sufficiently controlled such that significant effects would not arise.

## Cumulative Effects with Identified Committed Schemes (Application 4)

### Approach

13.143 There is the potential for cumulative effects to occur as a result of the proposed Application 4 development and cumulative schemes identified in the surrounding area. Cumulative effects may arise during both the demolition and construction phase and the operational phase.

13.144 The scope of this chapter relates to human response to noise and vibration. The following study areas have been adopted for the assessment:

- Construction noise arising from the proposed Application 4 development has been assessed at selected noise sensitive receptors within a study area of approximately 300m from the Application 4 site.
- Construction vibration arising from the proposed Application 4 development has been assessed at selected vibration sensitive receptors within a study area of approximately 100m from the Application 4 site.
- Operational noise from commercial activities has been assessed at selected sensitive receptors within a study area of approximately 100m from the Application 4 site.
- Development-generated road traffic noise is assessed for the existing road network. The adopted study area includes all routes in the traffic model developed for the Transport Assessment submitted in support of the planning application. The study area is also described in **Chapter 11 Transport and Access**.

### Likely Residual Cumulative Effects and their Significance

13.145 A review of the Cumulative Schemes identified in **Table 2.3** of **Chapter 2: Approach** has been undertaken to determine the potential for cumulative effects to arise. **Table 13.9** below summarises the outcomes of this review and those sites which have been considered within the cumulative assessment of construction and operational phase effects.

***Table 13.9:*** *Cumulative Effects Summary*

| Site Ref | Application Number | Proposal | Approx. Distance to Site | Status | Justification |
|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | Collyhurst Village | 650m north-east | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments.<br><br>Taking into consideration the distance between the Proposed Development and the committed development, it is considered |

| Site Ref | Application Number | Proposal | Approx. Distance to Site | Status | Justification |
|---|---|---|---|---|---|
| | | | | | unlikely that the developments would have common noise sensitive receptors. |
| 2 | 127971/FO/2020 | Osborne Yard | 950m east | Scoped out | This development is situated outside the scope of the study area for the construction and operational stage assessments.<br>Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 3 | 128248/FO/2020 | The Gasworks | 45m south | Scoped In | The potential impacts of demolition/construction stage activities on noise sensitive receptors of this Proposed Development have been considered as part of the assessment (NSR8).<br>Taking into consideration the results of the construction stage assessment for the Proposed Development and committed development, and assuming the piling activities for both scheme do not occur at the same time, it is unlikely that there would be a perceptible in-combination effect at common receptors situated to the south of the Site.<br>It is considered that any fixed plant associated with the operational stage of the committed development would be controlled by plant noise level limits to ensure a negligible effect at the nearest noise sensitive receptors. |
| 4 | 116366/FO/2017 | Meadowside | 90m south | Scoped In | The potential impacts of demolition/construction stage activities on noise sensitive receptors of this Proposed Development have been considered as part of the assessment (NSR9).<br>Taking into consideration the results of the construction stage assessment for the Proposed Development and committed development, and assuming the piling activities for both scheme do not occur at the same time, it is unlikely that there would be a perceptible in-combination effect at common receptors situated to the south of the Site.<br>It is considered that any fixed plant associated with the operational stage of the committed development would be controlled by plant noise level limits to ensure a negligible effect at the nearest noise sensitive receptors. |
| 5 | 127537/FO/2020 | 25 Rochdale Road | 340m south | Scoped Out | This development is situated outside the scope of the study area for the construction |

| Site Ref | Application Number | Proposal | Approx. Distance to Site | Status | Justification |
|---|---|---|---|---|---|
| | | | | | and operational stage assessments.<br>Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 6 | 124973/FO/2019 | 2 and 3 Angel Square | 260m south | Scoped In | The noise assessment submitted in support of application does not include a construction phase assessment. Taking into consideration the distance between the Proposed Development and the committed development, and screening provided by intervening buildings, it is unlikely that there would be an in-combination effect at common receptors situated to the south of the Site.<br>This development is situated outside the scope of the study area from the operational stage assessments. |
| 7 | 126944/FO/2020 | Victoria Riverside | 0m south (adjacent to Site boundary) | Scoped In | The potential impacts of demolition/construction stage activities on noise sensitive receptors of this Proposed Development have been considered as part of the assessment (NSR7).<br>Taking into consideration the results of the construction stage assessment for the Proposed Development and committed development, and assuming the piling activities for both scheme do not occur at the same time, it is unlikely that there would be a perceptible in-combination effect at common receptors situated to the south of the Site.<br>It is considered that any fixed plant associated with the operational stage of the committed development would be controlled by plant noise level limits to ensure a negligible effect at the nearest noise sensitive receptors. |
| 8 | 131708/FO/2021 | 87 Rochdale Road | 200m south | Scoped Out | The noise assessment submitted in support of application does not include a construction phase assessment. Taking into consideration the distance between the Proposed Development and the committed development, and screening provided by intervening buildings, it is unlikely that there would be an in-combination effect at common receptors situated to the south of the Site.<br>This development is situated outside the scope of the study area from the operational stage assessments. |

| Site Ref | Application Number | Proposal | Approx. Distance to Site | Status | Justification |
|---|---|---|---|---|---|
| 9 | 128997/FO/2020 | 40 Swan Street | 560m south | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 10 | 121380/FO/2018 | Swan House | 510m south | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 11 | 124888/FO/2019 | New Cross Central | 665m south | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 12 | 121375/FO/2018 | 20 – 36 High Street | 720m south | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 13 | 125678/FO/2019 | Peeler's Yard | 480m south | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 14 | 132416/FO/2021 | Great Ducie Street | 390m south-east | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 15 | 122280/FO/2019 | Mirabel Street | 450m south-east | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance |

| Site Ref | Application Number | Proposal | Approx. Distance to Site | Status | Justification |
|---|---|---|---|---|---|
| | | | | | between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 16 | 127901/FO/2020 | Manchester Arena Expansion | 290m south-east | Scoped Out | This development is not considered to be noise sensitive. |
| 17 | 131314/FO/2021 | 39 Deansgate (Speaker's House) | 820m south-east | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 18 | 130553/FO/2021 | Island, John Dalton Street | 1.1km south-east | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 19 | 130354/FO/2021 | Eliza Yard | 870m south-east | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 20 | 130627/FO/2021 | Ancoats Mobility Hub | 770m south-east | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 21 | 113914/FO/2016 | 1 Lord Street | 140m west | Scoped Out | The noise assessment submitted in support of application does not include a construction phase assessment. Taking into consideration the distance between the Proposed Development and the committed development, and screening provided by intervening buildings, it is unlikely that there would be an in-combination effect at common receptors situated to the west of the Site. This development is situated outside the scope of the study area from the operational stage assessments. |
| 22 | 18/71330/FUL | Uptown | 850m south- | Scoped | This development is situated outside the |

| Site Ref | Application Number | Proposal | Approx. Distance to Site | Status | Justification |
|---|---|---|---|---|---|
| | | | west | Out | scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 23 | 20/76134/FUL | Maldron Hotel, Chapel Street | 1km south-west | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 24 | 19/74465/HYBEIA | Cortland at Collier's Yard / Bankside | 960m south-west | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 25 | 15/66806/FUL | Embankment Exchange | 640m south-west | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |
| 26 | 19/74205/FULEIA | Waterloo Place | 620m south-west | Scoped Out | This development is situated outside the scope of the study area for the construction and operational stage assessments. Taking into consideration the distance between the Proposed Development and the committed development, it is considered unlikely that the developments would have common noise sensitive receptors. |

13.146 Once the proposed Application 4 development becomes operational, it will generate additional traffic on the local road network. Where one or more developments are in close proximity, traffic generated by each development may be distributed onto the same roads within the local network. The greatest effects will therefore be on sensitive receptors located adjacent to those roads likely to experience a change in traffic volume or composition as a result of the operation of the developments, in-combination.

13.147 Traffic data used in the assessment of operational phase effects takes into consideration traffic growth on the local road network. In the calculation of the traffic data, the Project Transport Consultants have reviewed the list

of identified cumulative developments to filter out those with minimal / negligible trip generation or that are located at a distance where they would not impact the same road network as the proposed Application 4 development. The cumulative schemes identified for inclusion within the traffic data included: Meadowside, Victoria Riverside, Ancoats Mobility Hub and Cortland. The future year modelling results are therefore inherently cumulative as they take into account the contributions from development generated road traffic associated with the identified cumulative schemes. A separate cumulative assessment is not therefore required.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

13.148 For construction noise, with the implementation of best practice mitigation measures as set out in Paragraph 13.54 to 13.56, the residual cumulative effects during demolition and construction would remain as reported for Application 4, i.e. direct, temporary adverse residual effects ranging from negligible to moderate. However, generally the effect is considered to be Not Significant.

13.149 For construction vibration, with the implementation of best practice mitigation measures as set out in Paragraph 13.54 to 13.56, the residual cumulative effects during demolition and construction would therefore remain as reported for Application 4, i.e. direct, temporary adverse residual effects ranging from negligible to moderate. However, generally the effect is considered to be Not Significant.

#### The Completed and Operational Development

13.150 As noted above, a separate cumulative assessment is not required for the operational phase as the traffic data used in the assessment, and therefore the modelling results, are inherently cumulative. The cumulative effect will therefore remain as reported for Application 4, i.e. direct, permanent**, negligible adverse** residual effect ranging from negligible to minor, and **not significant**.

## Cumulative Effects with Identified Committed Schemes + SRF (Application 4)

### Approach

13.151 There is the potential for cumulative effects to occur as a result of Application 4, the Strategic Regeneration Framework (SRF) and cumulative schemes identified in the surrounding area. Cumulative effects may arise during both the demolition and construction phase and the operational phase. It is assumed that most of the cumulative developments identified within **Table 13.9** will be completed or largely completed prior to the development of the wider SRF.

13.152 Trip generation associated with the Application 4 Site will therefore form part of the future baseline and will be assessed as part of the detailed assessments for each subsequent development plot. Once Application 4 becomes operational, it will generate additional traffic on the local road network. Where one or more developments are in close proximity, traffic generated by each development may be distributed onto the same

roads within the local network. The greatest effects will therefore be on sensitive receptors located adjacent to those roads likely to experience a change in traffic volume or composition as a result of the operation of the developments, in-combination.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

Construction Noise

13.153 With the implementation of best practice mitigation measures, it is unlikely there will be significant cumulative noise effects as a result of the combination of Application 4, the SRF and cumulative developments. Therefore, it is anticipated that the residual cumulative effect will, at worst, remain as reported for Application 4, i.e. direct, temporary, adverse residual effects ranging from negligible to major. For NSR7, the effect is considered to be significant.

Construction Vibration

13.154 Taking into consideration the distances between the existing and future noise sensitive receptors, the nearest development plot within each phase, the SRF and cumulative developments, it is unlikely the vibration generating activities will result in perceptible in-combination vibration effect. Therefore, it is anticipated that the cumulative effect will, at worst, remain as reported for Application 4, i.e. direct, temporary short-term, adverse residual effects ranging from negligible to moderate. For NSR16, the effect is considered to be significant.

Construction Phase Development Generated Road Traffic Noise

13.155 At the time of writing, insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF should these developments be brought forward during the construction phase of Application 4. Therefore, it is not currently possible to determine the potential changes in road traffic noise associated with Application 4 and cumulative developments in-combination with the SRF.

### The Completed and Operational Development

Development generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.156 With the implementation of best practice mitigation measures and adherence to plant noise limits, it is unlikely there will be significant cumulative noise effects as a result of the combination of the Application 4, the SRF and cumulative developments. Therefore, it is anticipated that the residual cumulative effect will, at worst, remain as reported for Application 4, i.e. a direct, permanent, long-term, negligible effect.

13.157 With regard to the NPSE, compliance with the derived noise level limits corresponds to NOEL. This effect is considered to be Not Significant.

Operational Phase Development Generated Road Traffic Noise

13.158 At the time of writing, insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF. Therefore, it is not currently possible to determine the potential changes in road traffic noise associated with Application 4 and cumulative developments in-combination with the SRF.

# NT02-NT04 (Full Application 5)

## Baseline Conditions (Application 5)

13.159 Existing noise sources contributing to the prevailing noise levels across the Application 5 area of the Site include:

- Road traffic noise from Red Bank (adopted highway) to the west of the Application 5 area of the Site, Dantzic Street and Collyhurst Way to the north of the Application 5 area of the Site and, to a lesser extent, the wider road network; and
- Noise from passenger and freight train movements along the Victoria Railway Line to the south of the Application 5 area of the Site.

13.160 Details of the baseline noise survey are presented in **Appendix 13.4**. The measurement locations are shown in **Figure 13.2** and a summary of the measurement data is presented in **Table 13.6** in **Appendix 13.4**.

### Future Baseline

13.161 Where road and rail traffic noise is a key contributor to the prevailing noise environment, it is anticipated that small increases in the baseline conditions may arise as a result of natural traffic growth over time or changes in rail traffic movement numbers. Future road traffic noise levels across the Site have been modelled taking into account natural traffic growth and the proposed reduction in speed along Dantzic Street from 30mph to 20mph.

13.162 When considering the potential impacts on existing receptors, adopting the current baseline noise environment in the determination of the background sound levels for assessment, represents a worst case as prevailing levels can reasonably be expected to be lower than those that will be arise in the future.

## Embedded Mitigation (Application 5)

### Demolition and Construction

13.163 Embedded mitigation for the proposed Application 5 development is as described for Application 4 in Paragraphs 13.54 to 13.56.

### The Completed and Operational Development

13.164 No primary and tertiary mitigation has been identified.

## Assessment of Likely Significant Effects (Application 5)

### Construction Noise

13.165 It is inevitable with any proposed major development that there will be some disturbance caused to those nearby during the construction works. However, disruption due to construction is localised and temporary in nature.

13.166 At this stage, the precise details of the noise generating sources during construction are not confirmed. Therefore, based on information provided by the Applicant's experience of similar schemes, predictions of the likely noise impacts from anticipated construction activities have been made which are indicative of the likely noise levels during the works. A more detailed assessment will be undertaken at a later stage (a requirement of the CEMP), once the principal Contractor has been appointed and detailed construction method statements are available.

13.167 It is acknowledged that the HIF Works will be ongoing (albeit reducing in scale to conclude in 2024) at the same time as site preparation and initial construction works are ongoing on the Application 5 site (starting in 2023). However, the assessment has been undertaken on the reasonable assumption that the nature of the works on both the HIF Works site and the Application 5 sites will be limited. It is anticipated that, by the time of the start of the works in Application 5, the major earth moving works will have been completed on the HIF Works site with only final grading and localised works being undertaken and consequently construction activities associated with the HIF works will be limited. The assessment of construction impacts for the Application 5 site reported in this chapter are based on key construction activities at typical and worst case locations, and it is therefore considered that the combined impacts of the HIF Works and Application 5 construction works as described would be less than those already assessed in this chapter.

13.168 Standard construction working hours are assumed to be:

- Monday to Friday: 07:30 to 18:00 hours;
- Saturday: 08:30 to 14:00 hours; and
- No working on Sundays or Bank Holidays.

13.169 It is possible that some working may be required outside of these hours, but where necessary, the appropriate permissions and notifications would be sought in advance with MCC.

13.170 It is anticipated that Application 5 would be delivered in one phase, over a 6 year construction programme commencing in 2023. The phasing plan for the development can be seen on the Phasing Plan in **Figure x.x**,:

13.171 The nature of works to be undertaken in the delivery of the proposed Application 5 development would be detailed within the CEMP, but for the purpose of this assessment it has been assumed that construction operations will be the same for each of the three phases, and can be broadly split into the following works:

- Activity 1 – Site preparation and remediation, including the movement of a medium pressure gas main.
- Activity 1a – Construction of the retaining wall against the operational railway viaduct and the movement of a main pressure gas main within Application 5 red line boundary.
- Activity 2 – Foundations and piling.
- Activity 3 – Erection of structure.

- Activity 4 – External and internal fitting out.
- Activity 5 - Groundworks and landscaping.

13.172 The assumed type and number of plant items associated with key construction working stages are presented in **Appendix 13.5**. In practice, and with the exception of the construction of the retaining wall against the operational railway viaduct, the activities would take place at different times and durations, and would move around the Site; consequently, construction noise at any receptor is likely to vary. Calculations have been undertaken based on all plant items positioned at a single location for the closest phase of work and at points considered to be the 'worst' and 'average' locations undertaken for each receptor. The worst case assumes all plant items for each construction activity are located at the nearest development plot of the closest phase of development. The average case considers that all plant are located at the approximate centre of that phase of development. The calculations for the construction of the retaining wall against the operational railway viaduct assume all plant items are located at the closest point for these works.

13.173 The high-level construction programme indicates that some of the Phases of works will overlap. For the purpose of this assessment, it is assumed that the construction works taking place in the phase closest to the noise sensitive receptors will dominate the construction noise levels generated. Therefore, for each receptor location, the predicted construction noise levels are presented for the works within the closest proposed phase of development.

13.174 **Table 13.10** sets out the range of construction noise levels calculated for each adopted receptor location. The range extends from the average case to the worst-case scenarios as described above.

***Table 13.10:*** *Predicted 'Average' and 'Worst' Case Construction Noise Levels for Application 5 – Façade* $L_{Aeq,10h}$ *(dB)*

| Receptor | Activity 1: Site Preparation and Remediation | Activity 1a: Construction of Retaining Wall | Activity 2: Foundations and Piling | Activity 3: Erection of Structure | Activity 4: External and internal fitting out | Activity 5: Groundworks and landscaping |
|---|---|---|---|---|---|---|
| NSR1 | 53-54 | 49 | 60-61 | 53-54 | 43-44 | 52-53 |
| NSR3 | 56-65 | 66 | 64-72 | 57-65 | 47-55 | 56-65 |
| NSR4 | 56-63 | 70 | 64-70 | 57-63 | 47-53 | 56-62 |
| NSR5 | 52-54 | 55 | 60-61 | 53-55 | 43-45 | 52-54 |
| NSR7 | 60-82 | 78 | 67-90 | 60-83 | 50-73 | 59-82 |
| NSR8 | 67-72 | 63 | 74-79 | 67-72 | 57-62 | 66-71 |
| NSR9 | 55-59 | 60 | 63-67 | 56-60 | 46-50 | 55-59 |
| NSR10 | 53-55 | 56 | 60-63 | 53-56 | 43-46 | 52-55 |
| NSR14 | 51-53 | 52 | 58-60 | 51-53 | 41-44 | 51-53 |
| NSR15 | 51-53 | 52 | 59-61 | 52-54 | 42-44 | 51-53 |

13.175 It is recognised that occasionally, higher construction noise levels could arise, for example, if works are required between the nearest development plot and the closest point of the red line boundary to sensitive receptors. However, it is anticipated that such works would be occasional and of short duration. The likelihood of significant effects is based on the predicted construction noise levels for the 'average' location of plant. The predicted construction noise levels for the 'average' case for the relevant Phase, as detailed in **Table 13.9**, have been compared against threshold criteria for each receptor. The results are given in **Table 13.11**. A negative value represents compliance, a positive value represents an exceedance.

**Table 13.11:** *Construction Noise Compliance for the Average Case for Application 5, dB*

| Receptor | Activity 1: Site Preparation and Remediation | Activity 1a: Construction of Retaining Wall | Activity 2: Foundations and Piling | Activity 3: Erection of Structure | Activity 4: External and internal fitting out | Activity 5: Groundworks and landscaping |
|---|---|---|---|---|---|---|
| NSR1 | -12 | -16 | -5 | -12 | -22 | -13 |
| NSR3 | -9 | +1 | -1 | -8 | -18 | -9 |
| NSR4 | -9 | +5 | -1 | -8 | -18 | -9 |
| NSR5 | -13 | -10 | -5 | -12 | -22 | -13 |
| NSR7 | -5 | +13 | +2 | -5 | -15 | -6 |
| NSR8 | +2 | -2 | +9 | +2 | -8 | +1 |
| NSR9 | -10 | -5 | -2 | -9 | -19 | -10 |
| NSR10 | -12 | -9 | -5 | -12 | -22 | -13 |
| NSR14 | -19 | -18 | -12 | -19 | -29 | -19 |
| NSR15 | -12 | -13 | -5 | -12 | -22 | -13 |

13.176 It can be seen from **Table 13.10** that for all working stages, the construction noise assessment criteria are met for receptors NSR3, NSR5, NSR9, NSR10, NSR14 and NSR15. Where the predicted noise levels do not exceed the assessment thresholds, the magnitude of impact is negligible and the NPSE classification is NOEL. The sensitivity of these receptors is considered to be high. There is likely to be a direct, temporary, medium-term, adverse effect which is considered to be negligible.

13.177 For receptor NSR1 (Activity 1a: Construction of retaining wall only), NRS4 (Activity 1a: Construction of retaining wall only), NSR7 (Activity 2: Foundations and piling only), NSR8 (Activity 1: Site Preparation and remediation, Activity 3: Erection of Structure and Activity 5: Groundworks and landscaping) an exceedance of up to +5dB is identified. The magnitude of impact is low to medium and the NPSE Classification is LOAEL. The sensitivity of these receptors is considered to be high. Therefore, there is likely to be a direct, temporary, medium-term, adverse effect which is considered to be minor to moderate.

13.178 For receptors NSR7 (Activity 1a: Construction of retaining wall only) and NSR8 (Activity 2: Foundations and piling only), an exceedance of up to +13dB and +9dB is identified respectively representing the greatest exceedances at

each receptor. For NSR7, it has been assumed that the nearest residential properties of this committed development would have been built out and be occupied by the time the nearest phase of the proposed Application 5 development is under construction.

13.179 For NSR7 and NSR8, the magnitude of impact is high and the NPSE Classification is SOAEL. The sensitivity of these receptors is considered to be high. Therefore, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be major.

13.180 The assessment of construction noise has identified that there would be exceedances in the noise assessment criteria. At this stage a detailed construction programme is not available. It is assumed that the duration of exceedances would be short, i.e. not in excess of a period of 10 or more days in 15 consecutive days or for a total number of days exceeding 40 in a six month period. However, this will need to be confirmed once the final construction programme is available.

## Construction Vibration

13.181 At this stage, the type and number of vibration-generating construction plant items, the programme and working methodologies to be applied are not known; these would be based on the final design, the ground conditions, and selected by the Contractor, who would be appointed after planning approval.

13.182 Percussive piling techniques can generate high levels of groundborne vibration. It is not anticipated that piling would be required within 30m of the nearest sensitive receptors. With the potential exception of limited driven piles associated with the river works, it is understood that non-percussive techniques such as continuous flight auger (CFA) will be employed across the majority of the proposed Application 5 development. As such, vibration from piling will not be considered further.

13.183 Ground-borne vibration calculations have been performed for construction activities typically required for similar developments. The calculations are based on the empirical prediction procedures presented within BS 5228-2. The distances at which vibration levels are predicted to meet the criteria thresholds, based on a specified confidence limit (where applicable) are set out in **Appendix 13.5**.

13.184 The results of the assessment show that for vibration to be just perceptible within residential properties (PPV <0.3mm/s), vibration generating works would need to take place at distances within 80m of the closest sensitive receptors surrounding the Site. For all vibration generating activities which occur at more than 80m from sensitive receptors, vibration levels are predicted to not be perceptible (i.e. <0.3mm/s) and the magnitude of impact would be negligible. A direct, temporary, short-term, adverse negligible effect is predicted.

13.185 For the majority of vibration generating activities which take place within 80m of sensitive receptors the impact magnitude would be low. A direct, temporary, short-term adverse minor effect is predicted.

13.186 When vibratory rollers are used within 30m of the closest sensitive receptor the impact magnitude would be medium. A direct, temporary, short-term adverse moderate effect is predicted and therefore has the potential to give rise to a significant effect at NSR7. The duration of exceedance would be short and would not be in excess of a period of 10 or more days in 15 consecutive days or for a total number of days exceeding 40 in a six month period.

## Construction Phase Development Generated Road Traffic Noise

13.187 The results of the Transport Assessment have been used as the basis for determining the change in noise levels arising on existing roads as a result of construction traffic. BNL calculations have been carried out in general accordance with CRTN, being undertaken for a notional receptor location 10m from the edge of the carriageway of each road considered. A notional receptor has been used because the change in traffic noise level adjacent to any given road will be the same at all distances where noise from that route is dominant. Traffic noise calculations have been undertaken to establish the change in the daytime $L_{A10,18hr}$ noise level for the worst case number of daily trips during the construction of Application 4 and Application 5, i.e. Q1-Q2 in 2027 for construction traffic accessing the Site via Collyhurst Road.

13.188 Predictions have been undertaken for the following scenarios:

- Scenario C1: 2019 Baseline Without Application 5; and
- Scenario C2: 2019 Baseline With Application 5.

13.189 The changes in road traffic noise have been determined by subtracting the noise level determined for Scenario C1, from that determined for Scenario C2. The resulting change is therefore that associated with the additional construction traffic movements.

13.190 In practice, construction traffic will not occur until the year of commencement. Prevailing flows in that year are expected to be greater than the baseline year. Adopting the baseline year represents a worst case in terms of the potential noise level changes that could arise.

13.191 The predicted road traffic noise levels and changes in road traffic noise due to construction traffic for each considered link is set out in full in **Appendix 13.6**. The links subject to the highest noise level changes, at worst, range between +1.2dB to +2.8dB, on Red Bank Road and Collyhurst Road respectively. The noise level changes on these routes due to construction traffic remain less than +3dB and the absolute noise level is below the SOAEL therefore the magnitude of impact is low. An indirect, temporary, medium-term, adverse minor effect is predicted.

13.192 For all remaining routes noise level changes range from 0.0dB to +0.6dB at worst and the magnitude of impact is negligible. An indirect, temporary, medium-term, adverse negligible effect is predicted.

13.193 In the Baseline 2019 scenario, the absolute noise levels (at nominal 10m distances from each route section), range from 62.0 to 70.4dB $L_{A10,18hr}$. With respect to the NPSE, and based on **Table 13.24** in **Appendix 13.3**, these levels range from the LOAEL to SOAEL. This range of effect levels remains unchanged when considering the with construction scenarios and therefore no change in significance occurs.

## The Completed and Operational Development

### Development generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.194 The proposed Application 5 development is anticipated to include fixed plant items with the potential to generate noise. At this stage, details of the type, number and location of any such plant are yet to be confirmed. Therefore, it is appropriate to specify suitable noise limits to which any such plant or operations should conform.

### Operational Phase Development Generated Road Traffic Noise

13.195 The assessment of development generated road traffic noise has followed the same principle of approach as the construction traffic noise assessment, only with the following scenarios considered:

- Scenario O1: 2019 Baseline Without Application 5.
- Scenario O2: 2029 Future Year With Application 5
- Scenario O3: 2029 Future Year With Application 5 and cumulative developments'

13.196 The changes in road traffic noise have been determined by subtracting the noise level determined for Scenario O1, from that determined for Scenario O2 and Scenario O3. The resulting change is therefore that associated with the additional development generated traffic movements associated with Application 5.

13.197 The predicted road traffic noise levels and changes in road traffic noise due to development generated traffic noise for each considered link is set out in full in **Appendix 13.6**. The links subject to the highest noise level change of +1.6dB, occur on Dantzic Street and the magnitude of impact is negligible. An indirect, permanent, long-term, adverse negligible effect is predicted.

13.198 In the Baseline 2019 scenario, the absolute noise levels (at nominal 10m distances from each route section), range from 59.6 to 83.0dB $L_{A10,18hr}$. With respect to the NPSE, and based on **Table 13.10** in **Appendix 13.3**, these levels range from the LOAEL to the SOAEL. This range of effect levels remains unchanged when considering the development generated scenarios and therefore no change in significance occurs.

### Noise sources contributing to the prevailing sound environment across the Site

13.199 The dominant existing noise sources affecting the Application 5 site are road traffic and rail movements on the Victoria Station railway line. The highest calculated levels of road traffic noise on each building façade, together with the minimum sound performance requirements to be achieved, are presented in **Table 13.12**. The

calculated values are the highest free-field noise levels at 1 m from each façade for the day and night-time assessment scenarios.

***Table 13.12:*** *Predicted daytime and night-time road traffic noise levels at the external façades of sensitive areas of development in Application 5 and minimum sound insulation performance requirements, free-field*

| Development Plot | Façade with Highest Noise Levels | Day (0700 – 2300 hrs) $L_{Aeq,\ 16\ hours}$ dB | Night (2300 -0700 hrs $L_{Aeq,\ 8\ hours}$ dB | Typical Night-time Maximum Noise Level $L_{AFMax}$ dB | Minimum Sound Reduction Required, dB |
|---|---|---|---|---|---|
| NT02 Amenity Clubhouse | North | 62 | N/A | N/A | 27 |
| NT02 Tower 1 | South | 64 | 59 | 81 | 36 |
| NT03 Tower 2 | North | 61 | 54 | 75 | 30 |
| NT03 Midrise 3 | South | 62 | 60 | 78 | 33 |
| NT03 Tail 3 | North | 58 | 51 | 75 | 30 |
| NT03 Tower 3 | South | 62 | 58 | 75 | 30 |
| NT04 Building 1 | South | 61 | 58 | 72 | 28 |
| NT04 Building 2 | South | 62 | 59 | 75 | 30 |
| NT04 Building 3 | North | 61 | 53 | 75 | 30 |

13.200 From the early stages of the design process, the sound insulation performances of the façades have been, and continue to be, one of the key performance requirements for the façade design. The sound insulation performance of the glazing and method of ventilation, i.e. the weakest elements of the building façade, will therefore be particularly important.

13.201 Based on the Detailed Plans for the Application 5 site, calculations have been undertaken to determine the minimum sound reduction required (per octave band) in order that the internal ambient noise limits can be achieved.

## Additional Mitigation / Enhancement Measures (Application 5)

### Demolition and Construction

#### Construction Noise and Vibration

13.202 BPM measures would be secured through the Construction Environmental Management Plan (CEMP) which would be prepared and submitted to MCC for approval. The need for noise and vibration monitoring and the setting of trigger action levels to assist in controlling noise and vibration at potentially sensitive receptor locations would be identified during the preparation of the CEMP and would also form a committed mitigation measure where identified as necessary.

#### Construction Phase Development-Generated Traffic

13.203 No secondary mitigation or enhancement has been identified at this stage.

### The Completed and Operational Development

#### Development generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.204 Plant noise level limits could be incorporated into an appropriately-worded planning condition thereby ensuring subsequent compliance and an appropriate means of control. It is assumed that the location of plant will be well removed from any existing noise sensitive receptors, but adjacent to proposed new residential development.

13.205 Representative background sound levels have been used to set allowable plant noise level limits, as set out in paragraphs 13.102 to 13.106. The allowable fixed plant noise level limit has been set 5dB below the background noise level, which corresponds to an impact magnitude of negligible.

13.206 The allowable plant noise level limits have been set in terms of the Rating Level ($L_{Ar,Tr}$). This is the allowable level after applying any acoustic character corrections.

13.207 The plant noise level limits apply to the cumulative noise emission from all fixed plant at the receptor location.

#### Operational Phase Development Generated Road Traffic Noise

13.208 No secondary mitigation or enhancement has been identified at this stage.

#### Noise sources contributing to the prevailing sound environment across the Site

13.209 **Appendix 13.8** provides further details on the possible façade configurations capable of meeting the sound insulation performances required to achieve the adopted internal criteria across the development. Configurations are for guidance only, to demonstrate that the specified minimum sound reduction indices are achievable. Other configurations could be used, providing that they meet the required minimum sound reduction indices.

13.210 The need to agree façade configurations with MCC prior to the construction of each phase of the proposed Application 5 development could be incorporated in an appropriate planning condition, thereby ensuring subsequent compliance with the internal noise criteria and an appropriate means of control.

## Likely Residual Effects of the Development and their Significance (Application 5)

### Demolition and Construction

#### Construction Noise

13.211 The sensitivity of the receptors is considered to be high. The magnitude of impact, following secondary mitigation ranges from negligible to high. Therefore, there is likely to be direct, temporary and medium-term, adverse residual effects ranging from negligible to major.

13.212 With regards to the NPSE, the applicable effects levels would be NOEL and SOAEL at worst.

13.213 For the nearest future residential receptors on Dantzic Street (i.e. NSR7) and Gould Street (i.e. NSR8) the effect is considered to be Significant during the construction of the retaining wall against the operational railway viaduct (Activity 1a) and foundations and piling works (i.e. Activity 2) respectively. However, generally and for the remaining receptors the effect is considered to be Not Significant.

### Construction Vibration

13.214 The sensitivity of the receptors is considered to be high. The magnitude of impact, following secondary mitigation ranges from negligible to medium. Therefore, there is likely to be direct, temporary short-term, adverse residual effects ranging from negligible to moderate.

13.215 With regards to the NPSE, the applicable Effect Levels would be NOEL and SOAEL.

13.216 For the nearest proposed residential receptors on Dantzic Street (i.e. NSR7) the effect is considered to be Significant when vibratory rollers are used within 30m of the receptor. However, generally and for the remaining receptors the effect is considered to be Not Significant.

### Construction Phase Development-Generated Road Traffic Noise

13.217 The sensitivity of the receptors is considered to be high. The magnitude of impact, in the absence of secondary mitigation remains from negligible to low. Therefore, there is likely to be direct, temporary medium-term, adverse residual effects ranging from negligible to minor.

13.218 NPSE effect level range is NOEL to SOAEL, these are unchanged by development generated traffic. This effect is considered to be Not Significant.

## The Completed and Operational Development

### Development-generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.219 The sensitivity of the receptors is considered to be high. The magnitude of impact, following secondary mitigation remains negligible. Therefore, there is likely to be direct, permanent, long-term, negligible effect.

13.220 With regard to the NPSE, compliance with the derived noise level limits corresponds to NOEL.

13.221 This effect is considered to be Not Significant.

### Operational Phase Development Generated Road Traffic Noise

13.222 The sensitivity of the receptors are considered to be high. The magnitude of impact, in the absence of secondary mitigation is negligible. Therefore, there is likely to be direct, permanent, long-term, adverse residual effect of negligible.

13.223 NPSE effect level range is NOEL to SOAEL, these are unchanged by development generated traffic.

13.224 This effect is considered to be Not Significant.

### Noise sources contributing to the prevailing sound environment across the Site

13.225 The sensitivity of the proposed residential spaces within Application 5 is considered to be High and the magnitude of impact is considered to be negligible. Therefore, there is likely to be a direct, permanent, long term negligible effect on the proposed residential receptors.

13.226 With respect to the NPSE, this corresponds to LOAEL.

13.227 This effect is considered to be Not Significant

***Table 13.13:*** *Residual Effects Summary for Application 5*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Construction noise from Application 5 | For receptors NSR3, NSR5, NSR9, NSR10, NSR14 and NSR15, there is likely to be a direct, temporary, medium-term, adverse effect which is considered to be negligible.<br><br>For receptors NSR1, NRS4, there is likely to be a direct, temporary, medium term, adverse effect which is considered to be minor to moderate.<br><br>For NSR7 and NSR8, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be major and therefore | No mitigation or enhancement has been identified. | Direct, temporary, **adverse** residual effects ranging from **negligible to major.** For NSR7 and NSR8, the effect is considered to be **significant.** For all other receptors, the effect is considered to be **not significant**. |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| | has the potential to give rise to a significant effect. | | |
| Construction vibration from Application 5 | For the majority of vibration generating activities which take place within 80m of sensitive receptors the impact magnitude would be low. A direct, temporary, short-term adverse minor effect is predicted.<br><br>For the receptor NSR7, when vibratory rollers are used within 30m of the closest sensitive receptor the impact magnitude would be medium. A direct, temporary, short-term adverse moderate effect is predicted and therefore has the potential to give rise to a significant effect. | No mitigation or enhancement has been identified. | Direct, temporary short-term, **adverse** residual effects ranging from **negligible to moderate.** For NSR7, the effect is considered to be significant. For all other receptors, the effect is considered to be **not significant**. |
| Changes in road traffic noise as a result of construction phase development generated traffic. | Direct, temporary medium-term, adverse residual effects ranging from negligible to minor. | No mitigation or enhancement has been identified. | Direct, temporary medium-term, **adverse** residual effects ranging from **negligible to minor**. This effect is considered to be **not significant.** |
| ***Completed Development*** | | | |
| Development generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant. | Direct, temporary medium-term, adverse residual effects ranging from negligible to minor. | Plant noise level limits could be incorporated into an appropriately worded planning condition thereby ensuring subsequent compliance and an appropriate means of control. | Direct, permanent, long-term, **adverse** effect of **negligible**. This effect is considered to be **not significant.** |
| Changes in road traffic noise as a result of operational phase development generated traffic. | Direct, temporary long-term, adverse residual effects of negligible. | No mitigation or enhancement has been identified. | Direct, permanent, long-term, **adverse** effect of **negligible**. This effect is considered to be **not significant** |
| Noise sources contributing to the prevailing sound environment across the | Direct, permanent, long term negligible effect on the proposed residential | **Appendix 13.8** provides further details on the possible façade configurations capable of | Direct, permanent, long term **negligible** effect on the proposed residential receptors. This effect is |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Site, i.e. road traffic on the existing local road network | receptors. | meeting the sound insulation performances required to achieve the adopted internal criteria across the development. | considered to be **not significant** |

## Conclusions (Application 5)

13.228 This chapter has considered the potential significant noise and vibration related effects that could arise as a result of Application 5. Consideration has been given to both the construction and operational phases of the development and the impact that could arise on existing local receptors. Consideration has also been given to the on-site noise environment, its suitability for the proposed noise sensitive uses (residential and potential noise-sensitive uses, such as offices, within the NT02 Amenity Clubhouse) and whether appropriate noise mitigation measures are incorporated at the detailed design stage where this is necessary.

13.229 The completed assessment has been undertaken in accordance with national and local planning policy as well as applicable British Standards and best practice guidance, and draws upon the results of the baseline noise surveys undertaken on and in the vicinity of the site and the future baseline assessment.

13.230 With respect to construction noise and vibration, a number of best practice mitigation measures have been presented to minimise construction noise and vibration levels, for incorporation into the proposed Construction Environmental Management Plan (CEMP).

13.231 The assessment of construction traffic noise has identified that level changes on local road traffic routes range between +1.2 and +2.8dB. Such level changes are not sufficient to give rise to any significant effects, or the need for additional mitigation.

13.232 The assessment of operational phase development generated road traffic noise has identified the highest level change on the surrounding network due to both Application 5 and other committed developments would be +1.6dB. in the future opening year of 2029 Such level changes are not sufficient to give rise to any significant effects, or the need for additional mitigation.

13.233 The assessment has included the determination of appropriate limits for the control of mechanical/fixed plant. These limits have been set based on the results of the baseline noise survey, at a level sufficiently low that significant effects would not arise. It has been demonstrated how compliance with such limits could be ensured with the use of an appropriate planning condition.

13.234 The assessment of potential noise impact on the noise sensitive aspects of the scheme has identified that across the residential development areas, applicable internal noise level criteria can be achieved with due consideration to building fabrication and scheme layout design considerations.

13.235 With these measures in place, the resulting impact is identified to be low, and sufficiently controlled such that significant effects would not arise.

## Cumulative Effects with Identified Committed Schemes (Application 5)

### Approach

13.236 There is the potential for cumulative effects to occur as a result of the proposed Application 5 development and cumulative schemes identified in the surrounding area. Cumulative effects may arise during both the demolition and construction phase and the operational phase.

13.237 The scope of this chapter relates to human response to noise and vibration. The following study areas have been adopted for the assessment:

- Construction noise arising from the proposed Application 5 development has been assessed at selected noise sensitive receptors within a study area of approximately 300m from the Application 5 site.
- Construction vibration arising from the proposed Application 5 development has been assessed at selected vibration sensitive receptors within a study area of approximately 100m of the Application 5 site.
- Operational noise from commercial activities has been assessed at selected sensitive receptors within a study area of approximately 100m from the Application 5 site.
- Development generated road traffic noise is assessed for the existing road network. The adopted study area includes all routes in the traffic model developed for the Transport Assessment submitted in support of the planning application. The study area is also described in **Chapter 11 Transport and Access**.

### Likely Residual Cumulative Effects and their Significance

13.238 **Table 13.9** summarises the outcomes of this review and those sites which have been considered within the cumulative assessment of construction and operational phase effects.

13.239 Once the proposed Application 5 development becomes operational, it will generate additional traffic on the local road network. Where one or more developments are in close proximity, traffic generated by each development may be distributed onto the same roads within the local network. The greatest effects will therefore be on sensitive receptors located adjacent to those roads likely to experience a change in traffic volume or composition as a result of the operation of the developments, in-combination.

13.240 Traffic data used in the assessment of operational phase effects takes into consideration traffic growth on the local road network. In the calculation of the traffic data, the Project Transport Consultants have reviewed the list of identified cumulative developments to filter out those with minimal / negligible trip generation or that are located at a distance where they would not impact the same road network as the Proposed Development. The cumulative schemes identified for inclusion within the traffic data included: Meadowside, Victoria Riverside, Ancoats Mobility Hub and Cortland. The future year modelling results are therefore inherently cumulative as they

take into account the contributions from development generated road traffic associated with the identified cumulative schemes. A separate cumulative assessment is not therefore required.

## Cumulative Effects with Identified Committed Schemes + SRF (Application 5)

### Approach

13.241 There is the potential for cumulative effects to occur as a result of the Application 5 site, the SRF and cumulative schemes identified in the surrounding area. Cumulative effects may arise during both the demolition and construction phase and the operational phase. It is assumed that most of the cumulative developments identified within **Table 13.9** will be completed or largely completed prior to the development of the wider SRF.

13.242 Trip generation associated with the Application 5 site will therefore form part of the future baseline and will be assessed as part of the detailed assessments for each subsequent development plot. Once the Application 5 site becomes operational, it will generate additional traffic on the local road network. Where one or more developments are in close proximity, traffic generated by each development may be distributed onto the same roads within the local network. The greatest effects will therefore be on sensitive receptors located adjacent to those roads likely to experience a change in traffic volume or composition as a result of the operation of the developments, in-combination.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

Construction Noise

13.243 With the implementation of best practice mitigation measures, it is unlikely there will be significant cumulative noise effects as a result of the combination of the Red Bank Outline Application 5, the SRF and cumulative developments. Therefore, it is anticipated that the residual cumulative effect will, at worst, remain as reported for Application 5, i.e. direct, temporary, adverse residual effects ranging from negligible to major. For NSR7 and NSR8, the effect is considered to be significant.

Construction Vibration

13.244 Taking into consideration the distances between the existing and future noise sensitive receptors, the nearest development plot within each phase, the SRF and cumulative developments, it is unlikely the vibration generating activities will result in perceptible in-combination vibration effect. Therefore, it is anticipated that the cumulative effect will, at worst, remain as reported for Application 5, i.e. direct, temporary short-term, adverse residual effects ranging from negligible to moderate. For NSR7, the effect is considered to be significant.

Construction Phase Development Generated Road Traffic Noise

13.245 At the time of writing, insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF should these developments be brought forward during the construction phase of the Proposed Development. Therefore, it is not currently possible to determine the potential changes in road traffic noise associated with Applications 5 and cumulative developments in-combination with the SRF.

## The Completed and Operational Development

Development generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.246 With the implementation of best practice mitigation measures and adherence to plant noise limits, it is unlikely there will be significant cumulative noise effects as a result of the combination of the Application 5, the SRF and cumulative developments. Therefore, it is anticipated that the residual cumulative effect will, at worst, remain as reported for Application 5, i.e. a direct, permanent, long-term, negligible effect.

13.247 With regard to the NPSE, compliance with the derived noise level limits corresponds to NOEL. This effect is considered to be Not Significant.

Operational Phase Development Generated Road Traffic Noise

13.248 At the time of writing, insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF. Therefore, it is not currently possible to determine the potential changes in road traffic noise associated with Application 5 and cumulative developments in-combination with the SRF.

# In Combination Effects of Applications 4 and 5

13.249 This section reports the results of the in-combination assessment of Application 4 and Application 5. The baseline conditions and embedded mitigation for the in-combination assessment are the same as those reported for Application 4 and Application 5.

## Assessment of Likely Significant Effects (Applications 4 and 5)

### Demolition and Construction

#### Construction Noise

13.250 It is inevitable with any proposed major development that there will be some disturbance caused to those nearby during the construction works. However, disruption due to construction is localised and temporary in nature.

13.251 At this stage, the precise details of the noise generating sources during construction are not confirmed. Therefore, based on information provided by the Applicant's experience of similar schemes, predictions of the likely noise impacts from anticipated construction activities have been made which are indicative of the likely noise levels during the works. A more detailed assessment will be undertaken at a later stage (a requirement of the CEMP), once the principal Contractor has been appointed and detailed construction method statements are available.

13.252 Further details of the construction noise assessments for Application 4 and Application 5 are set out above.

13.253 It is anticipated that the Proposed Development would be delivered in 3 phases, over a 9 year construction programme commencing in 2023. The phasing plan for the development can be seen on the Phasing Plan in **Figure 5.13**, and the associated programme is summarised as follows:

- Phase 1: NT02-04: Quarter 4 2023 to Quarter 4 2029 i.e. Application 5;
- Phase 2:RB01-05 and RB12b: Quarter 1 2025 to Quarter 4 2029 i.e. Application 4; and
- Phase 3:RB16 / 17 / 06 / 07 / 10: Quarter 3 2027- Quarter 4 2032 i.e. Application 4.

13.254 The high-level construction programme indicates that some of the Phases of works will overlap. For the purpose of the assessments, it is assumed that the construction works taking place in the phase closest to the noise sensitive receptors will dominate the construction noise levels generated. Therefore, for each receptor location, the predicted construction noise levels are presented for the works within the closest proposed phase of development.

13.255 It is assumed that foundation and piling works for each phase, i.e. Activity 2 and the noisiest of activities proposed during the construction phase, can be programmed to avoid these activities being undertaken within two phases concurrently. If these activities in each phase were to overlap, there is the potential for significant

cumulative effects for the future noise sensitive receptors located nearest to the Proposed Development (i.e., NRS7 and NSR8) and future residential receptors of the Proposed Development itself.

### Construction Vibration

13.256 Further details of the construction vibration assessments for Application 4 and Application 5 are set out above.

13.257 The high-level construction programme indicates that some of the Phases of works will overlap. Notwithstanding this, taking into consideration the distances between the existing and future noise sensitive receptors and the nearest development plot within each phase, it is unlikely the vibration generating activities will result in perceptible in-combination vibration effect.

### Construction Phase Development Generated Road Traffic Noise

13.258 The results of the Transport Assessment have been used as the basis for determining the change in noise levels arising on existing roads as a result of construction traffic for Application 4 and Application 5. BNL calculations have been carried out in general accordance with CRTN, being undertaken for a notional receptor location 10m from the edge of the carriageway of each road considered. A notional receptor has been used because the change in traffic noise level adjacent to any given road will be the same at all distances where noise from that route is dominant. Traffic noise calculations have been undertaken to establish the change in the daytime $L_{A10,18hr}$ noise level for the worst case number of daily trips for each construction route, i.e. Q1-Q2 in 2026 for construction traffic accessing the Site via Red Bank Road and Q1-Q2 in 2027 for construction traffic accessing the Site via Collyhurst Road.

13.259 The predicted road traffic noise levels and changes in road traffic noise due to construction traffic for each considered link is set out in full in **Appendix 13.6**. The links subject to the highest noise level changes, at worst, range between +1.2dB to +2.8dB, on Red Bank Road and Collyhurst Road respectively. The noise level changes on these routes due to construction traffic remain less than +3dB and the absolute noise level is below the SOAEL therefore the magnitude of impact is low. An indirect, temporary, medium-term, adverse minor effect is predicted.

13.260 For all remaining routes noise level changes range from 0.0dB to +0.6dB at worst and the magnitude of impact is negligible. An indirect, temporary, medium-term, adverse negligible effect is predicted.

13.261 In the Baseline 2019 scenario, the absolute noise levels (at nominal 10m distances from each route section), range from 62.0 to 70.4dB $L_{A10,18hr}$. With respect to the NPSE, and based on **Table 13.24** in **Appendix 13.3**, these levels range from the LOAEL to SOAEL. This range of effect levels remains unchanged when considering the with construction scenarios and therefore no change in significance occurs.

## The Completed and Operational Development

### Development-generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.262 The Proposed Development is anticipated to include fixed plant items with the potential to generate noise. At this stage, details of the type, number and location of any such plant are yet to be confirmed. Therefore, it is appropriate to specify suitable noise limits to which any such plant or operations should conform.

13.263 Assuming the proposed plant noise limits are met, it is unlikely that the fixed plant items will result in perceptible in-combination noise effect.

### Operational Phase Development Generated Road Traffic Noise

13.264 The assessment of development generated road traffic noise has followed the same principle of approach as the construction traffic noise assessment, only with the following scenarios considered:

- Scenario O1: 2019 Baseline, i.e. 'Without Scheme'.
- Scenario O6: 2032 Future Year + Proposed Scheme, i.e. 'With Scheme – Application 4 and Application 5'
- Scenario O7: 2032 Future + Proposed Scheme + Cumulative Development, i.e 'With Scheme – Application 4 and Application 5 + cumulative developments'

13.265 The changes in road traffic noise have been determined by subtracting the noise level determined for Scenario O1, from that determined for Scenario O6 and Scenario O6. The resulting change is therefore that associated with the additional development generated traffic movements associated with Application 4 and Application 5.

13.266 The predicted road traffic noise levels and changes in road traffic noise due to development generated traffic noise for each considered link is set out in full in **Appendix 13.6**. The links subject to the highest noise level change of +3.1dB, occur on Roger Street and the magnitude of impact is low. An indirect, permanent, long-term, adverse minor effect is predicted.

13.267 For all remaining routes noise level changes range from -0.2dB to +2.0dB at worst and the magnitude of impact is negligible. An indirect, permanent, long-term, adverse negligible effect is predicted.

13.268 In the Baseline 2019 scenario, the absolute noise levels (at nominal 10m distances from each route section), range from 59.6 to 83.0dB $L_{A10,18hr}$. With respect to the NPSE, and based on **Table 13.10** in **Appendix 13.3**, these levels range from the LOAEL to the SOAEL. This range of effect levels remains unchanged when considering the development generated scenarios and therefore no change in significance occurs.

## Phasing Effects (Applications 4 and 5)

### Demolition and Construction

13.269 The Proposed Development will be constructed over a period of approximately nine years and will therefore be brought forward in phases. Parts of the development are therefore likely to be completed and occupied whilst development is ongoing elsewhere within the Site.

13.270 It is assumed that the foundation and pilings works, i.e. Activity 2 and the noisiest of activities proposed during the construction phase, can be programmed to avoid these activities being undertaken within two phases concurrently. If these activities in each phase were to overlap, there is the potential for significant cumulative effects for the future noise sensitive receptors located nearest to the Proposed Development (i,e, NRS7 and NSR8) and future residential receptors of the Proposed Development itself.

### The Completed and Operational Development

13.271 In relation to the assessment of road traffic emissions, the traffic data provided for the assessment of operational phase effects is based on the completion years for Applications 4 and 5 respectively. Detailed traffic data was not available for any other interim/phasing scenario.

13.272 Notwithstanding this the results of the in-combination assessment indicates the magnitude of impact, in the absence of secondary mitigation, ranges between negligible and low. Therefore, there is likely to be direct, permanent, long-term, adverse residual effect ranging from negligible to minor.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5)

### Demolition and Construction

13.273 The additional mitigation / enhancement measures required are the same as those previously reported.

### The Completed and Operational Development

#### Development generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.274 Plant noise level limits could be incorporated into an appropriately-worded planning condition thereby ensuring subsequent compliance and an appropriate means of control. It is assumed that the location of plant will be well removed from any existing noise sensitive receptors, but adjacent to proposed new residential development.

13.275 Representative background sound levels have been used to set allowable plant noise level limits, as set out previously. The allowable fixed plant noise level limit has been set 5dB below the background noise level, which corresponds to an impact magnitude of negligible. The plant noise level limits apply to the cumulative noise emission from all fixed plant at the receptor location.

### Operational Phase Development Generated Road Traffic Noise

13.276 No secondary mitigation or enhancement has been identified at this stage.

## Likely Residual Effects of the Development and their Significance

### Demolition and Construction

### Construction Noise

13.277 Assuming the foundation and pilings works for each construction phase can be programmed to avoid these activities being undertaken within two phases concurrently, there is not anticipated to be a significant cumulative noise effects as a result of the combination of Application 4 and Application 5. Therefore, the cumulative effect will, at worst, remain as reported for Application 4 and Application 5 respectively, i.e. direct, temporary, adverse residual effects ranging from negligible to major. For NSR7 and NSR8, the effect is considered to be significant.

### Construction Vibration

13.278 Taking into consideration the distances between the existing and future noise sensitive receptors and the nearest development plot within each phase, it is unlikely the vibration generating activities will result in perceptible in-combination vibration effect. Therefore, the cumulative effect will, at worst, remain as reported for Application 4 and Application 5 respectively, i.e. direct, temporary short-term, adverse residual effects ranging from negligible to moderate. For NSR7 and NSR16, the effect is considered to be significant.

### Construction Phase Development Generated Road Traffic Noise

13.279 The construction phase traffic data used in the assessment accounts for Application 4 and Application 5, and therefore the modelling results, are inherently cumulative.

13.280 The sensitivity of the receptors is considered to be high. The magnitude of impact, in the absence of secondary mitigation remains from negligible to low. Therefore, there is likely to be direct, temporary medium-term, adverse residual effects ranging from negligible to minor.

13.281 NPSE effect level range is NOEL to SOAEL, these are unchanged by development generated traffic. This effect is considered to be Not Significant.

### The Completed and Operational Development

### Development generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.282 The sensitivity of the receptors is considered to be high. The magnitude of impact, following secondary mitigation remains negligible. Therefore, there is likely to be direct, permanent, long-term, negligible effect.

13.283 With regard to the NPSE, compliance with the derived noise level limits corresponds to NOEL.

13.284 This effect is considered to be Not Significant.

### Operational Phase Development Generated Road Traffic Noise

13.285 The operational phase traffic data used in the assessment accounts for Application 4 and Application 5, and therefore the modelling results, are inherently cumulative.

13.286 The sensitivity of the receptors is considered to be high. The magnitude of impact, in the absence of secondary mitigation is negligible. Therefore, there is likely to be direct, permanent, long-term, adverse residual effect of negligible.

13.287 NPSE effect level range is NOEL to SOAEL, these are unchanged by development generated traffic.

13.288 This effect is considered to be Not Significant.

***Table 13.14:*** *Residual Effects Summary for Application 4 and 5*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Construction noise from the Proposed Development | For receptors NSR2, NSR3, NSR5, NSR6, NSR11 to NSR15, there is likely to be a direct, temporary, medium-term, adverse effect which is considered to be negligible.<br><br>For receptors NRS1, NSR4, NSR9, NSR10, NSR16 and NSR17 there is likely to be a direct, temporary, short-term, adverse effect which is considered to be minor to moderate.<br><br>For NSR7 and NSR8, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be major and therefore has the potential to give rise to a significant effect. | No mitigation or enhancement has been identified | Direct, temporary, **adverse** residual effects ranging from **negligible to major.** For NSR7 and NSR8, the effect is considered to be **significant.** For all other receptors, the effect is considered to be **not significant**. |
| Construction vibration | For the majority of | No mitigation or | Direct, temporary short- |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| from the Proposed Development | vibration generating activities which take place within 80m of sensitive receptors the impact magnitude would be low. A direct, temporary, short-term adverse minor effect is predicted.<br><br>For the receptor NSR7 and NSR16, when vibratory rollers are used within 30m of the closest sensitive receptor the impact magnitude would be medium. A direct, temporary, short-term adverse moderate effect is predicted and therefore has the potential to give rise to a significant effect. | enhancement has been identified | term, **adverse** residual effects ranging from **negligible to moderate.** For NSR7 and NSR16, the effect is considered to be **significant.** For all other receptors, the effect is considered to be **not significant**. |
| Changes in road traffic noise as a result of construction phase development generated traffic. | Direct, temporary medium-term, adverse residual effects ranging from negligible to minor. | No mitigation or enhancement has been identified. | Direct, temporary medium-term, **adverse** residual effects ranging from **negligible to minor.** This effect is considered to be **not significant.** |
| ***Completed Development*** | | | |
| Development generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant. | Direct, temporary medium-term, adverse residual effects ranging from negligible to minor. | Plant noise level limits could be incorporated into an appropriately worded planning condition thereby ensuring subsequent compliance and an appropriate means of control. | Direct, permanent, long term **negligible** effect. This effect is considered to be **not significant.** |
| Changes in road traffic noise as a result of operational phase development generated traffic. | Direct, temporary long-term, adverse residual effects ranging from negligible to minor. | No mitigation or enhancement has been identified. | Direct, permanent, long-term, **adverse** effect ranging from **negligible to minor**. This effect is considered to be **not significant** |
| Noise sources contributing to the prevailing sound environment across the Site, i.e. road traffic on | Direct, permanent, long term negligible effect on the proposed residential receptors. | **Appendix 13.8** provides further details on the possible façade configurations capable of meeting the sound | Direct, permanent, long term **negligible** effect on the proposed residential receptors. This effect is considered to be **not** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| the existing local road network | | insulation performances required to achieve the adopted internal criteria across the development. | **significant** |

## Conclusions (Applications 4 and 5)

13.289 This chapter has considered the potential for cumulative significant noise and vibration related effects that could arise as a result of the combination of Application 4 and Application 5 developments. Consideration has been given to both the construction and operational phases of the development and the impact that could arise on existing and future noise sensitive receptors.

13.290 The completed assessment work has been undertaken in accordance with national and local planning policy as well as applicable British Standards and best practice guidance, and draws upon the results of the baseline noise surveys undertaken on and in the vicinity of the site and the future baseline assessment.

13.291 With respect to construction noise and vibration, a number of best practice mitigation measures have been presented to minimise construction noise and vibration levels, for incorporation into the proposed Construction Environmental Management Plan (CEMP).

13.292 The assessment of construction traffic noise has identified that level changes on local road traffic routes range between +1.2 and +2.8dB. Such level changes are not sufficient to give rise to any significant effects, or the need for additional mitigation.

13.293 The assessment of operational phase development generated road traffic noise has identified that level changes on the surrounding network due to both the Proposed Development and other committed developments would range between -0.2 and +3.1dB in the future opening year of 2032. Such level changes are not sufficient to give rise to any significant effects, or the need for additional mitigation.

13.294 The assessment has included the determination of appropriate limits for the control of mechanical/fixed plant. These limits have been set based on the results of the baseline noise survey, at a level sufficiently low that significant effects would not arise. It has been demonstrated how compliance with such limits could be ensured with the use of an appropriate planning condition.

## Cumulative Effects with Identified Committed Schemes (Applications 4 and 5)

### Approach

13.295 There is the potential for cumulative effects to occur as a result of the Proposed Development and cumulative schemes identified in the surrounding area. Cumulative effects may arise during both the demolition and construction phase and the operational phase.

13.296 The scope of this chapter relates to human response to noise and vibration. The following study areas have been adopted for the assessment:

- Construction noise arising from the Proposed Development has been assessed at selected noise sensitive receptors within a study area of approximately 300m from the Site.
- Construction vibration arising from the Proposed Development has been assessed at selected vibration sensitive receptors within a study area of approximately 100m of the Site.
- Operational noise from commercial activities has been assessed at selected sensitive receptors within a study area of approximately 100m from the Site.
- Development generated road traffic noise is assessed for the existing road network. The adopted study area includes all routes in the traffic model developed for the Transport Assessment submitted in support of the planning application. The study area is also described in **Chapter 11 Transport and Access**.

### Likely Residual Cumulative Effects and their Significance

13.297 **Table 13.9** summarises the outcomes of this review and those sites which have been considered within the cumulative assessment of construction and operational phase effects.

13.298 Once the Proposed Development becomes operational, it will generate additional traffic on the local road network. Where one or more developments are in close proximity, traffic generated by each development may be distributed onto the same roads within the local network. The greatest effects will therefore be on sensitive receptors located adjacent to those roads likely to experience a change in traffic volume or composition as a result of the operation of the developments, in-combination.

13.299 Traffic data used in the assessment of operational phase effects takes into consideration traffic growth on the local road network. In the calculation of the traffic data, the Project Transport Consultants have reviewed the list of identified cumulative developments to filter out those with minimal / negligible trip generation or that are located at a distance where they would not impact the same road network as the Proposed Development. The cumulative schemes identified for inclusion within the traffic data included: Meadowside, Victoria Riverside, Ancoats Mobility Hub and Cortland. The future year modelling results are therefore inherently cumulative as they take into account the contributions from development generated road traffic associated with the identified cumulative schemes. A separate cumulative assessment is not therefore required.

# In Combination Effects of Applications 4 and 5 and SRF

## Assessment of Likely Significant Effects (Applications 4 and 5 and SRF)

### Demolition and Construction

13.300 As noted for the earlier assessments of Applications 4 and 5, there is the potential for cumulative effects to occur as a result of the Proposed Development and cumulative schemes identified in the surrounding area.

13.301 It is assumed that demolition and construction works associated with the Proposed Development would be largely complete prior to the development of the wider SRF. Where any other SRF developments that are brought forward prior to the completion of the Proposed Development, it is assumed that they will be required to undertake a construction noise and vibration assessment in accordance with current best practice guidance and to implement construction mitigation measures proportionate to the identified level of risk of cumulative significant effects.

13.302 There is the potential for the construction phase of each development area within the SRF to generate additional road traffic movements on the local road network. The additional vehicle movements have the potential to increase the levels of road traffic noise at sensitive receptors adjacent to the surrounding road network. The program for development of the wider SRF area has yet to be fully defined. As such, trip generation and distribution data are not currently available for the SRF. It is expected that detailed analysis will be undertaken by the relevant applicant/s as each development parcel is brought forward.

13.303 Given the limited information available in relation to trip generation associated with the SRF, it is not currently possible to determine the likely significance of construction phase development generated road traffic on existing and future noise sensitive receptors. Therefore, the cumulative increase in traffic on the local road network associated with the Proposed Development and the SRF may result in increases in road traffic noise greater than reported within this Chapter at sensitive receptors situated adjacent to the local road network.

### The Completed and Operational Development

#### Development-generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.304 It is possible that phase of the SRF development will include fixed plant items with the potential to generate noise. When the SRF developments are brought forward, it is assumed that they will be required to undertake a noise assessment in accordance with current best practice guidance and the requirements of MCC. As part of the assessment, it will be necessary to demonstrate the noise generated by fixed plant items adhere to appropriate plant noise limits. Assuming the proposed plant noise limits are met, it is unlikely that the fixed plant items will result in perceptible in-combination noise effects.

### Operational Phase Development Generated Road Traffic Noise

13.305 Once the wider SRF is operational, there is the potential for each development area within the SRF to generate additional road traffic movements on the local road network. The additional vehicle movements have the potential to increase the levels of road traffic noise at sensitive receptors adjacent to the surrounding road network.

13.306 The overall quantum and nature of development within the wider SRF area has yet to be fully defined. As such, trip generation and distribution data are not currently available for the SRF. It is expected that detailed analysis will be undertaken by the relevant applicant/s as each development parcel is brought forward.

13.307 Given the limited information available in relation to trip generation associated with the SRF, it is not currently possible to determine the likely significance of operational phase development generated road traffic on existing and future noise sensitive receptors. In light of the scale of the SRF, it is anticipated that trip generation will be greater than assessed for the Proposed Development. Therefore, the cumulative increase in traffic on the local road network associated with the Proposed Development and the SRF may result in increases in road traffic noise greater than reported within this Chapter at sensitive receptors situated adjacent to the local road network.

13.308 The SRF is located near to the centre of Manchester, within a highly accessible and sustainable location. The key development principles for the SRF will be consistent with those adopted for the Proposed Development and will help to minimise trip generation and reduce reliance on the private car (in particular those with petrol/diesel engines) i.e. the SRF will be designed to enhance connectivity with the surrounding area, promote development with low levels of car parking, provide a safe and attractive environment for pedestrians and cyclists, encourage a shift towards active and sustainable transport choices, and support the use of low and zero-emission vehicles (notably through the provision of infrastructure to enable electric vehicle charging).

## Phasing Effects (Applications 4 and 5 and SRF)

13.309 Based on the information available at the time of the assessment, no additional significant effects have been identified above those reported for Application 4 and Application 5.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5 and SRF)

### Demolition and Construction

13.310 The additional mitigation / enhancement measures required are the same as those previously reported.

13.311 No secondary mitigation or enhancement has been identified for construction phase development generated road traffic at this stage.

### The Completed and Operational Development

#### Development-generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.312 Plant noise level limits could be incorporated into an appropriately-worded planning condition thereby ensuring subsequent compliance and an appropriate means of control as the SRF developments are brought forward. It is assumed that the location of plant will be well removed from any existing and future noise sensitive receptors, where practicable.

#### Operational Phase Development Generated Road Traffic Noise

13.313 No secondary mitigation or enhancement has been identified at this stage.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5 and SRF)

### Demolition and Construction

#### Construction Noise

13.314 With the implementation of best practice mitigation measures, it is unlikely there will be significant cumulative noise effects as a result of the combination of Application 4, Application 5 and SRF. Therefore, it is anticipated that the residual cumulative effect will, at worst, remain as reported for Application 4 and Application 5 respectively, i.e. direct, temporary, adverse residual effects ranging from negligible to major. For NSR7 and NSR8, the effect is considered to be significant.

#### Construction Vibration

13.315 Taking into consideration the distances between the existing and future noise sensitive receptors, the nearest development plot within each phase and the SRF, it is unlikely the vibration generating activities will result in perceptible in-combination vibration effect. Therefore, it is anticipated that the cumulative effect will, at worst, remain as reported for Application 4 and Application 5 respectively, i.e. direct, temporary short-term, adverse residual effects ranging from negligible to moderate. For NSR7 and NSR16, the effect is considered to be significant.

#### Construction Phase Development Generated Road Traffic Noise

13.316 At the time of writing, insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF should these developments be brought forward during the construction phase of the Proposed Development. Therefore, it is not currently possible to determine the potential changes in road traffic noise associated with Applications 4 and 5 in-combination with the SRF.

## The Completed and Operational Development

### Development-generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.317 With the implementation of best practice mitigation measures and adherence to plant noise limits, it is unlikely there will be significant cumulative noise effects as a result of the combination of Application 4, Application 5 and SRF. Therefore, it is anticipated that the residual cumulative effect will, at worst, remain as reported for Application 4 and Application 5 respectively, i.e. a direct, permanent, long-term, negligible effect.

13.318 With regard to the NPSE, compliance with the derived noise level limits corresponds to NOEL. This effect is considered to be Not Significant.

### Operational Phase Development-Generated Road Traffic Noise

13.319 At the time of writing, insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF. Therefore, it is not currently possible to determine the potential changes in road traffic noise associated with Applications 4 and 5 in-combination with the SRF.

***Table 13.15:*** *Residual Effects Summary for Application 4, Application 5 and SRF*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Construction noise from the Proposed Development | For receptors NSR2, NSR3, NSR5, NSR6, NSR11 to NSR15, there is likely to be a direct, temporary, medium-term, adverse effect which is considered to be negligible.<br><br>For receptors NRS1, NSR4, NSR9, NSR10, NSR16 and NSR17, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be minor to moderate.<br><br>For NSR7 and NSR8, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be major and therefore has the potential to give rise to a significant effect. | No mitigation or enhancement has been identified. | Direct, temporary, **adverse** residual effects ranging from **negligible to major.** For NSR7 and NSR8, the effect is considered to be **significant**. For all other receptors, the effect is considered to be **not significant**. |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Construction vibration from the Proposed Development | For the majority of vibration generating activities which take place within 80m of sensitive receptors the impact magnitude would be low. A direct, temporary, short-term adverse minor effect is predicted.<br><br>For the receptor NSR7 and NSR16, when vibratory rollers are used within 30m of the closest sensitive receptor the impact magnitude would be medium. A direct, temporary, short-term adverse moderate effect is predicted and therefore has the potential to give rise to a significant effect. | No mitigation or enhancement has been identified. | Direct, temporary short-term, **adverse** residual effects ranging from **negligible to moderate.** For NSR7 and NSR16, the effect is considered to be **significant.** For all other receptors, the effect is considered to be **not significant**. |
| Changes in road traffic noise as a result of construction phase development generated traffic. | Insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF should these developments be brought forward during the construction phase of the Proposed Development. it is not currently possible to determine the potential changes in road traffic noise associated with Applications 4 and 5 in-combination with the SRF. | NA | It is not currently possible to determine the potential changes in road traffic noise associated with Applications 4 and 5 in-combination with the SRF. |
| ***Completed Development*** | | | |
| Development generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant. | Direct, temporary medium-term, adverse residual effects ranging from negligible to minor. | Plant noise level limits could be incorporated into an appropriately worded planning condition thereby ensuring subsequent compliance and an appropriate means of control. | Direct, temporary medium-term, **adverse** residual effects ranging from **negligible to minor.** This effect is considered to be **not significant.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Changes in road traffic noise as a result of operational phase development generated traffic. | Insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF should these developments be brought forward during the operational phase of the Proposed Development. it is not currently possible to determine the potential changes in road traffic noise associated with Applications 4 and 5 in-combination with the SRF. | NA | It is not currently possible to determine the potential changes in road traffic noise associated with Applications 4 and 5 in-combination with the SRF. |
| Noise sources contributing to the prevailing sound environment across the Site, i.e. road traffic on the existing local road network | Direct, permanent, long term negligible effect on the proposed residential receptors. | **Appendix 13.8** provides further details on the possible façade configurations capable of meeting the sound insulation performances required to achieve the adopted internal criteria across the development. | Direct, permanent, long term **negligible** effect on the proposed residential receptors. This effect is considered to be **not significant.** |

## Cumulative Effects with Identified Committed Schemes (Applications 4 and 5 and SRF)

### Approach

13.320 There is the potential for cumulative effects to occur as a result of the Proposed Development, the SRF and cumulative schemes identified in the surrounding area. Cumulative effects may arise during both the demolition and construction phase and the operational phase. It is assumed that most of the cumulative developments identified within **Table 13.9** will be completed or largely completed prior to the development of the wider SRF.

13.321 Trip generation associated with these developments will therefore form part of the future baseline and will be assessed as part of the detailed assessments for each subsequent development plot. Once the Proposed Development becomes operational, it will generate additional traffic on the local road network. Where one or more developments are in close proximity, traffic generated by each development may be distributed onto the same roads within the local network. The greatest effects will therefore be on sensitive receptors located adjacent to those roads likely to experience a change in traffic volume or composition as a result of the operation of the developments, in-combination.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

Construction Noise

13.322 With the implementation of best practice mitigation measures, it is unlikely there will be significant cumulative noise effects as a result of the combination of Application 4, Application 5, the SRF and cumulative developments. Therefore, it is anticipated that the residual cumulative effect will, at worst, remain as reported for Application 4 and Application 5 respectively, i.e. direct, temporary, adverse residual effects ranging from negligible to major. For NSR7 and NSR8, the effect is considered to be significant.

Construction Vibration

13.323 Taking into consideration the distances between the existing and future noise sensitive receptors, the nearest development plot within each phase, the SRF and cumulative developments, it is unlikely the vibration generating activities will result in perceptible in-combination vibration effect. Therefore, it is anticipated that the cumulative effect will, at worst, remain as reported for Application 4 and Application 5 respectively, i.e. direct, temporary short-term, adverse residual effects ranging from negligible to moderate. For NSR7 and NSR16, the effect is considered to be significant.

Construction Phase Development-Generated Road Traffic Noise

13.324 At the time of writing, insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF should these developments be brought forward during the construction phase of the Proposed Development. Therefore, it is not currently possible to determine the potential changes in road traffic noise associated with Applications 4, Application 5 and cumulative developments in-combination with the SRF.

### The Completed and Operational Development

Development-generated commercial and fixed plant noise, e.g. service yard operations and mechanical/fixed plant

13.325 With the implementation of best practice mitigation measures and adherence to plant noise limits, it is unlikely there will be significant cumulative noise effects as a result of the combination of Application 4, Application 5, the SRF and cumulative developments. Therefore, it is anticipated that the residual cumulative effect will, at worst, remain as reported for Application 4 and Application 5 respectively, i.e. a direct, permanent, long-term, negligible effect.

13.326 With regard to the NPSE, compliance with the derived noise level limits corresponds to NOEL. This effect is considered to be Not Significant.

Operational Phase Development Generated Road Traffic Noise

13.327 At the time of writing, insufficient information was available regarding the volume and distribution of traffic that could be generated by the SRF. Therefore, it is not currently possible to determine the potential changes in road traffic noise associated with Application 4, Application 5 and cumulative developments in-combination with the SRF.

# 14. Daylight, Sunlight and Overshadowing

## Introduction

14.1 This chapter assesses the effects of the Proposed Development on daylight, sunlight and overshadowing considerations. The assessments consider the effects that may arise as a result of the Proposed Development (comprising Outline Application 4, Full Application 5 and both Applications 4 and 5 in combination) on neighbouring existing and consented surrounding properties. Additionally, a qualitative assessment of these applications together with the SRF is included.

14.2 The chapter describes the methods used to assess the likely significant effects; the baseline conditions currently existing at the site and surroundings; the potential direct and indirect effects of the development arising in terms of daylight and sunlight considerations; the mitigation measures required to prevent, reduce, or offset the identified significant effects; and the residual effects. This chapter and the assessments presented within it have been prepared by WSP.

14.3 This chapter is supported by figures which are located at the end of the chapter and appendices which are located in **Volume 3: Appendices** of this ES.

## Assessment Methodology and Significance Criteria

### Scope of the Assessment

14.4 The assessment focused on identifying the extent to which the Proposed Development affects the level of daylight and sunlight of existing and future surrounding properties' windows and rooms and overshadowing to proposed and neighbouring open amenity spaces. The potential for daylight and sunlight within the Proposed Development (which comprises the Outline Application 4, Full Application 5 and both Applications 4 and 5 in combination) has also been assessed to inform the design.

14.5 The technical analysis has been undertaken in accordance with the Building Research Establishment (BRE) Guidelines 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice'[1] (2022) criteria.

14.6 The assessment of effects on the receptors surrounding Application 4 and Application 5 is based on an assessment of the change from the Baseline Conditions assumed to be the existing application site and the existing properties surrounding the applications (including the properties under construction at the time of the assessment presented in their final form).

[1] Littlefair, P.J. (2022) Site Layout and Planning for Daylight and Sunlight: a guide to good practice, Building Research Establishment, UK, BR 209 2022 Edition.

14.7 The Daylight and Sunlight assessments are undertaken separately for each configuration or scenario. Each configuration or scenario is described in the next section. The Proposed Development (i.e. the Outline Application, 4, Full Application 5 and both in combination) is introduced on the site replacing the existing buildings. This approach allows for determining the impact that the Proposed Development for each scenario will have on the surrounding properties in terms of daylight, sunlight and overshadowing.

14.8 To assess the likely effects of the Proposed Development with other schemes locally that have permission but are not yet constructed, the Proposed Development together with the consented buildings surrounding the site have been assessed together. This is referred to as the 'Cumulative Effects Configuration'. The 'Future Baseline Conditions' comprise the site without the Proposed Development but includes the committed developments in the surroundings.

14.9 The level of daylight and sunlight within the Proposed Development has been assessed by quantifying the level of daylight and sunlight reaching the external envelope of the proposed blocks based on the parameter plans, for the Outline Application 4, and the windows in the case of the Full Application 5. This assessment is an external assessment of daylight and sunlight to provide an indication of the level of natural light available at the facades and does not include an assessment of the internal levels of daylight or sunlight within the rooms of the proposed residential units. For Outline Application 4 this approach is suitable because it is based on parameter plans and the windows or internal layouts have not yet been developed. For the Full Application 5 where windows location is available, this provides an assessment of the availability for daylight and sunlight for all windows.

## Assessment Scenarios

14.10 The assessment scenarios in respect of the EIA for the Proposed Development are set out in **Volume 2: Main Text, Chapter 2: Approach**. For the purpose of this Chapter the following scenarios have been assessed.

- **Red Bank (Outline Application 4)**
  - Construction Effects
  - Operational Effects
    - Existing Baseline: This includes the Site and surroundings in their currently existing form.
    - Impact Assessment: This includes Application 4 without Application 5 within the existing surroundings.
  - Cumulative Effects
    - Future Baseline: This includes the existing Site with Applications 1 to 3 implemented and, for this technical assessment, all relevant committed neighbouring schemes within the existing surroundings to accord with the Building Research Establishment (BRE) Guidelines 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice' (2022).

    - Cumulative Effects: This includes Application 4 and all relevant committed neighbouring schemes within the existing surroundings.
  - Assessment of effects within the Proposed Development.
  - Qualitative assessment with the rest of the SRF area.
- **NT02-NT04 (Full Application 5)**
  - Construction Effects
  - Operational Effects
    - Existing Baseline: This includes the Site and surroundings in their currently existing form.
    - Impact Assessment: This includes Application 5 without the outline masterplan within the existing surroundings.
  - Cumulative Effects
    - Future Baseline: This includes the existing Site in its current form and, for this technical assessment, all relevant committed neighbouring schemes within the existing surroundings.
    - Cumulative Effects: This includes Application 5 and all relevant committed neighbouring schemes within the existing surroundings.
  - Assessment of effects within the Proposed Development
  - Qualitative assessment with the rest of the SRF area.
- **Outline Application 4 and Full Application 5**
  - Construction Effects
  - Operational Effects
    - Existing Baseline: This includes the Site and surroundings in their currently existing form.
    - Impact Assessment: This will identify the effects of the Application 4 and Application 5 (the Proposed Development) on the existing surroundings.
  - Cumulative Effects
    - Future Baseline: This includes the existing Site in its current form and all relevant committed neighbouring schemes within the existing surroundings.
    - Cumulative Effects: This includes the Application 4 and Application 5 (the Proposed Development), and all relevant committed neighbouring schemes within the existing surroundings.
  - Assessment of effects within the Proposed Development.
- **In-combination effects of Red Bank Outline and NT02-NT04 Full and SRF**

- Construction Effects
- Operational Effects
- Cumulative Effects

## Study Area

14.11 The study area modelled for this analysis comprises the Red Bank (Outline Application 4) and the NT02-04 (Full Application 5) sites and the surrounding existing and consented properties likely to be affected by Applications 4 and 5. **Figure 14.1** shows the extent of the study area defined for the assessments.

## Assessment Modelling and Data Sources

14.12 The assessment has required the construction of a 3D computer model of the Proposed Development and adjacent surroundings and an assessment with specialist daylight software Radiance, one of the industry's most recognised daylight simulation tools.

14.13 The 3D model has been based on models and drawings provided by the design team supplemented with information from available mapping data, 3D survey data when available, photographic information of the site and surroundings, and the Manchester City Council planning portal. **Table 14.1** lists the set of models and drawings used to construct the 3D model for the study.

***Table 14.1**: Drawing Sets Used to Construct the 3D Model*

| Date Received | File Format | File Name | Usage |
|---|---|---|---|
| 17/01/2023 | 3D DWG Model | RDB-MLM-ZZ-XX-M3-AR-009001_EIA Combined Future Baseline (from Maccreanor Lavington Architects) | Used as supplementary information for the construction of terrain and surrounding area |
| 27/01/2023 | 3D DWG Model | SK-230126-010-QA Massing-Maximum height parameter 3D (1) (from Maccreanor Lavington Architects) | Construction of Red Bank (Outline Application 4) |
| 10/02/2023 | 3D DWG Model | 230210_RedBank_NT02&03_Detailed3DModel _DWG_TVIA (from Hawkins Brown Architects) | Construction of NT02-03 (Full Application 5) |
| 13/02/2023 | PDF Drawings | Ref: RDB-HBA-2B-ZZ-DR-AR-2003xx (from Hawkins Brown Architects) | Construction of NT02-03 (Full Application 5) |
| 17/02/2023 | 3D DWG Model | RDB-MLA-2D-XX-M3-AR-200003_3D Detailed (from Maccreanor Lavington Architects) | Construction of NT04 (Full Application 5) |
| 17/02/2023 | 3D DWG Drawings | Ref: RDB-MLA-2D-00-M2-AR-310xxx (from Maccreanor Lavington Architects) | Construction of NT04 (Full Application 5) |
| N/A | PDF Drawings | Various PDF drawings (derived from the website of Manchester City Council Planning Portal) | Construction of existing surrounding properties and consented schemes |

## Metrics for the Assessment

14.14 The BRE Guide gives criteria and methods for calculating daylight and sunlight both within new developments and the impact on existing surroundings. Based on the BRE Guide, the level of impact of the Proposed Development has been assessed using the following metrics:

- Obstruction Angle (25°);
- Daylight: Vertical Sky Component (VSC);
- Daylight Distribution: No-Sky Line (NSL);
- Sunlight: Probable Sunlight Hours (PSH);
- Overshadowing of Open Amenity Spaces: Sun Hours on Ground (SHOG);
- Sunlight: Sunlight Hours (SH); and
- Daylight Provision: Illuminance (Ill).

### Obstruction Angle

14.15 This is an initial check to identify any potential impacts. If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected, and further detailed studies should be carried out.

### Daylight: Vertical Sky Component (VSC)

14.16 When the obstruction angle and the visible sky angle (θ) vary significantly when multiple windows are involved, then the Vertical Sky Component (VSC) should be used instead. The calculation of VSC usually requires specialist computer software. The VSC, in simple terms, measures the amount of sky that can be viewed from the centre of a window accounting for all external obstructions, (with 40% being the maximum value for an unobstructed window). A VSC value of 27% or greater is recommended to maintain good levels of daylight.

### Daylight Distribution: No-Sky Line (NSL)

14.17 Daylight distribution test calculates the area at working plane level inside a room that will have a direct view of the sky. This is done by plotting the no-sky line, which is the line on the horizontal working plane beyond which no direct light from the sky will reach. The no-sky line is plotted for existing surrounding properties in both the Baseline and Impact Assessment scenarios to determine its reduction.

14.18 According to the guidelines, the no-sky line must be calculated for living rooms, dining rooms, kitchens, and bedrooms and should only be assessed if the information on internal layouts is available, for example through planning drawings from the council planning portal.

### Sunlight: Probable Sunlight Hours (PSH)

14.19 For the existing surrounding properties of the Site, access to sunlight is measured from the windows of all living areas, facing within 90° of due south. The Probable Sunlight Hours (PSH) calculation method measures the proportion of time that the window assessed is sunlit. 'Probable sunlight hours' means the total number of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness for the location in question, based on sunshine probability data.

14.20 The BRE Guide recommends that the PSH is calculated for the whole year with the term 'Annual Probable Sunlight Hours' (APSH) which refers to the long-term average of the total of hours during a year in which direct sunlight reaches the unobstructed ground. The 'Winter Probable Sunlight Hours' (WPSH) is used to mean the same but only for the winter period (21 September – 21 March).

14.21 For new developments, the BRE Guide recommends that the sunlight hours on 21 March be assessed on all windows of the proposed units to account for the hours a space is sunlit.

### Overshadowing of Open Amenity Spaces: Sun Hours on Ground (SHOG)

14.22 The BRE Guide recommends plotting an Equinox 2-hour sun contour to identify whether 50% of any garden or open amenity space receives a minimum of two hours of direct sun-on-ground as recommended by the guidelines.

### Sunlight: Sunlight Hours (SH)

14.23 For new developments, access to sunlight is measured from the windows of all habitable rooms (preferably a main living room) by quantifying the number of sunlight hours received by each window on the 21st of March. Ideally, all new residential developments should have at least one habitable room, preferably a main living room, receiving sufficient direct sunlight on 21 March.

### Daylight Provision: Illuminance (ILL)

14.24 Daylight provision measures the overall amount of daylight in a space and its diffusion within a room. This can be done by the Illuminance method as set out in the BRE Guide which consists of a direct prediction of illuminance levels at each point on an assessment plane for a typical year. This approach uses standardised climate data for the building's specific location simulating lighting changes at hourly or half-hourly intervals.

## Assessment Criteria

14.25 **Table 14.2** summarises the criteria set out within the BRE guidelines, which have been used to determine the significance criteria of the likely significant effects derived from the Daylight, Sunlight and Overshadowing assessments.

***Table* 14.2***: BRE Criteria 2022 for Daylight, Sunlight and Overshadowing*

| Metric | Criteria |
|---|---|
| ***Effect of the Proposed Development on the Surrounding Properties (Existing and Consented)*** | |
| VSC | The loss of daylight to a window will be noticeable if the VSC will be reduced to less than 27% and less than 0.8 times its former value. |
| Daylight Distribution | The loss of daylight to a room will be noticeable if the area of the working plane which can receive direct skylight will be reduced to less than 0.8 times its former value. This will only be assessed for the rooms where the layouts are known. |
| APSH | A window should still receive enough sunlight if it receives at least 25% APSH for the whole year including 5% during the winter months. If the available sunlight hours are less than this, and/or less than 0.8 times their former value, either during the winter or over the whole year, and/or the actual alteration is greater than 4% APSH, then a window may be adversely affected. |
| Overshadowing of Open Amenity Spaces | It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of direct sunlight on the 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable. |
| ***Effect of the Proposed Development on New Developments (directly adjacent to the site)*** | |
| Daylight Provision | For UK dwellings, the illuminance recommendations are of 100 lux in bedrooms, 150 lux in living rooms and 200 lux in kitchens. These are the median illuminances to be exceeded over at least 50% of the assessment points in the room for at least half of the daylight hours. |
| Sunlight Hours | For a dwelling to appear reasonably sunlit, it is recommended that at least one main window wall faces within 90° of due south and a habitable room, preferably a main living room, can receive a total of at least 1.5 hours of sunlight on 21 March. |
| Overshadowing of Open Amenity Spaces | It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of direct sunlight on the 21 March. |
| ***Daylight and Sunlight within the Proposed Development*** | |
| VSC | A VSC of ≥27% means that a conventional window design will usually give reasonable daylight to a room.; between 15% and 27% special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight; between 5% and 15% (θ is between 25° and 45°, obstruction angle between 45° and 65°) it is very difficult to provide adequate daylight unless very large windows are used; and, below 5% it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed. |
| Sunlight Hours | For a dwelling to appear reasonably sunlit, it is recommended that at least one main window wall faces within 90° of due south and a habitable room, preferably a main living room, can receive a total of at least 1.5 hours of sunlight on 21 March. |
| Overshadowing of Open Amenity Spaces | It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of direct sunlight on the 21 March. |

## Significance Criteria

14.26 The BRE criteria have been used to assess the likely levels of daylight and sunlight in habitable rooms and windows of the surrounding properties. In the Baseline Scenario, compliance with the BRE Guidelines is achieved if the levels of daylight/sunlight within the identified receptors of the surrounding properties are equal to or greater than the recommended values given in the Guide.

14.27 In the Proposed Scenario, compliance with the BRE Guide is also achieved for the identified receptors of the surrounding properties if the ratio of impact between the Baseline Configuration and the Proposed Configuration is 0.80 or higher, i.e. the reduction in daylight levels or sunlight hours is 20% or less. An additional criterion of overall annual loss for APSH values also needs to be satisfied to comply with the recommended BRE guidelines.

14.28 The Magnitude of Effect is negligible when compliance with the BRE criteria is met. When the criteria are not met, a scale to measure the effect significance between 'minor', 'moderate', or 'major' has been developed based on professional judgement to reflect the suggestions within Appendix H of the BRE guidelines. This is classified depending on the ratio of impact between the assessment with and without the Proposed Development on the site. All impacts other than those found to be 'negligible' are considered to be 'significant'. These have also been described as 'beneficial' or 'adverse' depending on whether there is a gain or loss of light to existing and/or future surrounding properties.

14.29 Given that the assessment is for the operational stage, all effects are considered to be 'permanent'.

14.30 It is important to note that the Baseline Scenario is assessed based on absolute criteria using the recommended levels for daylight sunlight and overshadowing provided by the BRE Guide, whereas the results of the Proposed Scenario also account for the ratio of impact between the Baseline and the Proposed Scenarios. This is further discussed in the Significance Criteria section.

## Significance Criteria Existing Receptors

14.31 The Significance of Effects directly corresponds to the Magnitude of Effect experienced by the receptor i.e. the degree of alteration from the Baseline. The criteria used for determining the Magnitude of Effects of existing properties for the VSC, NSL, APSH and WPSH results have been detailed in **Tables 14.3** to **14.5** below.

***Table 14.3**: Significance Criteria – Existing Receptors – Daylight*

| Effect Significance | Vertical Sky Component (VSC) – Magnitude of Effect | Daylight Distribution (NSL) – Magnitude of Effect |
|---|---|---|
| ***Effect of the Proposed Development on the Surrounding Properties*** | | |
| Negligible | Proposed VSC ≥27% OR Proposed VSC <27% and ≥0.8 times its former value | Proposed NSL ≥80% OR Proposed NSL ≥0.8 times its former value |
| Minor | Proposed VSC <27% and between 0.7 and 0.79 times its former value | Proposed NSL <80% and Proposed NSL is between 0.7 and 0.79 times its former value |
| Moderate | Proposed VSC <27% and between 0.6 and 0.69 times its former value | Proposed NSL <80% and Proposed NSL is between 0.6 and 0.69 times its former value |
| Major | Proposed VSC <27% and <0.6 times its former value | Proposed NSL <80% and <0.6 times its former value |

***Table 14.4**: Significance Criteria – Existing Receptors – Sunlight*

| Effect Significance | Annual Probable Sunshine Hours (APSH) – Magnitude of Effect | Winter Probable Sunshine Hours (WPSH) – Magnitude of Effect |
|---|---|---|
| ***Effect of the Proposed Development on the Surrounding Properties*** | | |
| Negligible | Proposed APSH ≥25% OR Proposed APSH <25% but ≥0.8 times its former value, and an absolute reduction of >4% | Proposed WPSH ≥5% |
| Minor | Proposed APSH <25%, between 0.7 and 0.79 times its former value, and an absolute reduction of >4% | Proposed WPSH <5% and is between 0.7 and 0.79 times its former value |
| Moderate | Proposed APSH <25%, between 0.6 and 0.69 times its former value, and an absolute reduction of >4% | Proposed WPSH <5% and is between 0.6 and 0.69 times its former value |
| Major | Proposed APSH <25% and <0.6 times its former value and an absolute reduction of >4% | Proposed WPSH <5% and <0.6 times its former value |

***Table 14.5**: Significance Criteria – Existing Receptors – Overshadowing of Open Amenity Spaces*

| Effect Significance | Overshadowing of Open Amenity Spaces (SHOG) – Magnitude of Effect |
|---|---|
| ***Effect of the Proposed Development on the Surrounding Properties*** | |
| Negligible | ≥50% of the open amenity space receives at least two hours of sunlight OR Proposed sunlit area is ≥0.8 times its former value |
| Minor | Between 40% to 49% of the open amenity space receives at least two hours of sunlight OR Proposed sunlit area is between 0.7 and 0.79 times its former value |
| Moderate | Between 25% to 39% of the open amenity space receives at least two hours of sunlight and sunlit area is between 0.6 and 0.69 times its former value |
| Major | <25% of the open amenity space receives at least two hours of sunlight and sunlit area is <0.6 times former value |

14.32 To determine the Magnitude of Effect of existing properties in the Cumulative Assessment, the ratio of impact is compared between the Cumulative Effects Configuration and the Baseline Configuration to quantify the effect of the Proposed Development in combination with the surrounding consented properties.

## Significance Criteria Future Receptors

14.33 Following the above criteria, to assess the effect on daylight and sunlight to the consented schemes (The Gasworks - 128248/FO/2020, Meadow Side Plot 4 - 116366/FO/2017, and 1 Lord Street - 113914/FO/2016) as part of the Cumulative Assessment, the effect significance has been classified according to the ratio of impact between the Future Baseline and the Cumulative Effects configurations.

14.34 The criteria for assessing daylight (VSC), sunlight (APSH and WPSH) and overshadowing (SHOG) between the Future Baseline and Cumulative Effects configurations for the consented schemes have been detailed below (**Tables 14.6** to **14.8**).

14.35 Given the proximity of the Proposed Development to the Victoria Riverside consented scheme (126944/FO/2020), the effect significance, in this case, has been based on the Magnitude of Effects for internal daylight illuminance

(ILL) and sunlight hours (SH) between the Future Baseline and the Cumulative Effects configurations. The criteria for overshadowing remains the same as the one for the rest of the consented schemes.

14.36 The criteria for assessing daylight and sunlight between the Future Baseline and Cumulative Effects configurations for the Victoria Riverside consented scheme have been detailed below (**Tables 14.9** and **14.10**).

***Table 14.6**: Significance Criteria – Consented Receptors – Daylight (VSC)*

| Effect Significance | Vertical Sky Component – Magnitude of Effect |
|---|---|
| ***Effect of the Proposed Development on the Consented Surrounding Properties*** | |
| Negligible | Consented VSC ≥27% OR Consented VSC <27% and ≥0.8 times its former value |
| Moderate/Major | Consented VSC <27% and between 0.7 and 0.79 times its former value |
| Moderate | Consented VSC <27% and between 0.6 and 0.69 times its former value |
| Major | Consented VSC <27% and <0.6 times its former value |

***Table 14.7**: Significance Criteria Descriptors – Consented Receptors – Sunlight (APSH and WSPS)*

| Effect Significance | Annual Probable Sunshine Hours (APSH) – Magnitude of Effect | Winter Probable Sunshine Hours (WPSH) – Magnitude of Effect |
|---|---|---|
| ***Effect of the Proposed Development on the Consented Surrounding Properties*** | | |
| Negligible | Consented APSH ≥25% OR Proposed APSH <25% but ≥0.8 times its former value, and an absolute reduction of >4% | Consented WPSH ≥5% |
| Minor | Consented APSH <25%, between 0.7 and 0.79 times its former value, and an absolute reduction of >4% | Consented WPSH <5% and is between 0.7 and 0.79 times its former value |
| Moderate | Consented APSH <25%, between 0.6 and 0.69 times its former value, and an absolute reduction of >4% | Consented WPSH <5% and is between 0.6 and 0.69 times its former value |
| Major | Consented APSH <25% and <0.6 times its former value and an absolute reduction of >4% | Consented WPSH <5% and <0.6 times its former value |

***Table 14.8**: Significance Criteria Descriptors – Consented Receptors – Overshadowing of Open Amenity Spaces (SHOG)*

| Effect Significance | Overshadowing of Open Amenity Spaces (SHOG) – Magnitude of Effect |
|---|---|
| ***Effect of the Proposed Development on the Consented Surrounding Properties*** | |
| Negligible | ≥50% of the consented open amenity space receives at least two hours of sunlight OR Proposed sunlit area is ≥0.8 times its former value |
| Minor | Between 40% to 49% of the consented open amenity space receives at least two hours of sunlight OR Proposed sunlit area is between 0.7 and 0.79 times its former value |
| Moderate | Between 25% to 39% of the consented open amenity space receives at least two hours of sunlight and sunlit area is between 0.6 and 0.69 times its former value |
| Major | <25% of the consented open amenity space receives at least two hours of sunlight and sunlit area is <0.6 times its former value |

***Table 14.9**: Significance Criteria Descriptors – Consented Receptors Adjacent to Site – Internal Daylight (ILL)*

| Effect Significance | Illuminance (ILL) – Magnitude of Effect |
|---|---|
| ***Effect of the Proposed Development on the Consented Surrounding Properties*** | |
| Negligible | The illuminance level of the committed scheme's room achieves the BRE criteria in the Cumulative Scenario OR the illuminance level of the committed scheme's room is ≥0.8 times its value in the Future Baseline |
| Moderate/Major | The room does not achieve the BRE criteria and the illuminance level in the Cumulative Scenario is between 0.7 and 0.79 times its value in the Future Baseline |
| Moderate | The room does not achieve the BRE criteria and the illuminance level in the Cumulative Scenario is between 0.6 and 0.69 times its value in the Future Baseline |
| Major | The room does not achieve the BRE criteria and the illuminance level in the Cumulative Scenario is below the BRE Criteria and <0.6 times its value in the Future Baseline |

***Table 14.10**: Significance Criteria Descriptors – Consented Receptors Adjacent to Site – Sunlight (SH)*

| Effect Significance | Sunlight Hours (SH) – Magnitude of Effect |
|---|---|
| ***Effect of the Proposed Development on the Consented Surrounding Properties*** | |
| Negligible | The committed scheme's room achieves the BRE sunlight criteria in the Cumulative Scenario OR the sunlight hours of the consented scheme's room is ≥0.8 times its value in the Future Baseline |
| Moderate/Major | The room does not achieve the criteria and the sunlight hours in the Cumulative Scenario are between 0.7 and 0.79 times their value in the Future Baseline |
| Moderate | The room does not achieve the criteria and the sunlight hours in the Cumulative Scenario are between 0.6 and 0.69 times their value in the Future Baseline |
| Major | The room does not achieve the criteria and the sunlight hours in the Cumulative Scenario are below the BRE Criteria and <0.6 times their value in the Future Baseline |

## Criteria for Receptors within the Proposed Development

14.37 To assess the effect on daylight and sunlight at the facades of the Proposed Development, and overshadowing of proposed open amenity spaces, the criteria have been based on the recommended guidance (BRE). These are presented in **Tables 14.11** to **14.13** below.

***Table 14.11**: Criteria Descriptors – Proposed Development – Daylight (VSC)*

| Absolute VSC Values (%) | Description |
|---|---|
| VSC≥27% | A conventional window design will usually give reasonable results. |
| 27%>VSC≥15% | Special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight. |
| 15%>VSC≥5% | It is very difficult to provide adequate daylight unless very large windows are used. |
| VSC<5% | It is often impossible to achieve reasonable daylight, even if the whole window wall is glazed. |

***Table 14.12**: Criteria Descriptors – Proposed Development – Sunlight (SH)*

| Sunlight Hours | Description |
|---|---|
| Above BRE Criteria | A room will appear adequately sunlit if its windows receive at least 1.5 hours of sunlight on 21st March. |
| Below BRE Criteria | The room will fall below the recommended guidelines if its windows receive less than 1.5 |

| Sunlight Hours | Description |
|---|---|
| | hours of sunlight on Equinox. |

***Table 14.13**: Criteria Descriptors – Proposed Development – Overshadowing of Open Amenity Spaces (SHOG)*

| Overshadowing – Open Amenity Spaces | Description |
|---|---|
| Above BRE Criteria | An outdoor amenity space will satisfy the criteria if at least half of its areas receives at least two hours of sunlight on 21 March. |
| Below BRE Criteria | The amenity space will fall below the recommended guidelines if it receives less than 2 hours of sunlight on 21 March in more than half of its area. |

14.38 The BRE Guide includes the following suggested guidance for the significance of effects:

*"Adverse impacts occur when there is a significant decrease in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space. The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied.*

*Where the loss of skylight or sunlight fully meets the guidelines, the impact is assessed as negligible or minor adverse. Where the loss of light is well within the guidelines, or only a small number of windows or limited area of open space lose light (within the guidelines), a classification of negligible impact is more appropriate. Where the loss of light is only just within the guidelines, and a larger number of windows or open space area are affected, a minor adverse impact would be more appropriate, especially if there is a particularly strong requirement for daylight and sunlight in the affected building or open space.*

*Where the loss of skylight or sunlight does not meet the guidelines, the impact is assessed as minor, moderate or major adverse. Factors tending towards a minor adverse impact include:*

- *only a small number of windows or limited area of open space are affected;*
- *the loss of light is only marginally outside the guidelines;*
- *an affected room has other sources of skylight or sunlight;*
- *the affected building or open space only has a low level requirement for skylight or sunlight; and*
- *there are particular reasons why an alternative, less stringent, guideline should be applied.*

*Factors tending towards a major adverse impact include:*

- *a large number of windows or large area of open space are affected;*
- *the loss of light is substantially outside the guidelines;*
- *all the windows in a particular property are affected; and*
- the affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight, e.g. a living room in a dwelling or a children's playground.

*Beneficial impacts occur when there is a significant increase in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space.*

*An adverse impact on one property cannot be balanced against negligible or beneficial impacts on other properties. In these situations it is more appropriate to quote a range of impacts.*

*The provision of new dwellings, or commercial or industrial buildings, or private gardens that meet the skylight or sunlight guidance in this book should not be classified as a beneficial daylight or sunlight impact on the local environment. However, the provision of community buildings or public open spaces with good skylight and/or sunlight could be classed as a beneficial impact."*

## Sensitive Receptors

14.39 According to the BRE Guide, sensitive receptors are described as the habitable rooms, windows and open amenity spaces facing the site where the occupants have a reasonable expectation of natural light, the availability of which might be affected due to the introduction of the Proposed Development.

14.40 Following the BRE Guide, paragraph 2.2.10, sensitive receptors for daylight distribution (NSL) include the rooms of the adjacent existing surroundings whose layouts are known (available, in this case, on the Manchester City Council planning portal).

14.41 The guidelines for sunlight have been applied to the existing developments for the windows facing within 90° of due south.

14.42 Sensitive receptors for overshadowing of open spaces include gardens and open amenity spaces on adjacent properties, excluding public footpaths, front gardens, and car parks.

### Determining the Sensitivity of Receptors

14.43 A receptor sensitivity rating has been developed using professional judgement based on the BRE Guide, which is described below and categorised into 'high', 'medium' and 'low' based on the function or use of the space being assessed. This rating is indicative and there will be occasions where the sensitivity may be interpreted differently:

- Habitable rooms such as living rooms, kitchens and bedrooms within residential developments generally require good levels of natural light to render them more enjoyable and adequate for their function. These spaces are classified as having high sensitivity to daylight and sunlight.
- Buildings where the occupants have a reasonable expectation of natural light, including schools, hospitals, hotels, hostels and student accommodations, have been classified as having a medium sensitivity to daylight and sunlight.
- Office buildings tend to rely on supplementary artificial lighting and have been classified as having low sensitivity to daylight and sunlight.

- Retail developments usually rely on mechanical climate control to achieve comfort and reduce the effect of outside air and noise pollution, particularly in urban areas. These are not considered spaces where there would be an expectation of daylight by the user. Thus, such spaces can be classified as having low sensitivity to daylight and sunlight.
- For the purpose of the overshadowing assessments, gardens and open amenity spaces on adjacent properties have been classified as having a high sensitivity.

14.44 For the purpose of this assessment and given the nature of the locality, only receptors with high and medium sensitivity have been assessed.

## Identification of Sensitive Receptors

14.45 The receptors for the assessment were selected based on their location relative to the Proposed Development and depending on the 'sensitivity' to natural light.

14.46 There are several offices and industrial properties surrounding the application site, which have a lower requirement for natural lighting as they are assumed to have a greater reliance on supplementary electric lighting. Any effects on these properties are therefore unlikely to be significant and have therefore been excluded from this assessment.

14.47 There are also several consented residential properties surrounding the site. However, only the schemes Victoria Riverside, The Gasworks, Meadow Side Plot 4, and 1 Lord Street have been included in the assessment. Given their distance to the site, the rest of the committed schemes are unlikely to be affected by the Proposed Development and have been therefore excluded from the assessment.

14.48 The daylight, sunlight and overshadowing assessments, therefore, focus on the surrounding residential properties, schools and student accommodations, adjacent to the application site where the occupiers are likely to have an expectation of natural light and might be affected by the Proposed Development. The receptors selected for the assessment are illustrated in **Figures 14.2** and **14.3** and summarised in **Tables 14.14** and **14.15** below. Further information on the sensitive receptors selected for the assessments can be found in **Appendix 14.1**.

***Table 14.14**: Existing and Consented Sensitive Receptors Surrounding the Proposed Development - Buildings*

| Receptor No. | Location/Description | No. of Windows | No. of Rooms | Usage | Sensitivity |
|---|---|---|---|---|---|
| ***Existing Sensitive Receptors*** | | | | | |
| 1 | Green Quarter - Block 7 (The Hallmark) (Ref: 109031/FO/2015/N1) | 107 | 81 | Residential | High |
| 2 | Green Quarter - Block 4 (Jefferson Place) | 455 | n/a | Residential | High |
| 3 | Green Quarter - Block 5 (Britton House) (Ref: 082191/FO/2007/N1) | 298 | 201 | Residential | High |
| 4 | 609 Lincoln Gate | 223 | n/a | Residential | High |

| Receptor No. | Location/Description | No. of Windows | No. of Rooms | Usage | Sensitivity |
|---|---|---|---|---|---|
| 5 | Green Quarter - Block 1 (Melia House) | 342 | n/a | Residential | High |
| 6 | Green Quarter - Block 3 (Barton Place) | 328 | n/a | Residential | High |
| 7 | Green Quarter - Block 2 (Masson Place) | 325 | n/a | Residential | High |
| 8 | Green Quarter - Block 6 – A (Ref: 077806/FO/2005/N1) | 365 | 298 | Residential | High |
| 9 | Green Quarter - Block 6 – B (Ref: 077806/FO/2005/N1) | 196 | 152 | Residential | High |
| 10 | New Victoria - Block 2 (Ref: 111777/FO/2016/C1) | 282 | 79 | Residential | High |
| 11 | New Victoria - Block 1 (Ref: 111777/FO/2016/C1) | 371 | 102 | Residential | High |
| 12 | Parkers Apartments | 161 | n/a | Residential | High |
| 13 | Ashton House – Accommodation | 112 | n/a | Short Let/ Accommodation | Medium |
| 14 | Manchester Court Student Accommodation | 28 | n/a | Student Accommodation | Medium |
| 15 | Homes for Students Manchester Court | 79 | n/a | Student Accommodation | Medium |
| 16 | Victoria Meadow Side - Plot 2 (Ref: 124120/JO/2019 and 116366/FO/2017) | 536 | 305 | Residential | High |
| 17 | Victoria Meadow Side - Plot 3 (Ref: 124120/JO/2019 and 116366/FO/2017) | 291 | 146 | Residential | High |
| 18 | The King of Kings School | 64 | n/a | School | Medium |
| 19 | 21 Naples Street | 76 | n/a | Residential | High |
| 20 | 23 Naples Street and Land in Angel Street, City. | 116 | n/a | Residential | High |
| 21 | Victoria Meadow Side - Plot 5 (Ref: 124120/JO/2019 and 116366/FO/2017) | 209 | 176 | Residential | High |
| 22 | 60-62 Dalton Street | 6 | n/a | Residential | High |
| 23 | 64-66 Dalton Street | 5 | n/a | Residential | High |
| 24 | 68-70 Dalton Street | 4 | n/a | Residential | High |
| 25 | 72-74 Dalton Street | 4 | n/a | Residential | High |
| 26 | 76-78 Dalton Street | 6 | n/a | Residential | High |
| 27 | 80-84 Dalton Street | 13 | n/a | Residential | High |
| 28 | 29-35 Dalton Street | 20 | n/a | Residential | High |
| 29 | 19-27 Dalton Street | 33 | n/a | Residential | High |
| 30 | Emmeline Apartments (Ref: 077792/FO/2005/N1) | 124 | 73 | Residential | High |
| 31 | 1 Fairholme Caravan Site | 10 | n/a | Residential | High |
| 32 | 2 Fairholme Caravan Site | 18 | n/a | Residential | High |
| 33 | 2a Fairholme Caravan Site | 6 | n/a | Residential | High |
| 34 | B18-19 Fairholme Caravan Site | 6 | n/a | Residential | High |
| 35 | C32 Fairholme Caravan Site | 11 | n/a | Residential | High |
| 36 | 41d Fairholme Caravan Site | 12 | n/a | Residential | High |
| ***Consented Sensitive Receptors*** | | | | | |
| 37 | Victoria Riverside (Ref: 126944/FO/2020) | 2390 | 1740 | Residential | High |
| 38 | The Gasworks (Ref: 128248/FO/2020) | 1575 | n/a | Residential | High |
| 39 | Victoria Meadow Side - Plot 4 (Ref: 124120/JO/2019 and 116366/FO/2017) | 681 | n/a | Residential | High |

| Receptor No. | Location/Description | No. of Windows | No. of Rooms | Usage | Sensitivity |
|---|---|---|---|---|---|
| 40 | 1 Lord Street<br>(Ref: 113914/FO/2016) | 155 | n/a | Residential | High |

***Table 14.15**: Existing, Consented and Proposed Sensitive Receptors– Open Amenity Spaces*

| Receptor No. | Location/Description | Usage | Sensitivity |
|---|---|---|---|
| ***Existing Sensitive Receptors*** | | | |
| A | New Century Park | Public Open Amenity Space | High |
| B | Green Quarter - Block 5 (Britton House) Ground Floor Amenity | Private Open Amenity Space | High |
| C | Green Quarter – Blocks 2 and 3 Amenity | Private Open Amenity Space | High |
| D | Green Quarter - Block 6 Amenity | Private Open Amenity Space | High |
| E | 29-35 Dalton Street Garden | Private Open Amenity Space | High |
| F | 19-27 Dalton Street Garden | Private Open Amenity Space | High |
| G | Emmeline Apartments - Ground Floor Garden | Private Open Amenity Space | High |
| H | 1 Fairholme Caravan Site Garden | Private Open Amenity Space | High |
| I | 2a Fairholme Caravan Site Garden | Private Open Amenity Space | High |
| J | B18-19 Fairholme Caravan Site Garden | Private Open Amenity Space | High |
| K | C32 Fairholme Caravan Site Garden | Private Open Amenity Space | High |
| L | 41d Fairholme Caravan Site Garden | Private Open Amenity Space | High |
| ***Consented Sensitive Receptors*** | | | |
| X | Victoria Riverside Podium A | Private Open Amenity Space | High |
| Y | Victoria Riverside Podium B | Private Open Amenity Space | High |
| ***Proposed Sensitive Receptors*** | | | |
| M | NT02 North Terrace | Private Open Amenity Space | High |
| N | NT02 Tower 1 South Terrace | Private Open Amenity Space | High |
| O | NT03 Podium Terrace | Private Open Amenity Space | High |
| P | Travis Passage | Public Open Amenity Space | High |
| Q | Dulwich St Amenity 1 | Public Open Amenity Space | High |
| R | Dulwich St Amenity 2 | Public Open Amenity Space | High |
| S | Dulwich St Amenity 3 | Public Open Amenity Space | High |
| T | Dulwich St Amenity 4 | Public Open Amenity Space | High |
| U | Dulwich and Dalton St. Corner Amenity | Public Open Amenity Space | High |
| V | Dalton St. Amenity | Private Open Amenity Space | High |
| W | NT04 Podium Terrace | Private Open Amenity Space | High |

## Assumptions / Limitations

14.49 All calculations have been based on best practice guidance and on drawings or models of the Proposed Development provided by the architects and drawings derived from the Manchester City Planning Portal website. Where required, estimations have been made with regard to the height and massing of surrounding properties, based on available satellite photographs and mapping.

## Consultation

14.50 A Scoping Report was submitted to Manchester City Council on 31.01.2023 for consultation regarding the proposed Daylight, Sunlight and Overshadowing assessments. The report provides detail of the approach to the assessment including the methodology and criteria to be used in the assessment, the key receptors, and the main assumptions to be made. The Scoping Opinion was received on 16.03.2023 with no comments in relation to the Daylight, Sunlight and Overshadowing section.

# Red Bank (Outline Application 4)

## Baseline Conditions (Application 4)

14.51 An assessment of the Baseline Conditions (which consists of the existing buildings on the Site and the existing properties surrounding the Site (**Figure 14.4**) ("Baseline Scenario"), has been carried out prior to the assessment of the impact of the Proposed Development. A 3D model has been developed for the purpose of the Daylight, Sunlight and Overshadowing Assessment of the Baseline. The model has been constructed using the topographical survey available for the site and the drawings provided by the design and planning teams and supplemented with the mapping database ArcGIS and available aerial photographic data for the area.

The results of the Baseline are discussed below.

### Daylight Assessment – Baseline Scenario

14.52 The results are presented both for the properties where internal layout information was available and for those where the assessment was based on external window position. The results of the Baseline Configuration showed that for the properties with internal room information, 991 out of the 1613 rooms assessed (61.4%) are within the recommended daylight criteria, indicating VSC values above 27% and the NSL above 80% of the room area. The number of receptors where the criteria are not met is 622 (38.6%). For the properties with window information only, the results indicated that out of 2463 windows assessed, 1166 (47.3%) are within the recommended criteria with VSC values above 27%; and 1297 (52.7%) are below the threshold.

14.53 It is evident that in the existing Baseline conditions the existing residential properties, particularly those to the north of the site, are arranged in apartment blocks with a high building density, resulting in self-obstruction to light to many of these properties.

***Table 14.16**: Summary of Daylight Results – Baseline Scenario*

| Receptor Type | Rooms/Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Rooms (VSC + NSL) | 1613 | 991 | 61.4 | 622 | 38.6 |
| Windows (VSC) | 2463 | 1166 | 47.3 | 1297 | 52.7 |

### Sunlight Assessment – Baseline Scenario

14.54 The existing properties that are likely to be affected by the Proposed Development are located on the north side of the site. These are the properties that have windows facing south. The results of the sunlight assessment for the Baseline Configuration showed that of the 2700 windows assessed, 1981 (73.4%) are within the recommended sunlight criteria, indicating APSH values above 25% and WPSH values above 5%; and 719 windows (26.6%) are below the threshold.

***Table 14.17**: Summary of Sunlight Results – Baseline Scenario*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (APSH + WPSH) | 2700 | 1981 | 73.4 | 719 | 26.6 |

### Overshadowing Assessment – Baseline Scenario

14.55 In relation to the Overshadowing Assessment, all the open amenity areas of the properties adjacent to the Proposed Development have been assessed.

14.56 The results of the Overshadowing Assessment for the Baseline Scenario indicated that 6 (50%) of the existing adjacent open amenity spaces satisfy the BRE criteria, i.e., receive at least two hours of sunlight on the 21st of March on at least 50% of the area. The table below shows the results of the overshadowing assessment of open spaces in the Baseline Scenario.

***Table 14.18**: Summary of Overshadowing Results for Open Spaces – Baseline Scenario*

| Receptor | Area that sees at least 2 hours of sunlight on 21 March (%) | Above / Below BRE Criteria |
|---|---|---|
| New Century Park | 21.07 | Below |
| Green Quarter - Block 5 (Britton House) Ground Floor Amenity | 83.83 | Above |
| Green Quarter – Blocks 2 and 3 Amenity | 2.98 | Below |
| Green Quarter - Block 6 Amenity | 64.3 | Above |
| 29-35 Dalton St Garden | 69.64 | Above |
| 19-27 Dalton St Gardens | 46.35 | Below |
| Emmeline Apartments - Ground Floor Garden | 88.2 | Above |
| 1 Fairholme Caraven Site Garden | 25.71 | Below |
| 2a Fairholme Caraven Site Garden | 97.11 | Above |
| B18-19 Fairholme Caraven Site Garden | 92.77 | Above |
| C32 Fairholme Caraven Site Garden | 32.9 | Below |
| 41d Fairholme Caraven Site Garden | 21.52 | Below |

## Assessment of Likely Significant Effects (Application 4)

### Demolition and Construction

14.57 [The] effects during the site preparation, earthworks and construction phase has not been quantitatively assessed as the effects will be temporary and variable, and the assessment of effects has focused on the comparison between the Baseline Conditions and the completed Proposed Development as the impacts are permanent. However, it is expected that as construction of the Proposed Development proceeds into its different

phases, the availability and obstruction of natural light will vary, gradually adjusting to that of the completed Proposed Development.

14.58 During periods of demolition as the site becomes relatively free of obstructions, there will be greater levels of daylight and sunlight to existing surrounding buildings. As construction develops, the new structures' obstruction to daylight and sunlight will gradually increase until arriving to their completed condition. The effects of the completed conditions are described in the following sections.

## Completed and Operational Development

14.59 The effects once the development is completed and operational have been assessed and described below. A 3D model (**Figure 14.5**) of the Proposed Development and the relevant surrounding context has been developed for the purpose of the Daylight, Sunlight and Overshadowing Assessment of the Proposed Development (Application 4). The model has been constructed based on the design team drawings and model as listed in **Table 14.1**. Graphical results for the impact of Application 4 on surrounding properties can be found in **Appendix 14.2**.

### Daylight Assessment – Proposed Scenario

14.60 The results are presented both for the properties where internal layout information was available and for those where the assessment was based on external window position. The results of the daylight assessment of the Proposed Configuration showed that for the properties with internal room information, out of the 1613 rooms assessed, 1236 (76.6%) are within the recommended daylight criteria i.e., with VSC values above 27% and the NSL above 80% of the room area, or the magnitude of effect from the Baseline is 0.8 or greater. The number of receptors where the criteria are not met is 377 (23.4%).

14.61 For the properties with window information only, the results indicated that out of 2463 windows, 1700 (69.0%) are within the recommended criteria and 763 (31%) are below the threshold. According to the significance criteria and the magnitude of effect, of the 763 receptors falling below the criteria, 402 (**16.3%**) have a **Minor impact**, 236 (**9.6%**) have a **Moderate impact** and 125 (**5.1%**) have a **Major impact**.

***Table 14.19**: Summary of Daylight Results – Proposed Scenario*

| Receptor Type | Rooms/Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Rooms (VSC + NSL) | 1613 | 1236 | 76.6 | 377 | 23.4 |
| Windows (VSC) | 2463 | 1700 | 69.0 | 763 | 31.0 |

### Sunlight Assessment – Proposed Scenario

14.62 The results of the sunlight assessment for the Proposed Configuration showed that of the 2700 windows assessed, 2322 (86.0%) are within the recommended sunlight criteria, indicating APSH values above 25% and

WPSH values above 5%, or the magnitude of effect from the Baseline is 0.8 or greater. According to the significance criteria and the Magnitude of Effect, of the receptors below the criteria, 75 (2.8%) have a **Minor impact**, 59 (2.2%) have a **Moderate impact,** and 244 (9.0%) have a **Major impact**.

***Table 14.20**: Summary of Sunlight Results – Proposed Scenario*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (APSH + WPSH) | 2700 | 2322 | 86.0 | 378 | 14 |

## Overshadowing Assessment – Proposed Scenario

14.63 The results of the overshadowing assessment for the Proposed Scenario indicated that 11 (91.7%) of the existing adjacent open amenity spaces satisfy the BRE criteria, i.e. receive at least two hours of sunlight on the 21st of March on at least 50% of the area or the Magnitude of Effect from the Baseline is 0.8 or greater. The table below shows the results of the overshadowing assessment of open spaces in the Baseline Scenario.

***Table 14.21**: Summary of Overshadowing Results for Open Spaces – Proposed Scenario*

| Receptor | Above / Below BRE Criteria | Effect Significance |
|---|---|---|
| New Century Park | Above | Negligible |
| Green Quarter - Block 5 (Britton House) Ground Floor Amenity | Above | Negligible |
| Green Quarter – Blocks 2 and 3 Amenity | Below | Major Adverse |
| Green Quarter - Block 6 Amenity | Above | Negligible |
| 29-35 Dalton Street Garden | Above | Negligible |
| 19-27 Dalton Street Garden | Above | Negligible |
| Emmeline Apartments - Ground Floor Garden | Above | Negligible |
| 1 Fairholme Caraven Site Garden | Above | Negligible |
| 2a Fairholme Caraven Site Garden | Above | Negligible |
| B18-19 Fairholme Caraven Site Garden | Above | Negligible |
| C32 Fairholme Caraven Site Garden | Above | Negligible |
| 41d Fairholme Caraven Site Garden | Above | Negligible |

14.64 According to the significance criteria and the magnitude of effect, only one of 12 receptors falls below the criteria, (8.3%) indicating a **Minor impact**.

14.65 It should be noted that, to correctly interpret the results of the impact assessment, consideration must be given to the fact that the Baseline Scenario is assessed based on absolute criteria using the recommended levels for

daylight sunlight and overshadowing, whereas the results of the Proposed Scenario also account for the ratio of impact between the Baseline and the Proposed Scenarios. This means that, in accordance with guidelines, a reduction of 20% of the values achieved the Baseline Scenario is acceptable, which explains why in some cases the Proposed Scenario presents a higher passing rate than the Baseline.

## Additional Mitigation / Enhancement Measures (Application 4)

14.66 Access to daylight and sunlight in windows and open spaces can be optimised by reducing obstruction to natural light through design, building form, and also by the size of massing. Since the parameter-based approach is a worst-case scenario and allows some flexibility in the definition of the final massing, it will be possible to undertake further detailed studies at the detailed design stage to address the level of daylight and sunlight access to existing surrounding properties. It is important to highlight that given the context of a highly urbanised environment and that the area is characterised by a dense nature of development with tightly packed streets and buildings close to each other, this would have an inevitable effect on the availability of daylight and sunlight. It is therefore considered that the likely impacts arising from the Proposed Development would not be unusual and would be acceptable in the context of a very urban location such as this.

## Likely Residual Effects of the Development and their Significance (Application 4)

14.67 Considering the effects significance on the daylight, sunlight and overshadowing to the existing receptors, the residual effects are likely to be **local**, **permanent** and **long-term** effects of **Minor to Moderate Adverse** significance.

***Table 14.22**: Residual Effects Summary – Proposed Scenario*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| *Construction and Demolition* | | | |
| n/a | n/a | n/a | n/a |
| *The Completed and Operational Development* | | | |
| Daylight Impact to existing receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing during detailed planning | local, permanent, and long-term effect of minor adverse significance to moderate |
| Sunlight Impacts to existing receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing during detailed planning | local, permanent, and long-term effect of minor to moderate adverse significance |
| Overshadowing (Open Spaces) Impact to existing receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing during detailed planning | local, permanent, and long-term effect of minor to moderate adverse significance negative |

## Assessment of effects within the Proposed Development (Application 4)

14.68 The aim of this assessment which was based on the Parameter Plans is to quantify the level of daylight and sunlight within the Proposed Development. The assessment was based on the calculation of the availability of daylight and sunlight by estimating the Vertical Sky Component (VSC) and the Sunlight Hours (SH) on the facades of the various blocks within the Proposed Development. Graphical results can be found in **Appendix 14.5**.

14.69 The results of the daylight assessment indicated that adequate levels of daylight (VSC of 27% or greater) are achieved in all blocks to different degrees with façade areas ranging from 59.5% to 98.2% depending on the degree of self-shading and obstruction from neighbouring blocks.

***Table 14.23**: Daylight Assessment within Application 4*

| VSC Level (%) | RB10 | RB12B | RB01, RB02, RB03, RB04, RB05C | RB05A | RB05B | RB16, RB17 | RB07, RB06 |
|---|---|---|---|---|---|---|---|
| **5% or below** | 0.3% | 3.8% | 1.6% | 10.2% | 21.5% | 0.9% | 0.0% |
| **between 5%-15%** | 0.3% | 10.9% | 6.1% | 15.2% | 14.0% | 0.5% | 3.2% |
| **between 15%-27%** | 1.3% | 20.3% | 27.6% | 8.2% | 5.0% | 16.4% | 17.5% |
| **27% and above** | 98.2% | 65.0% | 64.7% | 66.4% | 59.5% | 82.2% | 79.2% |

14.70 The results of the sunlight analysis showed that the blocks access to sunlight varies between 64.4% and 92.1% depending on the degree of self-shading and obstruction from neighbouring blocks.

***Table 14.24**: Sunlight Assessment within Application 4*

| Outline Masterplan Block | Façade Area Above Criteria (%) | Façade Area Below Criteria (%) |
|---|---|---|
| RB10 | 92.11 | 7.89 |
| RB12B | 74.14 | 25.86 |
| RB01, RB02, RB03, RB04, RB05C | 73.61 | 26.39 |
| RB05A | 79.71 | 20.29 |
| RB05B | 74.10 | 25.90 |
| RB16, RB17 | 64.41 | 35.59 |
| RB07, RB06 | 76.78 | 23.22 |

14.71 In summary, the outline masterplan shows good potential for optimising natural light within the proposed blocks. Once the plots are developed in detail, it will be possible to undertake further studies at the detailed design stage to optimise the design and achieve the best possible levels of natural light within the buildings. The BRE guidelines recommend that if the VSC is:

- at least 27% conventional window design will usually give reasonable results.
- between 15% and 27% special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight
- between 5% and 15 it is very difficult to provide adequate daylight unless very large windows are used.
- less than 5% it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed.

## Conclusions (Application 4)

14.72 The results of the Outline Application 4 assessments indicated that the level of daylight and sunlight to existing surrounding properties and open spaces remains largely within the recommended criteria with 69% to 76.6% of the properties retaining suitable levels of daylight, 86% retaining suitable levels on sunlight, and 92% of open spaces retaining suitable levels of overshadowing. The loss of light reported in each category is predominantly within the **Minor** to **Moderate** Magnitude of Effect from the Baseline. Where necessary, it will be possible to undertake further studies at the detailed design stage to address the level of daylight and sunlight access to existing surrounding properties to minimise any significant negative effects to neighbouring adjacent buildings.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 4)

14.73 The list of cumulative sites is provided in **Table 2.3** of **Chapter 2: Approach**. The consented schemes relevant to the Daylight, Sunlight and Overshadowing assessments are listed below and have been included within the cumulative assessment. Other cumulative schemes listed in Table 2.3 are located at sufficient distance from Application 4 as to not be likely to have a material cumulative effect on daylight, sunlight and overshadowing at the identified sensitive receptors.

- Victoria Riverside (Ref: 126944/FO/2020)
- Meadowside - Plot 4 (Ref: 124120/JO/2019 and 116366/FO/2017)
- The Gasworks (Ref: 128248/FO/2020)
- 1 Lord Street (Ref: 113914/FO/2016)

### Approach

14.74 The approach to the cumulative effects is based on the assessment of loss to daylight and sunlight to existing properties and open spaces surrounding the site with the presence of both the Proposed Development and the consented schemes in the surroundings. In addition, the impact of the Proposed Development on the loss of light to the consented schemes has been assessed. For the consented schemes that are at a distance from the site, the approach for assessing the effects has been carried out through an assessment to the impact at window level. Where the consented scheme is in close proximity to the site, the assessment was carried on based on an assessment of the loss of daylight internally within the rooms.

## Demolition and Construction

14.75 The [assessment] effects during the site preparation, earthworks and construction phase have not been quantitatively assessed as the effects will be temporary and variable, and the assessment of effects has focused on the comparison between the Baseline and the completed Proposed Development including committed developments as the impacts are permanent. However, it is expected that as construction of the Proposed Development proceeds into its different phases, the availability and obstruction of natural light will vary, gradually adjusting to that of the completed Proposed Development.

14.76 During periods of demolition as the site becomes relatively free of obstructions, there will be greater levels of daylight and sunlight to existing surrounding buildings. As construction develops, the new structures' obstruction to daylight and sunlight will gradually increase until arriving to their completed condition. The effects of the completed conditions are described in the following sections.

## The Completed and Operational Development

14.77 This section set out the cumulative effects once the development is completed and operational.

***Daylight Assessment – Cumulative Scenario***

14.78 The results for the cumulative impacts on existing properties are presented both for the properties where internal layout information was available and for those where the assessment was based on external window position. The results of the daylight assessment of the Cumulative Configuration showed that for the existing properties with internal room information, out of the 1613 rooms assessed, 1115 (69.1%) are within the recommended daylight criteria i.e., with VSC values above 27% and the NSL above 80% of the room area, or the magnitude of effect from the Baseline is 0.8 or greater. The number of receptors where the criteria are not met is 498 (30.9%).

14.79 For the existing properties with window information only, the results indicated that out of 2463 windows, 1523 (61.8%) are within the recommended criteria with VSC values above 27% or the magnitude of effect from the Baseline is 0.8 or greater; and 940 (38.2%) are below the threshold. According to the significance criteria and the magnitude of effect, of the 940 receptors falling below the criteria, 471 (19.1%) have a **Minor impact**, 298 (12.1%) have a **Moderate impact,** and 171 (6.9%) have a **Major impact**.

***Table 14.25****: Summary of Daylight Results – Cumulative Scenario Application 4- Existing Properties*

| Receptor Type | Rooms/Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Rooms (VSC + NSL) | 1613 | 1115 | 69.1 | 498 | 30.9 |
| Windows (VSC) | 2463 | 1523 | 61.8 | 940 | 38.2 |

### *Sunlight Assessment – Cumulative Scenario*

14.80 The results of the sunlight assessment for the Cumulative Configuration showed that for the existing properties, of the 2700 windows assessed, 2303 (85.3%) are within the recommended sunlight criteria, indicating APSH values above 25% and WPSH values above 5%, or the magnitude of effect from the Baseline is 0.8 or greater. According to the significance criteria and the magnitude of effect, of the receptors below the criteria, 77 (2.9%) have **Minor impact**, 58 (2.1%) have a **Moderate impact** and 262 (9.7%) have a **Major impact**.

***Table 14.26**: Summary of Sunlight Results – Cumulative Scenario Application 4- Existing Properties*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (APSH + WPSH) | 2700 | 2303 | 85.3 | 397 | 14.7 |

### *Overshadowing Assessment – Cumulative Scenario*

14.81 The results of the overshadowing assessment for the Cumulative scenario indicated that 12 (85.7%) of the existing and consented adjacent open amenity spaces satisfy the BRE criteria, i.e. receive at least two hours of sunlight on the 21st of March on at least 50% of the area, or the magnitude of effect from the Baseline/Future Baseline is 0.8 or greater. In addition, for the Victoria Riverside scheme, the results showed that one of the two spaces is within the criteria, and one is below; however, this space is already below the criteria prior to the Proposed Development due to self-shading. The table below shows the results of the overshadowing assessment of open spaces in the Cumulative Scenario.

***Table 14.27**: Summary of Overshadowing Results for Open Spaces– Cumulative Scenario Application 4- Existing and Consented Open Spaces*

| Receptor | Above / Below BRE Criteria | Effect Significance |
|---|---|---|
| New Century Park | Above | Negligible |
| Green Quarter - Block 5 (Britton House) Ground Floor Amenity | Above | Negligible |
| Green Quarter – Blocks 2 and 3 Amenity | Below | Major |
| Green Quarter - Block 6 Amenity | Above | Negligible |
| 29-35 Dalton Street Garden | Above | Negligible |
| 19-27 Dalton Street Garden | Above | Negligible |
| Emmeline Apartments - Ground Floor Garden | Above | Negligible |
| 1 Fairholme Caraven Site Garden | Above | Negligible |
| 2a Fairholme Caraven Site Garden | Above | Negligible |
| B18-19 Fairholme Caraven Site Garden | Above | Negligible |
| C32 Fairholme Caraven Site Garden | Above | Negligible |

| Receptor | Above / Below BRE Criteria | Effect Significance |
|---|---|---|
| 41d Fairholme Caraven Site Garden | Above | Negligible |
| Victoria Riverside Podium B | Below | Major |
| Victoria Riverside Podium A | Above | Negligible |

14.82 According to the significance criteria and the magnitude of effect, only 2 (14.3%) of 14 receptors are below the criteria, indicating a **Minor impact**.

14.83 It should be noted that to correctly interpret the results of the impact assessment, consideration must be given to the fact that the Baseline Scenario is assessed based on absolute criteria using the recommended levels for daylight sunlight and overshadowing, whereas the results of the Cumulative Scenario also account for the ratio of impact between the Baseline and the Cumulative Scenarios. This means that, in accordance with guidelines, a reduction of 20% of the values achieved the Baseline scenario is acceptable, which explains why in some cases the Cumulative Scenario presents a higher passing rate than the Baseline.

***Impact on Victoria Riverside***

14.84 In addition to the cumulative impacts with all committed schemes together, given the location of the Victoria Riverside scheme in relation to the site, a detailed assessment of the impact on daylight has been undertaken based on internal illuminance within each room. The results indicated that out of the 1740 rooms assessed, 1217 (69.9%) are within the recommended illuminance level, while 523 rooms (30.1%) are below.

14.85 The sunlight assessment indicated that out of the 1740 rooms assessed, 1344 (77.2%) are within the recommended criteria and 396 (22.8%) are below.

***Table 14.28**: Summary of Daylight Results – Cumulative Scenario (Victoria Riverside) Application 4*

| Receptor Type | Rooms | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Bedrooms | 1105 | 883 | 79.91 | 222 | 20.09 |
| Kitchens/LK | 635 | 334 | 52.6 | 301 | 47.4 |
| Total | 1740 | 1217 | 69.9 | 523 | 30.06 |

***Table 14.29**: Summary of Sunlight Results – Cumulative Scenario (Victoria Riverside) Application 4*

| Receptor Type | Rooms | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| All Units | 1740 | 1344 | 77.2 | 396 | 22.8 |
| Units 90° due South | 879 | 852 | 96.9 | 27 | 3.1 |

### *Impact on Consented Schemes*

14.86 The assessment of the impacts of the Proposed Development on Meadowside - Plot 4, The Gasworks, and 1 Lord Street consented schemes was based on external window position given their further distance to the site.

14.87 The results of the daylight assessment, summarised in the Table below, showed that out of the 2386 windows assessed, 2065 (86.5%) are within the recommended daylight criteria i.e., with VSC values above 27%, or the magnitude of effect from the Future Baseline is 0.8 or greater. According to the significance criteria and the magnitude of effect, of the receptors below the criteria, 155 (**6.5%**) have **Minor impact**, 75 (**3.1%**) have a **Moderate impact** and 44 (**1.8%**) have a **Major impact**.

***Table 14.30**: Summary of Daylight Results – Cumulative Scenario Application 4 – Consented Schemes*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (VSC) | 2386 | 2065 | 86.5 | 274 | 11.5 |

14.88 The results of the sunlight assessment showed that for the consented schemes, of the 399 windows assessed, 397 (**99.5%**) are within the recommended sunlight criteria, indicating APSH values above 25% and WPSH values above 5% or the magnitude of effect from the Future Baseline is 0.8 or greater. According to the significance criteria and the magnitude of effect, the receptors below the criteria are 2 (**0.5%**) and have a **Minor impact**.

***Table 14.31**: Summary of Sunlight Results – Cumulative Scenario Application 4 – Consented Schemes*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (APSH + WPSH) | 399 | 397 | 99.5 | 2 | 0.5 |

## Additional Mitigation / Enhancement Measures (Cumulative Scenario)

14.89 Access to daylight and sunlight in rooms, windows and open spaces can be optimised by reducing obstruction to natural light through design, building form, and also by the size of massing. Since the parameter-based approach is a worst-case scenario and allows some flexibility in the definition of the final massing, it will be possible to undertake further detailed studies at the detailed design stage to address the level of daylight and sunlight access to existing surrounding properties to minimise any significant negative effects to neighbouring adjacent buildings.

### Likely Residual Effects of the Development and their Significance (Cumulative Scenario)

14.90 Considering the effects significance on the daylight sunlight and overshadowing to the existing and consented receptors, the residual effects in the Cumulative Scenario are likely to be **local, permanent** and **long-term** effects of **Minor to Moderate Adverse** significance.

***Table 14.32:*** *Residual Effects Summary – Cumulative Scenario Application 4*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| *Construction and Demolition* | | | |
| n/a | n/a | n/a | n/a |
| *The Completed and Operational Development* | | | |
| Daylight Impact to existing and consented receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing during detailed planning | local, permanent and long-term effect of minor to moderate adverse significance |
| Sunlight Impacts to existing and consented receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing during detailed planning | local, permanent and long-term effect of minor to moderate adverse significance |
| Overshadowing (Open Spaces) Impact to existing and consented receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing during detailed planning | local, permanent and long-term effect of minor to moderate adverse significance |

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 4)

### Approach

14.91 A qualitative assessment has been carried out as an overview of the impacts of the Proposed Development in combination with the SRF. Daylight and sunlight impacts are significant when the massing of new developments is likely to affect the level of diffuse or direct light to surrounding properties. This is particularly relevant for developments in close proximity to each other. Based on the map of the SRF Initial Development Area in the context of the Northern Gateway SRF initiative, most development areas are a sufficient distance from each other to assume that the impacts with each other are unlikely to be significant. Only if the immediately adjacent development areas include development blocks in close proximity to the Red Bank site, will the level of daylight or sunlight be affected, in which case, a suitable assessment should be carried out.

### Demolition and Construction

14.92 The [assessment] effects during the site preparation, earthworks and construction phase have not been quantitatively assessed as the effects will be temporary and variable, and the assessment of effects has focused on the comparison between the Baseline and the completed Proposed Development as the impacts are permanent. However, it is expected that as construction of the Proposed Development proceeds into its different

phases, the availability and obstruction of natural light will vary, gradually adjusting to that of the completed Proposed Development.

14.93 During periods of demolition as the site becomes relatively free of obstructions, there will be greater levels of daylight and sunlight to existing surrounding buildings. As construction develops, the new structures' obstruction to daylight and sunlight will gradually increase until arriving to their completed condition.

### The Completed and Operational Development

14.94 Daylight and sunlight impacts are significant when the massing of new developments is likely to affect the level of diffuse or direct light to surrounding properties. This is particularly relevant for developments in close proximity to each other. Based on the map of the SRF Initial Development Area in the context of the Northern Gateway SRF initiative, most development areas are within sufficient distance to assume that the impacts with each other are unlikely to be significant. Only if the immediately adjacent development areas include development blocks in close proximity to the Red Bank site, will the level of daylight or sunlight be affected, in which case a suitable assessment should be carried out to define the actual level of impact.

## Likely Residual Cumulative Effects and their Significance

14.95 Based on the above considerations and subject to suitable assessments once the information is available, the residual effects on the daylight sunlight and overshadowing of the inclusion of the SRF sites in the cumulative scenario are likely to be local, permanent and long-term effects of **Minor to Moderate Adverse** significance.

# NT02-NT04 (Full Application 5)

## Baseline Conditions (Application 5)

14.96 Information relating to the Baseline Conditions for Outline Application 4 and Full Application 5 has been set out previously in this chapter, see Application 4.

## Assessment of Likely Significant Effects (Application 5)

### Demolition and Construction

14.97 The effects during the site preparation, earthworks and construction phase have not been quantitatively assessed as the effects will be temporary and variable, and the assessment of effects has focused on the comparison between the Baseline and the completed Proposed Development as the impacts are permanent. However, it is expected that as construction of the Proposed Development proceeds into its different phases, the availability and obstruction of natural light will vary, gradually adjusting to that of the completed Proposed Development.

14.98 During periods of demolition as the site becomes relatively free of obstructions, there will be greater levels of daylight and sunlight to existing surrounding buildings. As construction develops, the new structures' obstruction to daylight and sunlight will gradually increase until arriving to their completed condition. The effects of the completed conditions are described in the following sections.

### Completed and Operational Development

14.99 The effects once the development is completed and operational have been assessed and described below. A 3D model (**Figure 14.6**) of the Proposed Development and the relevant surrounding context has been developed for the purpose of the Daylight, Sunlight and Overshadowing Assessment of the Proposed Development (Application 5). The model has been constructed based on the design team drawings and model as listed in **Table 14.1**. Graphical results for the impact of Application 5 on surrounding properties can be found in **Appendix 14.3**.

### Daylight Assessment – Proposed Scenario

14.100 The results are presented both for the properties where internal layout information was available and for those where the assessment was based on external window position. The results of the daylight assessment of the Proposed Configuration showed that for the properties with internal room information, all the 1613 rooms assessed, (100%) are within the recommended daylight criteria i.e., with VSC values above 27% and the NSL above 80% of the room area, or the magnitude of effect from the Baseline is 0.8 or greater.

14.101 For the properties with window information only, the results indicated that all the 2463 windows assessed (100%) are within the recommended criteria with VSC values above 27% or the magnitude of effect from the Baseline is 0.8 or greater.

***Table 14.33**: Summary of Daylight Results – Proposed Scenario Application 5*

| Receptor Type | Rooms/Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Rooms (VSC + NSL) | 1613 | 1613 | 100 | 0 | 0 |
| Windows (VSC) | 2463 | 2463 | 100 | 0 | 0 |

## Sunlight Assessment – Proposed Scenario

14.102 The results of the sunlight assessment for the Proposed Configuration showed that all the 2700 windows assessed (100%), are within the recommended sunlight criteria, indicating APSH values above 25% and WPSH values above 5%, or the magnitude of effect from the Baseline is 0.8 or greater.

***Table 14.34**: Summary of Sunlight Results – Proposed Scenario Application 5*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (APSH + WPSH) | 2700 | 2700 | 100 | 0 | 0 |

## Overshadowing Assessment – Proposed Scenario

14.103 The results of the overshadowing assessment for the Proposed Scenario indicated that all 12 (100%) of the existing adjacent open amenity spaces satisfy the BRE criteria, i.e., receive at least two hours of sunlight on the 21st of March on at least 50% of the area, or the magnitude of effect from the Baseline is 0.8 or greater. The table below shows the results of the overshadowing assessment of open spaces in the Baseline Scenario.

***Table 14.35**: Summary of Overshadowing Results for Open Spaces – Application 5*

| Receptor | Above / Below BRE Criteria | Effect Significance |
|---|---|---|
| New Century Park | Above | Negligible |
| Green Quarter - Block 5 (Britton House) Ground Floor Amenity | Above | Negligible |
| Green Quarter – Blocks 2 and 3 Amenity | Above | Negligible |
| Green Quarter - Block 6 Amenity | Above | Negligible |
| 29-35 Dalton Street Garden | Above | Negligible |
| 19-27 Dalton Street Garden | Above | Negligible |
| Emmeline Apartments - Ground Floor Garden | Above | Negligible |
| 1 Fairholme Caraven Site Garden | Above | Negligible |
| 2a Fairholme Caraven Site Garden | Above | Negligible |
| B18-19 Fairholme Caraven Site Garden | Above | Negligible |

| Receptor | Above / Below BRE Criteria | Effect Significance |
|---|---|---|
| C32 Fairholme Caraven Site Garden | Above | Negligible |
| 41d Fairholme Caraven Site Garden | Above | Negligible |

14.104 According to the significance criteria and the magnitude of effect, none of the 12 receptors are below the criteria, indicating a **Negligible impact**.

14.105 It should be noted that, to correctly interpret the results of the impact assessment, consideration must be given to the fact that the Baseline Scenario is assessed based on absolute criteria using the recommended levels for daylight sunlight and overshadowing, whereas the results of the Proposed Scenario also account for the ratio of impact between the Baseline and the Proposed Scenarios. This means that, in accordance with guidelines, a reduction of 20% of the values achieved the Baseline Scenario is acceptable, which explains why in some cases the Proposed Scenario presents a higher passing rate than the Baseline.

## Additional Mitigation / Enhancement Measures (Application 5)

14.106 No mitigation has been identified given the negligible impact of the Proposed Development on the daylight, sunlight on overshadowing to existing surrounding properties.

## Likely Residual Effects of the Development and their Significance (Application 5)

14.107 Considering the effects significance on the daylight, sunlight and overshadowing to the existing receptors, the residual effects are likely to be **local**, **permanent** and **long-term** effects of **Negligible** significance.

***Table 14.36**: Residual Effects Summary – Application 5*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| *Construction and Demolition* | | | |
| n/a | n/a | n/a | n/a |
| *The Completed and Operational Development* | | | |
| Daylight Impact to existing receptors | local, permanent and long-term effect of negligible significance | n/a | local, permanent and long-term effect of negligible significance |
| Sunlight Impacts to existing receptors | local, permanent and long-term effect of negligible significance | n/a | local, permanent and long-term effect of negligible significance |
| Overshadowing (Open Spaces) Impact to existing receptors | local, permanent and long-term effect of negligible significance | n/a | local, permanent and long-term effect of negligible significance |

## Assessment of effects within the Proposed Development (Application 5)

14.108 The aim of this assessment which was based on the scheme drawings is to quantify the level of daylight and sunlight within the Proposed Development. The assessment was based on the calculation of the availability of daylight and sunlight by estimating the Vertical Sky Component (VSC) and the Sunlight Hours (SH) on the windows of the proposed blocks within the Proposed Development. Graphical results can be found in **Appendix 14.6**.

14.109 The results of the daylight assessment indicated that adequate levels of daylight (VSC of 27% or greater) are achieved in all blocks to different degrees with a percentage of windows ranging from 3.2% to 95.9% depending on the degree of self-shading and obstruction from neighbouring blocks.

***Table 14.37**: Daylight Assessment within Proposed Development – Application 5*

| VSC Level (%) | | 5% or below | Between 5%-15% | Between 15%-27% | 27% and above |
|---|---|---|---|---|---|
| **NT02 Tower 1** | Windows | 0.0% | 0.1% | 9.5% | 90.4% |
| **NT02 Tower 2** | Windows | 1.0% | 11.2% | 39.0% | 48.8% |
| **NT03 Midrise3** | Windows | 10.2% | 45.5% | 24.4% | 19.9% |
| **NT03 Tower3** | Windows | 0.5% | 10.5% | 15.9% | 73.1% |
| **NT03Tail3** | Windows | 22.4% | 65.6% | 8.8% | 3.2% |
| **NT04 Tail 4** | Windows | 5.5% | 19.8% | 45.1% | 29.7% |
| **NT04 Tower4** | Windows | 3.0% | 9.2% | 29.7% | 58.2% |
| **NT04 Midrise 4** | Windows | 1.6% | 39.0% | 9.2% | 50.2% |
| **NT04 Tower 5** | Windows | 1.3% | 0.8% | 1.9% | 95.9% |
| **NT04 Tail 5** | Windows | 0.0% | 12.1% | 34.6% | 53.3% |

14.110 The results of the sunlight assessment for the Proposed Configuration showed that out of 5,181 windows assessed, 3,559 (68.7%) are within the recommended sunlight criteria, indicating that these windows receive at least 1.5 hours of sunlight on 21st of March.

***Table 14.38**: Sunlight Assessment within Proposed Development – Application 5*

| Receptor Type | Windows | Meets BRE Criteria | | Does not meet BRE Criteria | |
|---|---|---|---|---|---|
| **Windows** | **No.** | **No.** | **%** | **No.** | **%** |
| NT02 Tower 1 | 1088 | 1088 | 100.00 | 0 | 0.00 |
| NT02 Tower 2 | 625 | 310 | 49.60 | 315 | 50.40 |
| NT03 Midrise3 | 246 | 138 | 56.10 | 108 | 43.90 |
| NT03 Tower3 | 945 | 735 | 77.78 | 210 | 22.22 |
| NT03 Tail3 | 125 | 24 | 19.20 | 101 | 80.80 |
| NT04 Tail 4 | 182 | 163 | 89.56 | 19 | 10.44 |

| Receptor Type | Windows | Meets BRE Criteria | | Does not meet BRE Criteria | |
|---|---|---|---|---|---|
| Windows | No. | No. | % | No. | % |
| NT04 Tower4 | 698 | 432 | 61.89 | 266 | 38.11 |
| NT04 Midrise 4 | 251 | 18 | 7.17 | 233 | 92.83 |
| NT04 Tower 5 | 839 | 535 | 63.77 | 304 | 36.23 |
| NT04 Tail 5 | 182 | 116 | 63.74 | 66 | 36.26 |
| **Total** | **5181** | **3559** | **68.69** | **1622** | **31.31** |

14.111 In summary, Application 5 shows good potential for optimising natural light within the proposed blocks. The BRE guidelines recommend that if the VSC is:

- at least 27% conventional window design will usually give reasonable results.
- between 15% and 27% special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight
- between 5% and 15 it is very difficult to provide adequate daylight unless very large windows are used.
- less than 5% it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed.

## Conclusions (Application 5)

14.112 The results of the Application 5 assessments indicated that the level of daylight and sunlight to existing surrounding properties and open spaces remains within the recommended criteria with 100% of the properties retaining suitable levels of daylight, sunlight and overshadowing to open spaces, indicating a **Negligible Impact**. No mitigation has been identified as necessary.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 5)

14.113 The list of cumulative sites is provided in **Table 2.3** of **Chapter 2: Approach**. The consented schemes relevant to the Daylight, Sunlight and Overshadowing assessments are listed below and have been included within the cumulative assessment. Other cumulative schemes listed in Table 2.3 are located at sufficient distance from the Application 5 as to not be likely to have a material cumulative effect on daylight, sunlight and overshadowing at the identified sensitive receptors.

- Victoria Riverside (Ref: 126944/FO/2020)
- Meadowside - Plot 4 (Ref: 124120/JO/2019 and 116366/FO/2017)
- The Gasworks (Ref: 128248/FO/2020)
- 1 Lord Street (Ref: 113914/FO/2016)

## Approach

14.114 The approach to the cumulative effects is based on the assessment of loss to daylight and sunlight to existing properties and open spaces surrounding the site with the presence of both the Proposed Development and the consented schemes in the surroundings. In addition, the impact of the Proposed Development on the loss of light to the consented schemes has been assessed. For the consented schemes that are at a distance from the site, the approach for assessing the effects has been carried out through an assessment to the impact at window level. Where the consented scheme is in close proximity to the site, the assessment was carried on based on an assessment of the loss of daylight internally within the rooms.

### Demolition and Construction

14.115 The [assessment] effects during the site preparation, earthworks and construction phase have not been quantitatively assessed as the effects will be temporary and variable, and the assessment of effects has focused on the comparison between the Baseline and the completed Proposed Development including committed developments as the impacts are permanent. However, it is expected that as construction of the Proposed Development proceeds into its different phases, the availability and obstruction of natural light will vary, gradually adjusting to that of the completed Proposed Development.

14.116 During periods of demolition as the site becomes relatively free of obstructions, there will be greater levels of daylight and sunlight to existing surrounding buildings. As construction develops, the new structures' obstruction to daylight and sunlight will gradually increase until arriving to their completed condition. The effects of the completed conditions are described in the following sections.

### The Completed and Operational Development

14.117 This section set out the cumulative effects once the development is completed and operational.

#### *Daylight Assessment – Cumulative Scenario*

14.118 The results for the impact on existing properties are presented both for the properties where internal layout information was available and for those where the assessment was based on external window position. The results of the daylight assessment of the Cumulative Configuration showed that for the existing properties with internal room information, out of the 1613 rooms assessed, 1569 (97.3%) are within the recommended daylight criteria i.e., with VSC values above 27% and the NSL above 80% of the room area, or the magnitude of effect from the Baseline is 0.8 or greater. The number of receptors where the criteria are not met is 44 (2.7%).

14.119 For the existing properties with window information only, the results indicated that out of 2463 windows, 2436 (98.9%) are within the recommended criteria with VSC values above 27% or the magnitude of effect from the Baseline is 0.8 or greater; and 27 (1.1%) are below the threshold. According to the significance criteria and the

magnitude of effect, of the 27 receptors falling below the criteria, 22 (0.9%) have a **Minor impact** and 2 (0.2%) have a **Moderate impact** with no instances of Major impacts.

***Table 14.39**: Summary of Daylight Results – Cumulative Scenario Existing Properties*

| Receptor Type | Rooms/Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Rooms (VSC + NSL) | 1613 | 1569 | 97.3 | 44 | 2.7 |
| Windows (VSC) | 2463 | 2436 | 98.9 | 27 | 1.1 |

### *Sunlight Assessment – Cumulative Scenario*

14.120 The results of the sunlight assessment for the Cumulative Configuration showed that for the existing properties, all the 2700 windows assessed (100%), are within the recommended sunlight criteria, indicating APSH values above 25% and WPSH values above 5%, or the magnitude of effect from the Baseline is 0.8 or greater.

***Table 14.40**: Summary of Sunlight Results – Cumulative Scenario - Existing properties*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (APSH + WPSH) | 2700 | 2700 | 100 | 0 | 0 |

### *Overshadowing Assessment – Cumulative Scenario*

14.121 The results of the overshadowing assessment for the Cumulative scenario indicated that 13 (92.86%) of the existing and consented adjacent open amenity spaces satisfy the BRE criteria, i.e., receive at least two hours of sunlight on the 21st of March on at least 50% of the area or the magnitude of effect from the Baseline is 0.8 or greater. In addition, for the Victoria Riverside scheme, the results showed that one of the two spaces is within the criteria, and one is below; however, this space is already below the criteria prior to the Proposed Development due to self-shading. The table below shows the results of the overshadowing assessment of open spaces in the Cumulative Scenario.

***Table 14.41**: Summary of Overshadowing Results for Open Spaces– Cumulative Scenario Application 5- Existing and Consented Open Spaces*

| Receptor | Above / Below BRE Criteria | Effect Significance |
|---|---|---|
| New Century Park | Above | Negligible |
| Green Quarter - Block 5 (Britton House) Ground Floor Amenity | Above | Negligible |
| Green Quarter – Blocks 2 and 3 Amenity | Above | Negligible |

| Receptor | Above / Below BRE Criteria | Effect Significance |
|---|---|---|
| Green Quarter - Block 6 Amenity | Above | Negligible |
| 29-35 Dalton Street Garden | Above | Negligible |
| 19-27 Dalton Street Garden | Above | Negligible |
| Emmeline Apartments - Ground Floor Garden | Above | Negligible |
| 1 Fairholme Caraven Site Garden | Above | Negligible |
| 2a Fairholme Caraven Site Garden | Above | Negligible |
| B18-19 Fairholme Caraven Site Garden | Above | Negligible |
| C32 Fairholme Caraven Site Garden | Above | Negligible |
| 41d Fairholme Caraven Site Garden | Above | Negligible |
| Victoria Riverside Podium B | Below | Major |
| Victoria Riverside Podium A | Above | Negligible |

14.122 According to the significance criteria and the magnitude of effect, only one of 14 receptors falls below the criteria, (7.14%) indicating a **Minor impact**.

14.123 It should be noted that to correctly interpret the results of the impact assessment, consideration must be given to the fact that the Baseline Scenario is assessed based on absolute criteria using the recommended levels for daylight sunlight and overshadowing, whereas the results of the Cumulative Scenario also account for the ratio of impact between the Baseline and the Cumulative Scenarios. This means that, in accordance with guidelines, a reduction of 20% of the values achieved the Baseline Scenario is acceptable, which explains why in some cases the Cumulative Scenario presents a higher passing rate than the Baseline.

***Impact on Victoria Riverside***

14.124 In addition to the cumulative impacts with all committed schemes together, given the location of the Victoria Riverside scheme in relation to the site, a detailed assessment of the impact on daylight has been undertaken based on internal illuminance within each room. The results indicated that out of the 1740 rooms assessed, 1389 (79.8%) are within the recommended illuminance level, while 351 rooms (20.2%) are below.

14.125 The sunlight assessment indicated that out of the 1740 rooms assessed, 1393 (80.1%) are within the recommended criteria and 347 (19.9%) are below.

***Table 14.42**: Summary of Daylight Results – Cumulative Scenario (Victoria Riverside) Application 5*

| Receptor Type | Rooms | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Bedrooms | 1105 | 963 | 87.15 | 142 | 12.85 |
| Kitchens/LK | 635 | 426 | 67.09 | 209 | 32.91 |

| Receptor Type | Rooms | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Total | 1740 | 1389 | 79.83 | 351 | 20.17 |

***Table 14.43**: Summary of Sunlight Results – Cumulative Scenario (Victoria Riverside) Application 5*

| Receptor Type | Rooms | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| All Units | 1740 | 1393 | 80.1 | 347 | 19.9 |
| Units 90° due South | 879 | 855 | 97.3 | 24 | 2.7 |

### *Impact on Consented Schemes*

14.126 The assessment of the impacts of the Proposed Development on Meadowside – Plot 4, The Gasworks, and 1 Lord Street consented schemes was based on external window position given their further distance to the site.

14.127 The results of the daylight assessment, summarised in the Table below, showed that out of the 2386 windows assessed, 2246 (94.1%) are within the recommended daylight criteria i.e., with VSC values above 27%, or the magnitude of effect from the Future Baseline is 0.8 or greater. According to the significance criteria and the magnitude of effect, of the receptors below the criteria, 89 (3.7%) have **Minor impact**, 31 (1.3%) have a **Moderate impact** and 20 (0.8%) have a **Major impact**.

***Table 14.44**: Summary of Daylight Results – Cumulative Scenario Application 5– Consented Schemes*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (VSC) | 2386 | 2246 | 94.1 | 140 | 5.9 |

14.128 The results of the sunlight assessment showed that for the consented schemes, all the 399 windows assessed are within the recommended sunlight criteria, indicating APSH values above 25% and WPSH values above 5% or the magnitude of effect from the Future Baseline is 0.8 or greater.

***Table 14.45**: Summary of Sunlight Results – Cumulative Scenario Application 5– Consented Schemes*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (APSH + WPSH) | 399 | 399 | 100 | 0 | 0 |

## Additional Mitigation / Enhancement Measures (Cumulative Scenario) (Application 5)

14.129 No mitigation has been identified given the negligible impact of the Proposed Development on the daylight, sunlight on overshadowing to existing surrounding properties.

## Likely Residual Effects of the Development and their Significance (Cumulative Scenario) (Application 5)

14.130 Considering the effects significance on the daylight sunlight and overshadowing to the existing and consented receptors, the residual effects in the Cumulative Scenario are likely to be **local**, **permanent** and **long-term** effects of **Minor** significance.

***Table 14.46**: Residual Effects Summary – Cumulative Scenario Application 5*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| *Construction and Demolition* | | | |
| n/a | n/a | n/a | n/a |
| *The Completed and Operational Development* | | | |
| Daylight Impact to existing and Consented receptors | local, permanent and long-term effect of minor significance | n/a | local, permanent and long-term effect of minor significance |
| Sunlight Impacts to existing and Consented receptors | local, permanent and long-term effect of negligible significance | n/a | local, permanent and long-term effect of negligible significance |
| Overshadowing (Open Spaces) Impact to existing and Consented receptors | local, permanent and long-term effect of minor significance | n/a | local, permanent and long-term effect of minor significance |

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 5)

### Approach

14.131 A qualitative assessment has been carried out as an overview of the impacts of the Proposed Development in combination with the SRF. Daylight and sunlight impacts are significant when the massing of new developments is likely to affect the level of diffuse or direct light to surrounding properties. This is particularly relevant for developments in close proximity to each other. Based on the map of the SRF Initial Development Area in the context of the Northern Gateway SRF initiative, most development areas are a sufficient distance from each other to assume that the impacts with each other are unlikely to be significant. Only if the immediately adjacent development areas include development blocks in close proximity to the NT02-04 site, will the level of daylight or sunlight be affected, in which case, a suitable assessment should be carried out.

### Demolition and Construction

14.132 The [assessment] effects during the site preparation, earthworks and construction phase have not been quantitatively assessed as the effects will be temporary and variable, and the assessment of effects has focused on the comparison between the Baseline and the completed Proposed Development as the impacts are permanent. However, it is expected that as construction of the Proposed Development proceeds into its different phases, the availability and obstruction of natural light will vary, gradually adjusting to that of the completed Proposed Development.

14.133 During periods of demolition as the site becomes relatively free of obstructions, there will be greater levels of daylight and sunlight to existing surrounding buildings. As construction develops, the new structures' obstruction to daylight and sunlight will gradually increase until arriving to their completed condition.

### The Completed and Operational Development

14.134 Daylight and sunlight impacts are significant when the massing of new developments is likely to affect the level of diffuse or direct light to surrounding properties. This is particularly relevant for developments in close proximity to each other. Based on the map of the SRF Initial Development Area in the context of the Northern Gateway SRF initiative, most development areas are within a sufficient distance from each other to assume that the impacts with each other are unlikely to be significant. Only if the immediately adjacent development areas include development blocks in close proximity to the NT02-04 site, will the level of daylight or sunlight be affected, in which case a suitable assessment should be carried out to define the actual level of impact.

## Likely Residual Cumulative Effects and their Significance

14.135 Based on the above considerations and subject to suitable assessments once the information is available, the residual effects on the daylight sunlight and overshadowing of the inclusion of the SRF sites in the cumulative scenario are likely to be local, permanent and long-term effects of **Minor Adverse** significance.

# In Combination Effects of Applications 4 and 5

## Baseline Conditions (Applications 4 and 5)

14.136 Information relating to the Baseline Conditions for Applications 4 and 5 has been set out previously in this chapter, see Application 4.

## Assessment of Likely Significant Effects (Applications 4 and 5)

### Demolition and Construction

14.137 The assessment during the site preparation, earthworks and construction phase has not been quantitatively assessed as the effects will be temporary and variable, and the assessment of effects has focused on the comparison between the Baseline and the completed Proposed Development as the impacts are permanent. However, it is expected that as construction of the Proposed Development proceeds into its different phases, the availability and obstruction of natural light will vary, gradually adjusting to that of the completed Proposed Development.

14.138 During periods of demolition as the site becomes relatively free of obstructions, there will be greater levels of daylight and sunlight to existing surrounding buildings. As construction develops, the new structures' obstruction to daylight and sunlight will gradually increase until arriving to their completed condition. The effects of the completed conditions are described in the following sections.

### Completed and Operational Development

14.139 The effects once the development is completed and operational have been assessed and described below. A 3D model (**Figure 14.7**) of the Proposed Development and the relevant surrounding context has been developed for the purpose of the Daylight, Sunlight and Overshadowing Assessment of the Proposed Development (Applications 4 and 5). The model has been constructed based on the design team drawings and model as listed in **Table 14.1**. Graphical results for the impact of Application 5 on surrounding properties can be found in **Appendix 14.4**.

#### Daylight Assessment – Proposed Scenario

14.140 The results are presented both for the properties where internal layout information was available and for those where the assessment was based on external window position. The results of the daylight assessment of the Proposed Configuration showed that for the properties with internal room information, out of the 1613 rooms assessed, 1227 (76.1%) are within the recommended daylight criteria i.e., with VSC values above 27% and the NSL above 80% of the room area, or the magnitude of effect from the Baseline is 0.8 or greater. The number of receptors where the criteria are not met is 386 (23.9%).

14.141 For the properties with window information only, the results indicated that out of 2463 windows, 1667 (67.7%) are within the recommended criteria; and 796 (32.3%) are below the threshold. According to the significance criteria and the magnitude of effect, of the 796 receptors falling below the criteria, 427 (17.3%) have a **Minor impact**, 235 (9.5%) have a **Moderate impact** and 134 (5.4%) have a **Major impact**.

***Table 14.47**: Summary of Daylight Results – Proposed Scenario Applications 4 and 5*

| Receptor Type | Rooms/Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Rooms (VSC + NSL) | 1613 | 1227 | 76.1 | 386 | 23.9 |
| Windows (VSC) | 2463 | 1667 | 67.7 | 796 | 32.3 |

## Sunlight Assessment – Proposed Scenario

14.142 The results of the sunlight assessment for the Proposed Configuration showed that of the 2700 windows assessed, 2317 (85.8%) are within the recommended sunlight criteria, indicating APSH values above 25% and WPSH values above 5%, or the magnitude of effect from the Baseline is 0.8 or greater. According to the significance criteria and the magnitude of effect, of the receptors below the criteria, 75 (2.8%) have **Minor impact**, 59 (2.2%) have a **Moderate impact** and 249 (9.2%) have a **Major impact**.

***Table 14.48**: Summary of Sunlight Results – Proposed Scenario Applications 4 and 5*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (APSH + WPSH) | 2700 | 2317 | 85.8 | 383 | 14.2 |

## Overshadowing Assessment – Proposed Scenario

14.143 The results of the overshadowing assessment for the Proposed Scenario indicated that 11 (91.7%) of the existing adjacent open amenity spaces satisfy the BRE criteria, i.e., receive at least two hours of sunlight on the 21st of March on at least 50% of the area or the magnitude of effect from the baseline is 0.8 or greater. The table below shows the results of the overshadowing assessment of open spaces in the Baseline Scenario.

***Table 14.49**: Summary of Overshadowing Results for Open Spaces – Proposed Scenario Applications 4 and 5*

| Receptor | Above / Below BRE Criteria | Effect Significance |
|---|---|---|
| New Century Park | Above | Negligible |
| Green Quarter - Block 5 (Britton House) Ground Floor Amenity | Above | Negligible |
| Green Quarter – Blocks 2 and 3 Amenity | Below | Major |

| Receptor | Above / Below BRE Criteria | Effect Significance |
|---|---|---|
| Green Quarter - Block 6 Amenity | Above | Negligible |
| 29-35 Dalton Street Garden | Above | Negligible |
| 19-27 Dalton Street Garden | Above | Negligible |
| Emmeline Apartments Amenity | Above | Negligible |
| 1 Fairholme Caraven Site Garden | Above | Negligible |
| 2a Fairholme Caraven Site Garden | Above | Negligible |
| B18-19 Fairholme Caraven Site Garden | Above | Negligible |
| C32 Fairholme Caraven Site Garden | Above | Negligible |
| 41d Fairholme Caraven Site Garden | Above | Negligible |

14.144 According to the significance criteria and the magnitude of effect, only one of 12 receptors falls below the criteria, (8.3%) indicating a **Minor impact**.

14.145 It should be noted that to correctly interpret the results of the impact assessment, consideration must be given to the fact that the Baseline Scenario is assessed based on absolute criteria using the recommended levels for daylight sunlight and overshadowing, whereas the results of the Proposed Scenario also account for the ratio of impact between the Baseline and the Proposed Scenarios. This means that, in accordance with guidelines, a reduction of 20% of the values achieved the Baseline Scenario is acceptable, which explains why in some cases the Proposed Scenario presents a higher passing rate than the Baseline.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5)

14.146 Access to daylight and sunlight in windows and open spaces can be optimised by reducing obstruction to natural light through design, building form and also by the size of massing. Since the parameter-based approach for the outline element is a worst-case scenario and allows some flexibility of the definition of the final massing, it will be possible to undertake further detailed studies at the detailed design stage to address the level of daylight and sunlight access to existing surrounding properties to minimise any significant negative effects to neighbouring adjacent buildings.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5)

14.147 Considering the effects significance on the daylight sunlight and overshadowing to the existing receptors, the residual effects are likely to be **local**, **permanent** and **long-term** effects of **Minor to Moderate Adverse** significance.

***Table 14.50**: Residual Effects Summary – Cumulative Scenario Applications 4 and 5*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| *Construction and Demolition* | | | |
| n/a | n/a | n/a | n/a |
| *The Completed and Operational Development* | | | |
| Daylight Impact to existing receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the to massing of Application 4 during detailed planning | local, permanent and long-term effect of minor to moderate adverse significance |
| Sunlight Impacts to existing receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing of Application 4 during detailed planning | local, permanent and long-term effect of minor to moderate adverse significance |
| Overshadowing (Open Spaces) Impact to existing receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing of Application 4 during detailed planning | local, permanent and long-term effect of minor to moderate adverse significance |

## Assessment of effects within the Proposed Development (Applications 4 and 5)

14.148 The aim of this assessment which was based on the Parameter Plans for Application 4, and the scheme drawings for Application 5, is to quantify the level of daylight and sunlight within the Proposed Development. The assessment was based on the calculation of the availability of daylight and sunlight by estimating the Vertical Sky Component (VSC) and the Sunlight Hours (SH) on the existing facades of the various blocks within Application 4 and on the windows of the proposed blocks within Application 5. Graphical results can be found in **Appendix 14.7**.

14.149 The results of the daylight assessment of Application 4 indicated that adequate levels of daylight (VSC of 275% or greater) are achieved in all blocks to different degrees with façade areas ranging from 57.3% to 97.9% depending on the degree of self-shading and obstruction from neighbouring blocks.

***Table 14.51**: Daylight Assessment within Proposed Development, Outline results – Applications 4 and 5*

| VSC Level (%) | RB10 | RB12B | RB01, RB02, RB03, RB04, RB05C | RB05A | RB05B | RB16, RB17 | RB07, RB06 |
|---|---|---|---|---|---|---|---|
| **5% or below** | 0.3% | 3.8% | 1.6% | 10.3% | 21.7% | 0.9% | 0.0% |
| **between 5%-15%** | 0.3% | 10.9% | 7.4% | 15.2% | 13.8% | 11.2% | 4.5% |
| **between 15%-27%** | 1.6% | 20.2% | 30.0% | 8.2% | 7.2% | 29.1% | 35.0% |
| **27% and above** | 97.9% | 65.1% | 61.1% | 66.3% | 57.3% | 58.8% | 60.5% |

14.150 The results of the daylight assessment of Application 5 indicated that adequate levels of daylight (VSC of or greater than 27%) are achieved in all blocks to different degrees with a percentage of windows ranging from 0% to 95% depending on the degree of self-shading and obstruction from neighbouring blocks.

***Table 14.52:*** *Daylight Assessment within Proposed Development, Detailed Plots results – Applications 4 and 5*

| VSC Level (%) | | 5% or below | Between 5%-15% | Between 15%-27% | 27% and above |
|---|---|---|---|---|---|
| **NT02 Tower 1** | Windows | 0.0% | 1.7% | 17.5% | 80.9% |
| **NT02 Tower 2** | Windows | 8.6% | 37.9% | 52.5% | 1.0% |
| **NT03 Midrise3** | Windows | 22.8% | 36.2% | 21.1% | 19.9% |
| **NT03 Tower3** | Windows | 1.4% | 14.7% | 24.4% | 59.5% |
| **NT03Tail3** | Windows | 47.2% | 52.0% | 0.8% | 0.0% |
| **NT04 Tail 4** | Windows | 5.5% | 25.8% | 41.2% | 27.5% |
| **NT04 Tower4** | Windows | 3.0% | 27.9% | 33.4% | 35.7% |
| **NT04 Midrise 4** | Windows | 1.2% | 43.8% | 21.5% | 33.5% |
| **NT04 Tower 5** | Windows | 1.4% | 0.7% | 2.9% | 95.0% |
| **NT04 Tail 5** | Windows | 0.0% | 13.2% | 45.1% | 41.8% |

14.151 The results of the sunlight analysis showed that the Application 4 blocks' access to sunlight varies between 60.2% and 92.1 % depending on the degree of self-shading and obstruction from neighbouring blocks.

***Table 14.53****: Sunlight Assessment within Proposed Development, Outline Results – Applications 4 and 5*

| Outline Masterplan Block | Façade Area Above Criteria (%) | Façade Area Below Criteria (%) |
|---|---|---|
| RB10 | 92.11 | 7.89 |
| RB12B | 74.14 | 25.86 |
| RB01, RB02, RB03, RB04, RB05C | 73.61 | 26.39 |
| RB05A | 79.71 | 20.29 |
| RB05B | 74.10 | 25.90 |
| RB16, RB17 | 60.15 | 39.85 |
| RB07, RB06 | 75.34 | 24.66 |

14.152 The results of the sunlight assessment for Application 5 showed that out of 5,181 windows assessed, 3,486 (67.3%) are within the recommended sunlight criteria, indicating that these windows receive at least 1.5 hours of sunlight on 21st of March.

***Table 14.54**: Sunlight Assessment within Proposed Development, Detailed Plots Results – Applications 4 and 5*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| Windows | No. | No. | % | No. | % |
| NT02 Tower 1 | 1088 | 1036 | 95.22 | 52 | 4.78 |
| NT02 Tower 2 | 625 | 296 | 47.36 | 329 | 52.64 |
| NT03 Midrise3 | 246 | 138 | 56.10 | 108 | 43.90 |
| NT03 Tower3 | 945 | 735 | 77.78 | 210 | 22.22 |
| NT03 Tail3 | 125 | 24 | 19.20 | 101 | 80.80 |
| NT04 Tail 4 | 182 | 163 | 89.56 | 19 | 10.44 |
| NT04 Tower4 | 698 | 425 | 60.89 | 273 | 39.11 |
| NT04 Midrise 4 | 251 | 18 | 7.17 | 233 | 92.83 |
| NT04 Tower 5 | 839 | 535 | 63.77 | 304 | 36.23 |
| NT04 Tail 5 | 182 | 116 | 63.74 | 66 | 36.26 |
| **Total** | **5181** | **3486** | **67.28** | **1695** | **32.72** |

14.153 In summary, both applications show good potential for optimising natural light within the proposed blocks. Once the plots from Application 4 are developed in detail, it will be possible to undertake further studies for all blocks to optimise the design and achieve the best possible levels of natural light within the buildings. The BRE guidelines recommend that if the VSC is:

- at least 27% conventional window design will usually give reasonable results.
- between 15% and 27% special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight
- between 5% and 15 it is very difficult to provide adequate daylight unless very large windows are used.
- less than 5% it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed.

## Phasing Effects (Applications 4 and 5)

14.154 Since the phasing strategy is to start with Application 5, it is expected that the level of daylight and sunlight will be greater for these blocks (NT02-04) before the rest of the plots of Application 4 are built out, reducing their access to daylight due to increased obstruction. The daylight, sunlight and overshadowing effects of Application 4 in isolation, Application 5 in isolation, and the two developments combined have been captured in the assessments presented earlier in this chapter. These effects have been assessed at façade level only and the detailed design of Application 4 will need to respond to Application 5 as an existing sensitive receptor and ensure appropriate levels of daylight are maintained at Application 5.

## Conclusions (Applications 4 and 5)

14.155 The results of the Applications 4 and 5 assessments indicated that the level of daylight and sunlight to existing surrounding properties and open spaces remains largely within the recommended criteria with 67.7% of the properties retaining suitable levels of daylight, 85.8% retaining suitable levels on sunlight, and 91.7% of open spaces retaining suitable levels of overshadowing. The loss of light reported in each category is predominantly within the **Minor** to **Moderate** Magnitude of Effect from the Baseline. Where necessary, it will be possible to undertake further studies at the detailed design stage of Application 4 to further address the level of daylight and sunlight access to existing surrounding properties to minimise any significant adverse effects to neighbouring adjacent buildings.

## Assessment of Cumulative Effects with Identified Committed Schemes (Applications 4 and 5)

14.156 The list of cumulative sites is provided in **Table 2.3** of **Chapter 2: Approach**. The consented schemes relevant to the Daylight, Sunlight and Overshadowing assessments are listed below and have been included within the cumulative assessment.

- Victoria Riverside (Ref: 126944/FO/2020)
- Meadowside - Plot 4 (Ref: 124120/JO/2019 and 116366/FO/2017)
- The Gasworks (Ref: 128248/FO/2020)
- 1 Lord Street (Ref: 113914/FO/2016)

### Approach

14.157 The approach to the cumulative effects is based on the assessment of loss to daylight and sunlight to existing properties and open spaces surrounding the site with the presence of both the Proposed Development and the consented schemes in the surroundings. In addition, the impact of the Proposed Development on the loss of light to the consented schemes has been assessed. For the consented schemes that are at a distance from the site, the approach for assessing the effects has been carried out through an assessment to the impact at window level. Where the consented scheme is in close proximity to the site, the assessment was carried on based on an assessment of the loss of daylight internally within the rooms.

#### Demolition and Construction

14.158 The [assessment] effects during the site preparation, earthworks and construction phase have not been quantitatively assessed as the effects will be temporary and variable, and the assessment of effects has focused on the comparison between the Baseline and the completed Proposed Development including committed developments as the impacts are permanent. However, it is expected that as construction of the Proposed Development proceeds into its different phases, the availability and obstruction of natural light will vary, gradually adjusting to that of the completed Proposed Development.

14.159 During periods of demolition as the site becomes relatively free of obstructions, there will be greater levels of daylight and sunlight to existing surrounding buildings. As construction develops, the new structures' obstruction to daylight and sunlight will gradually increase until arriving to their completed condition. The effects of the completed conditions are described in the following sections.

## The Completed and Operational Development

14.160 This section set out the cumulative effects once the development is completed and operational.

### *Daylight Assessment – Cumulative Scenario*

14.161 The results for the impact on existing properties are presented both for the properties where internal layout information was available and for those where the assessment was based on external window position. The results of the daylight assessment of the Cumulative Configuration showed that for the properties with internal room information, out of the 1613 rooms assessed, 1111 (68.9%) are within the recommended daylight criteria i.e., with VSC values above 27% and the NSL above 80% of the room area, or the magnitude of effect from the Baseline is 0.8 or greater. The number of receptors where the criteria are not met is 502 (31.1%).

14.162 For the existing properties with window information only, the results indicated that out of 2463 windows, 1520 (61.7%) are within the recommended criteria with VSC values above 27% or the magnitude of effect from the Baseline is 0.8 or greater; and 943 (38.2%) are below the threshold. According to the significance criteria and the magnitude of effect, of the 943 receptors falling below the criteria, 470 (19.1%) have a **Minor impact**, 298 (12.1%) have a **Moderate impact,** and 175 (7.1%) have a **Major impact**.

***Table 14.55****: Summary of Daylight Results – Cumulative Scenario Applications 4 and 5- Existing Properties*

| Receptor Type | Rooms/Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Rooms (VSC + NSL) | 1613 | 1111 | 68.9 | 502 | 31.1 |
| Windows (VSC) | 2463 | 1520 | 61.7 | 943 | 38.3 |

### *Sunlight Assessment – Cumulative Scenario*

14.163 The results of the sunlight assessment for the Cumulative Configuration showed that for the existing properties, of the 2700 windows assessed, 2301 (85.2%) are within the recommended sunlight criteria, indicating APSH values above 25% and WPSH values above 5%, or the magnitude of effect from the Baseline is 0.8 or greater. According to the significance criteria and the magnitude of effect, of the receptors below the criteria, 77 (2.9%) have **Minor impact**, 58 (2.1%) have a **Moderate impact** and 264 (9.8%) have a **Major impact**.

***Table 14.56**: Summary of Sunlight Results – Cumulative Scenario Applications 4 and 5- Existing Properties*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (APSH + WPSH) | 2700 | 2301 | 85.2 | 399 | 14.8 |

### *Overshadowing Assessment – Cumulative Scenario*

14.164 The results of the overshadowing assessment for the Cumulative scenario indicated that 12 (85.71%) of the existing and consented adjacent open amenity spaces satisfy the BRE criteria, i.e., receive at least two hours of sunlight on the 21st of March on at least 50% of the area, or the result is greater than 0.8 times its former value. The table below shows the results of the overshadowing assessment of open spaces in the Cumulative Scenario.

***Table 14.57**: Summary of Overshadowing Results for Open Spaces– Cumulative Scenario Applications 4 and 5*

| Receptor | Above / Below BRE Criteria | Effect Significance |
|---|---|---|
| New Century Park | Above | Negligible |
| Green Quarter - Block 5 (Britton House) Ground Floor Amenity | Above | Negligible |
| Green Quarter – Blocks 2 and 3 Amenity | Below | Major |
| Green Quarter - Block 6 Amenity | Above | Negligible |
| 29-35 Dalton Street Garden | Above | Negligible |
| 19-27 Dalton Street Garden | Above | Negligible |
| Emmeline Apartments - Ground Floor Garden | Above | Negligible |
| 1 Fairholme Caraven Site Garden | Above | Negligible |
| 2a Fairholme Caraven Site Garden | Above | Negligible |
| B18-19 Fairholme Caraven Site Garden | Above | Negligible |
| C32 Fairholme Caraven Site Garden | Above | Negligible |
| 41d Fairholme Caraven Site Garden | Above | Negligible |
| Victoria Riverside Podium B | Below | Major |
| Victoria Riverside Podium A | Above | Negligible |

14.165 According to the significance criteria and the magnitude of effect, only two of 14 receptor falls below the criteria (14.3%), indicating a **Minor impact**.

14.166 It should be noted that to correctly interpret the results of the impact assessment, consideration must be given to the fact that the Baseline Scenario is assessed based on absolute criteria using the recommended levels for daylight sunlight and overshadowing, whereas the results of the Cumulative Scenario also account for the ratio of impact between the Baseline and the Cumulative Scenarios. This means that, in accordance with guidelines, a reduction of 20% of the values achieved the Baseline Scenario is acceptable, which explains why in some cases the Cumulative Scenario presents a higher passing rate than the Baseline.

***Impact on Victoria Riverside***

14.167 In addition to the cumulative impacts with all committed schemes together, given the location of the Victoria Riverside scheme in relation to the site, a detailed assessment of the impact on daylight has been undertaken based on internal illuminance within each room. The results indicated that out of the 1740 rooms assessed, 1071 (61.6%) are within the recommended illuminance level, while 669 rooms (38.4%) are below.

14.168 The sunlight assessment indicated that out of the 1740 rooms assessed, 1255 (72.1%) are within the recommended criteria and 485 (27.9%) are below.

***Table 14.58**: Summary of Daylight Results – Cumulative Scenario (Victoria Riverside) Application 4*

| Receptor Type | Rooms | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Bedrooms | 1105 | 798 | 72.22 | 307 | 27.78 |
| Kitchens/LK | 635 | 273 | 42.99 | 362 | 57.01 |
| Total | 1740 | 1071 | 61.55 | 669 | 38.45 |

***Table 14.59**: Summary of Sunlight Results – Cumulative Scenario (Victoria Riverside) Application 4*

| Receptor Type | Rooms | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| All Units | 1740 | 1255 | 72.1 | 485 | 27.9 |
| Units 90° due South | 879 | 850 | 96.7 | 29 | 3.3 |

***Impact on Consented Schemes***

14.169 The assessment of the impacts of the Proposed Development on Meadowside - Plot 4, The Gasworks, and 1 Lord Street consented schemes was based on external window position given their further distance to the site.

14.170 The results of the daylight assessment, summarised in the Table below, showed that out of the 2386 windows assessed, 1840 (77.1%) are within the recommended daylight criteria i.e., with VSC values of or above 27%, or the magnitude of effect from the Future Baseline is 0.8 or greater. According to the significance criteria and the magnitude of effect, of the receptors below the criteria, 193 (8.1%) have **Minor impact**, 145 (6.1%) have a **Moderate impact**, and 208 (8.7%) have a **Major impact**.

***Table 14.60**: Summary of Daylight Results – Cumulative Scenario Applications 4 and 5– Consented Schemes*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (VSC) | 2386 | 1840 | 77.1 | 546 | 22.9 |

14.171 The results of the sunlight assessment showed that for the consented schemes, of the 399 windows assessed, 397 (99.5%) are within the recommended sunlight criteria, indicating APSH values above 25% and WPSH values above 5%, or the magnitude of effect from the Future Baseline is 0.8 or greater. According to the significance criteria and the magnitude of effect, the receptors below the criteria are 2 (0.5%) and have a **Minor impact**.

***Table 14.61**: Summary of Sunlight Results – Cumulative Scenario Applications 4 and 5– Consented Schemes*

| Receptor Type | Windows | Meets BRE Criteria | | Does not BRE Criteria | |
|---|---|---|---|---|---|
| | No. | No. | % | No. | % |
| Windows (APSH + WPSH) | 399 | 397 | 99.5 | 2 | 0.5 |

## Additional Mitigation / Enhancement Measures (Cumulative Scenario)

14.172 Access to daylight and sunlight in windows and open spaces can be optimised by reducing obstruction to natural light through design, building form, and also by the size of massing. Since the parameter-based approach is a worst-case scenario and allows some flexibility in the definition of the final massing for Application 4, it will be possible to undertake further detailed studies at the detailed design stage to address the level of daylight and sunlight access to existing surrounding properties to minimise any significant negative effects to neighbouring adjacent buildings.

## Likely Residual Effects of the Development and their Significance (Cumulative Scenario)

14.173 Considering the effects significance on the daylight sunlight and overshadowing to the existing and consented receptors, the residual effects in the Cumulative Scenario are likely to be **local, permanent** and **long-term** effects of **Minor to Moderate Adverse** significance.

***Table 14.62:*** *Residual Effects Summary – Cumulative Scenario Applications 4 and 5*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| *Construction and Demolition* | | | |
| n/a | n/a | n/a | n/a |
| *The Completed and Operational Development* | | | |
| Daylight Impact to existing and consented receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing during detailed planning | local, permanent and long-term effect of minor to moderate adverse significance |
| Sunlight Impacts to existing and consented receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing during detailed planning | local, permanent and long-term effect of minor to moderate adverse significance |
| Overshadowing (Open Spaces)<br>Impact to existing and consented receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing during detailed planning | local, permanent and long-term effect of minor to moderate adverse significance |

# In Combination Effects of Applications 4 and 5 and SRF

## Approach (Applications 4 and 5 and SRF)

14.174 A qualitative assessment has been carried out as an overview of the impacts of the Proposed Development in combination with the SRF. Daylight and sunlight impacts are significant when the massing of new developments is likely to affect the level of diffuse or direct light to surrounding properties. This is particularly relevant for developments in close proximity to each other. Based on the map of the SRF Initial Development Area in the context of the Northern Gateway SRF initiative, most development areas are a sufficient distance from each other to assume that the impacts with each other are unlikely to be significant. Only if the immediately adjacent development areas include development blocks in close proximity to the Red Bank site, will the level of daylight or sunlight be affected, in which case a suitable assessment should be carried out.

### Demolition and Construction

14.175 The assessment during the site preparation, earthworks and construction phase has not been quantitatively assessed as the effects will be temporary and variable, and the assessment of effects has focused on the comparison between the Baseline and the completed Proposed Development as the impacts are permanent. However, it is expected that as construction of the Proposed Development proceeds into its different phases, the availability and obstruction of natural light will vary, gradually adjusting to that of the completed Proposed Development.

14.176 During periods of demolition as the site becomes relatively free of obstructions, there will be greater levels of daylight and sunlight to existing surrounding buildings. As construction develops, the new structures' obstruction to daylight and sunlight will gradually increase until arriving to their completed condition.

### The Completed and Operational Development

14.177 Daylight and sunlight impacts are significant when the massing of new developments is likely to affect the level of diffuse or direct light to surrounding properties. This is particularly relevant for developments in close proximity to each other. Based on the map of the SRF Initial Development Area in the context of the Northern Gateway SRF initiative, most development areas are within sufficient distance to assume that the impacts with each other are unlikely to be significant. Only if the immediately adjacent development areas include development blocks in close proximity to the Red Bank site, will the level of daylight or sunlight be affected, in which case a suitable assessment should be carried out to define the actual level of impact.

### Likely Residual Cumulative Effects and their Significance

14.178 Based on the above considerations and subject to suitable assessments once the information is available, the residual effects on the daylight sunlight and overshadowing of the inclusion of the SRF sites in the cumulative scenario are likely to be local, permanent and long-term effects of **Minor to Moderate Adverse** significance.

## Phasing Effects (Applications 4 and 5 and SRF)

14.179 Further to the potential phasing effects identified for Applications 4 and 5, the potential effect of the SRF will depend on the massing of the adjacent SRF sites and their proximity to the Applications 4 and 5 sites. Once this information becomes available, a suitable assessment should be carried out to define the actual level of impact of those future schemes on the Proposed Development. However, as the development of the SRF will come forward after the Proposed Development, it will need to respond to the Proposed Development and ensure appropriate levels of daylight and sunlight to the Proposed Development.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5 and SRF)

### Demolition and Construction

14.180 N/A.

### The Completed and Operational Development

14.181 Access to daylight and sunlight in rooms, windows and open spaces can be optimised by reducing obstruction to natural light through design, building form and also by the size of massing. Since the parameter-based approach for the outline element is a worst-case scenario and allows some flexibility in the definition of the final massing, it will be possible to undertake further detailed studies at the detailed design stage to address the level of daylight and sunlight access to existing surrounding properties to minimise any significant negative effects to neighbouring adjacent buildings. In addition, the effects of SRF developments immediately adjacent to the site where the schemes may include development blocks in close proximity to the Proposed Development, a suitable daylight, sunlight and overshadowing assessment should be undertaken as part of the design and planning of those schemes.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5 and SRF)

14.182 Considering the effects significance on the daylight sunlight and overshadowing to the existing receptors, the residual effects are likely to be local, permanent and long-term effects of **Minor to Moderate Adverse** significance.

***Table 14.63**: Residual Effects Summary – Cumulative Scenario Applications 4 and 5 and SRF*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| *Construction and Demolition* | | | |
| n/a | n/a | n/a | n/a |
| *The Completed and Operational Development* | | | |
| Daylight Impact to existing receptors | local, permanent and long-term effect of minor to moderate | Address through the massing of Application | local, permanent and long-term effect of minor to moderate |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| | adverse significance | 4 during detailed planning | adverse significance |
| Sunlight Impacts to existing receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing of Application 4 during detailed planning | local, permanent and long-term effect of minor to moderate adverse significance |
| Overshadowing (Open Spaces) Impact to existing receptors | local, permanent and long-term effect of minor to moderate adverse significance | Address through the massing of Application 4 during detailed planning | local, permanent and long-term effect of minor to moderate adverse significance |

## Conclusions (Applications 4 and 5 and SRF)

14.183 The effects of the Applications 4 and 5 and SRF assessments are likely to remain similar to Applications 4 and 5 which have been presented earlier in the chapter. The main potential difference is the additional effects of SRF developments immediately adjacent to the site where the schemes may include development blocks in close proximity to the Proposed Development, in which case a suitable daylight, sunlight and overshadowing assessment should be undertaken as part of the design and planning of those schemes.

## Assessment of Cumulative Effects with Identified Committed Schemes (Applications 4 and 5 and SRF)

14.184 The cumulative effects of the Applications 4 and 5 and SRF assessments are likely to remain similar to Applications 4 and 5 which have been presented earlier in the chapter. The main potential difference is the additional effects of SRF developments immediately adjacent to the site where the schemes may include development blocks in close proximity to the Proposed Development, in which case a suitable daylight, sunlight and overshadowing assessment should be undertaken as part of the design and planning of those schemes.

### Likely Residual Cumulative Effects and their Significance (Applications 4 and 5 and SRF)

#### Demolition and Construction

14.185 N/A.

#### The Completed and Operational Development

14.186 The residual effects of the Applications 4 and 5 and SRF assessments are likely to remain similar to the residual effects of Applications 4 and 5 which have been presented earlier in the chapter. The main potential difference is the additional effects of SRF developments immediately adjacent to the site where the schemes may include

development blocks in close proximity to the Proposed Development, in which case a suitable daylight, sunlight and overshadowing assessment should be undertaken as part of the design and planning of those schemes.

# Figures

**Figure 14.1: Study Area for the Assessment**

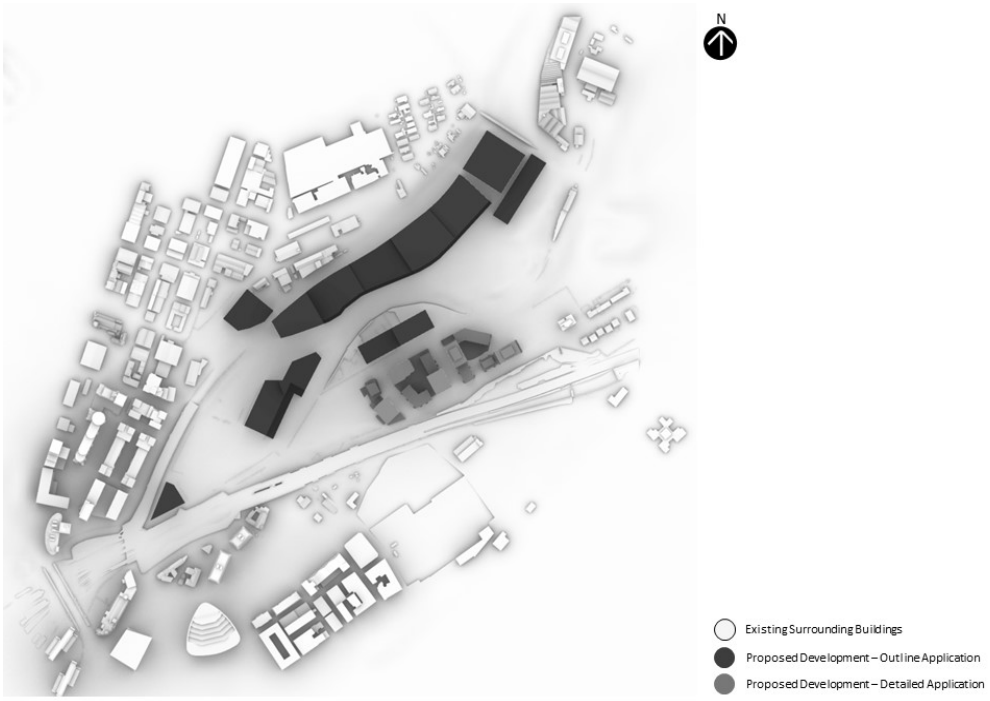



**Figure 14.2: Existing and Proposed Sensitive Receptors for the Assessment**

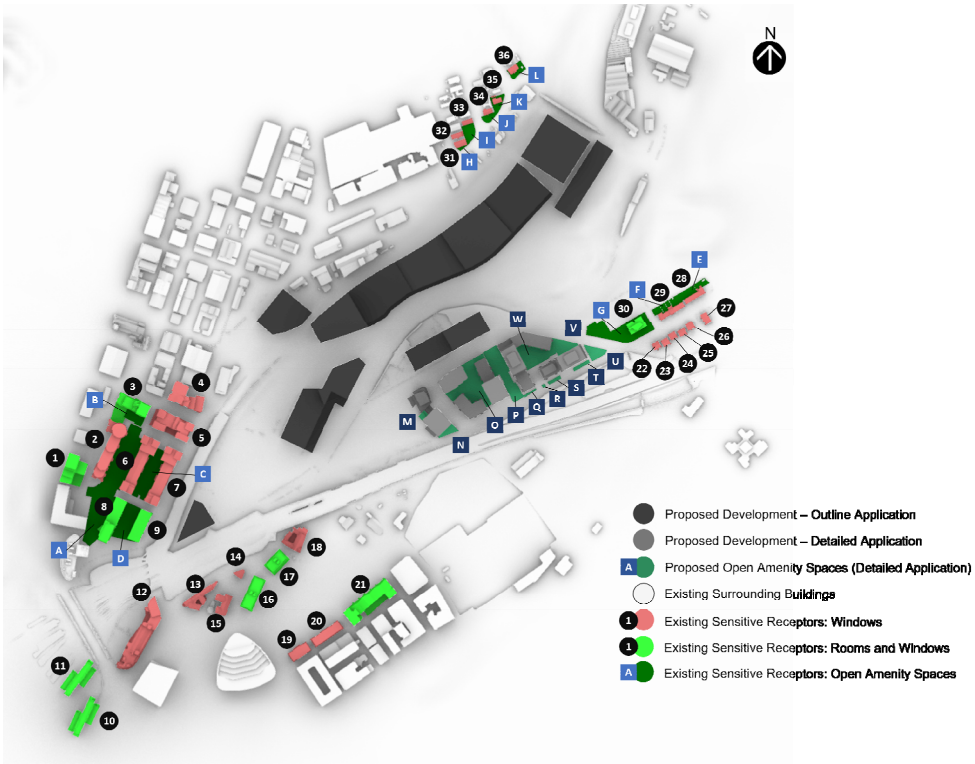


**Figure 14.3: Consented Sensitive Receptors Surrounding the Proposed Development**

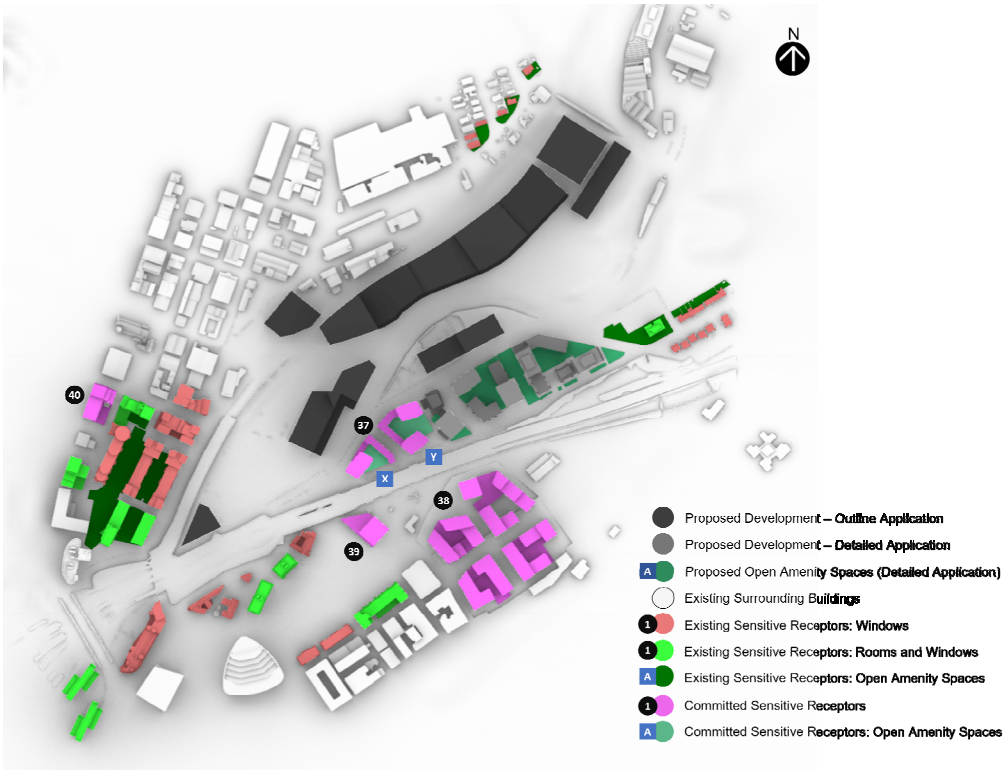



**Figure 14.4: 3D Model for the Assessments – Baseline Configuration – SE Perspective**

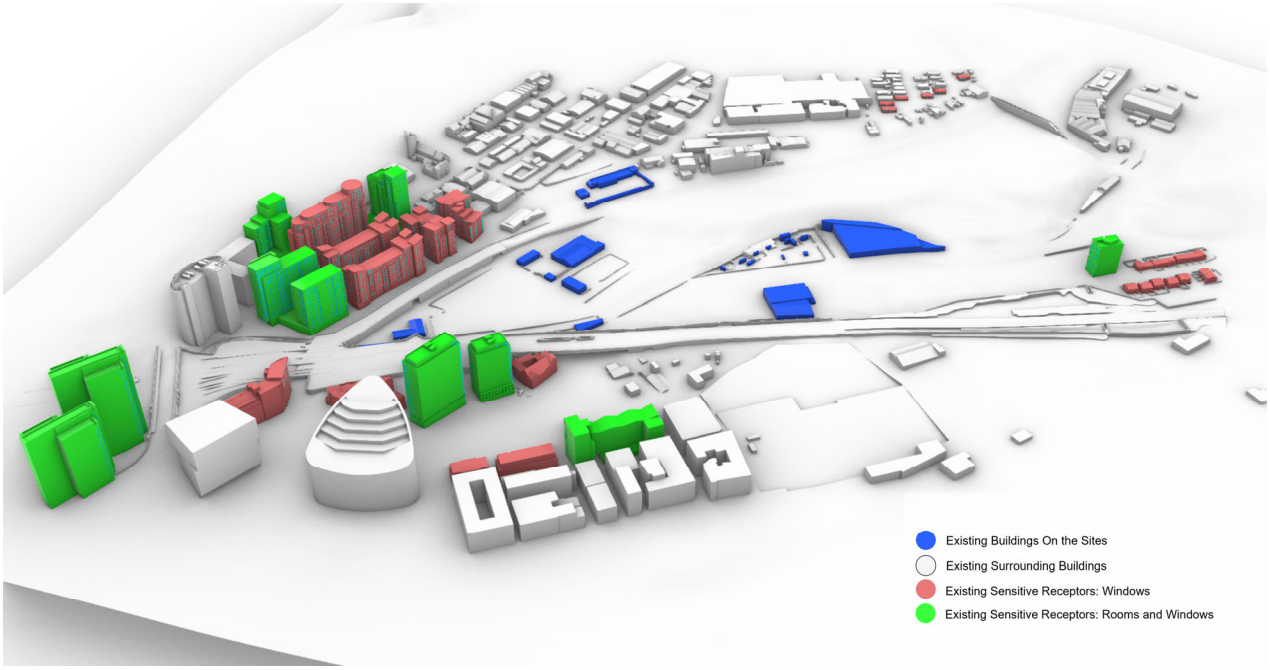


**Figure 14.5: 3D Model for the Assessments showing the Outline Application within the existing surrounding – SE Perspective**

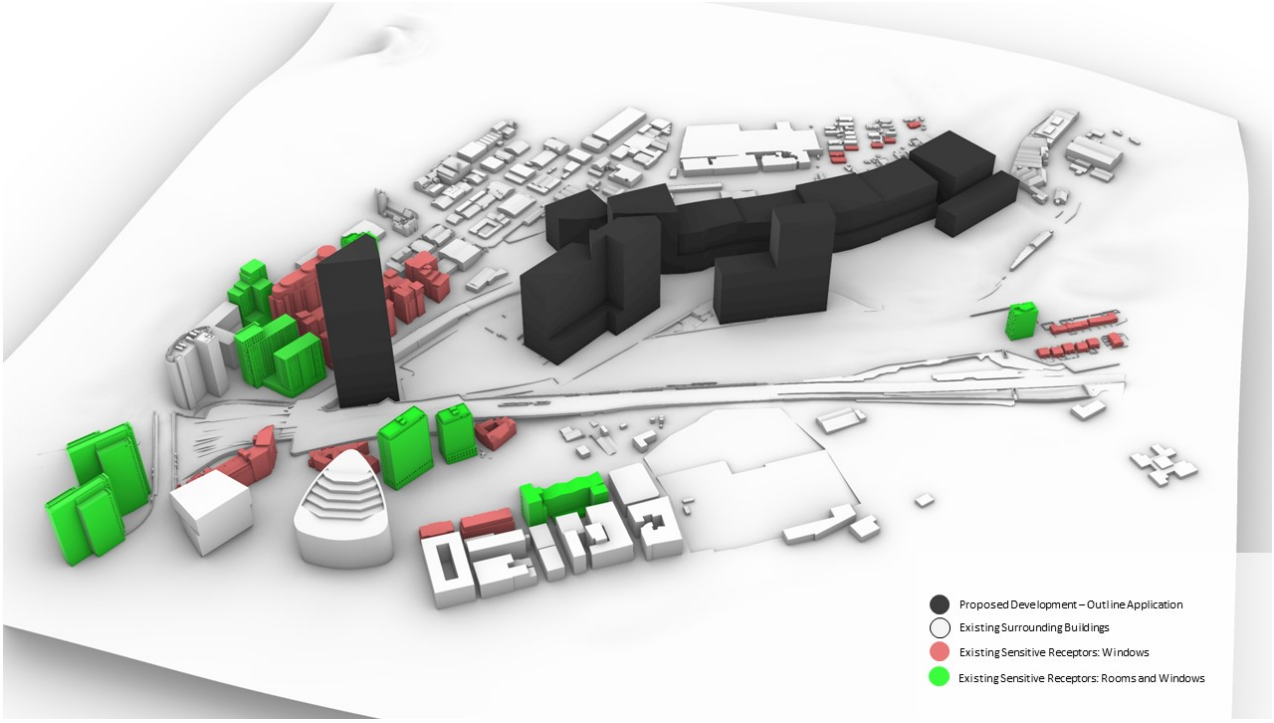



**Figure 14.6: 3D Model for the Assessments showing the Full Application within the existing surrounding – SE Perspective**

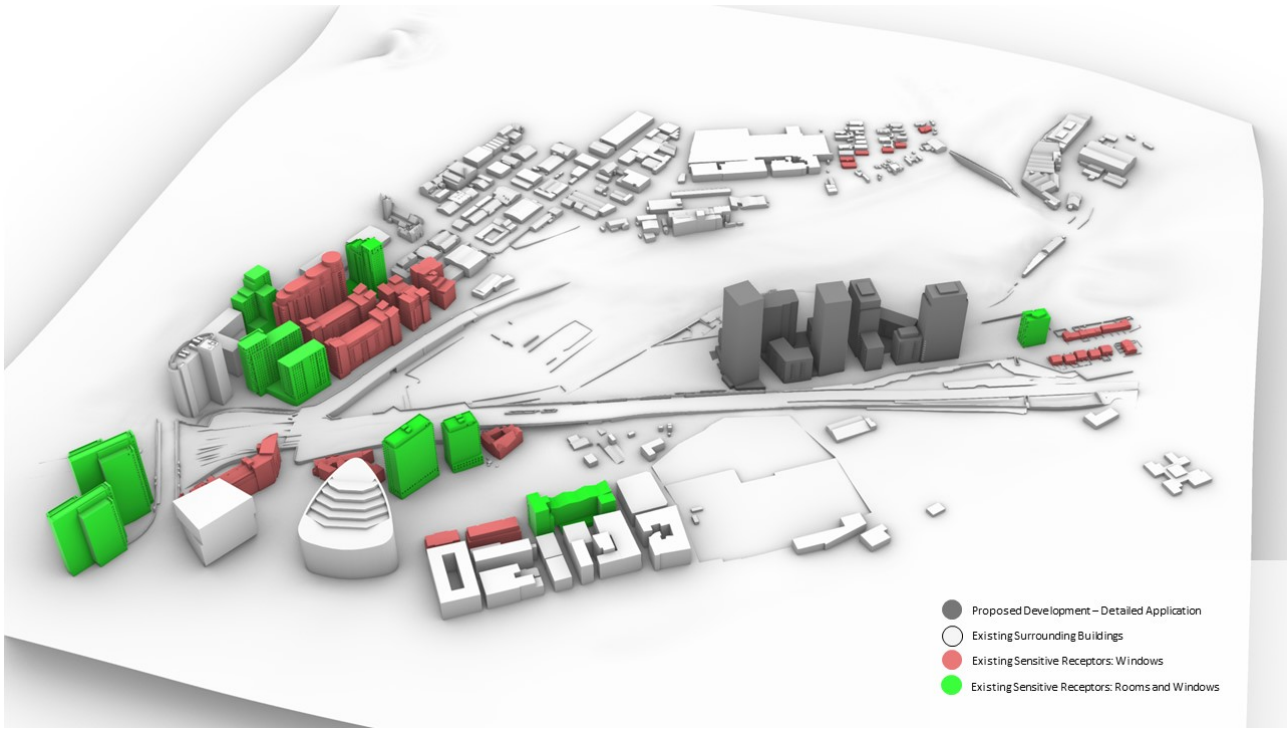
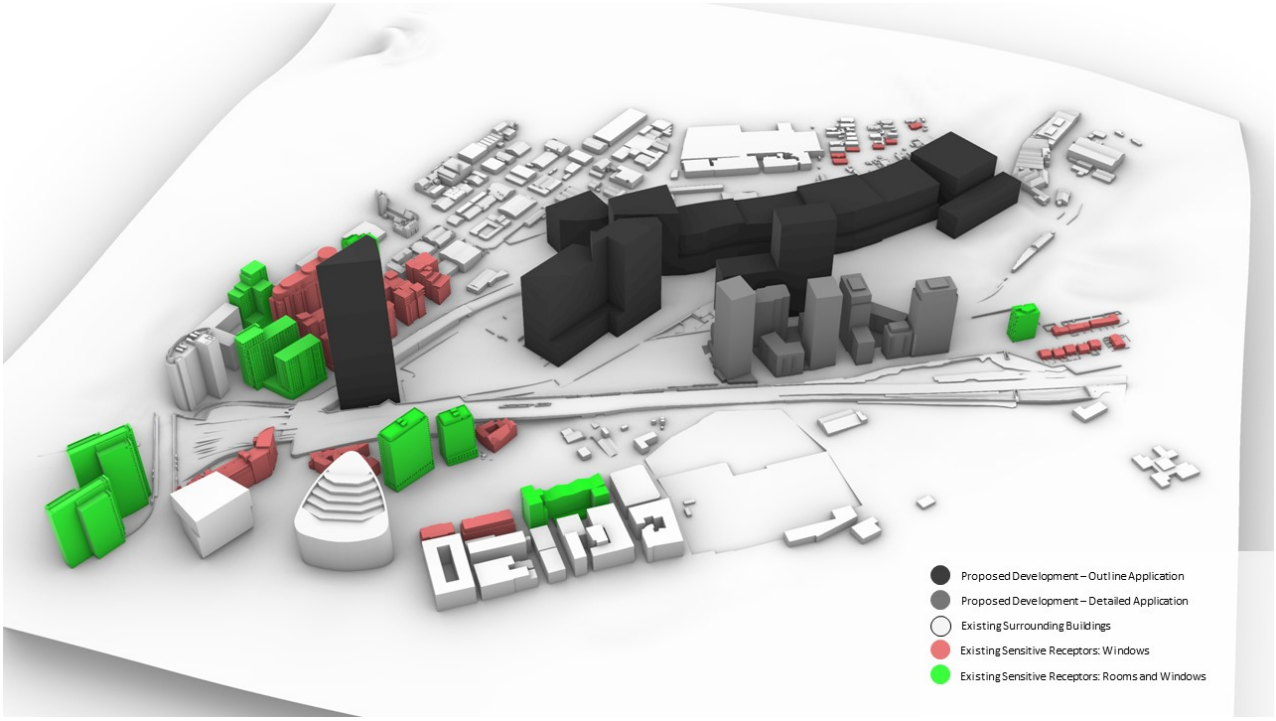


**Figure 14.7: 3D Model for the Assessments showing both the Outline and Full Applications Together within the existing surroundings – SE Perspective**



# 15. Wind Microclimate

## Introduction

15.1 This chapter assesses the effects of the Proposed Development on Wind Microclimate considerations. In particular, it considers effects that may arise as a result of the Proposed Development on nearby receptors that would be sensitive to changes in Wind Microclimate.

15.2 The chapter describes the methods used to assess the likely significant effects; the baseline conditions currently existing at the Site and surroundings; the potential direct and indirect effects of the Proposed Development arising in terms of Wind Microclimate considerations; the mitigation measures required to prevent, reduce, or offset the identified significant effects; and the residual effects. It has been written by WSP Wind Engineering.

15.3 This chapter is supported by figures which are located in **Volume 2a: Main Text Figures** and appendices which are located in **Volume 3: Appendices** of this ES. This ES Chapter is intended to be read in conjunction with the technical appendices '*70079268_RedBank_OPA_Wind_Microclimate_Study.pdf*' (**Appendix 15.1**) and '*70079268_RedBank NT02-04_Wind_Microclimate_Study.pdf*' (**Appendix 15.2**).

## Assessment Methodology and Significance Criteria

15.4 The pedestrian level wind environment in an urban setting is influenced by the macroscopic wind conditions at the Site as well as by the more local aerodynamic effects generated by the urban environment itself. For this reason, the assessment of the pedestrian level wind environment involves the following three steps:

- the evaluation of the aerodynamic effects generated by the urban environment on the on-coming winds;
- the combination of these with historical wind data; and,
- a comparison against a set of criteria to quantify the discomfort and/or level of distress caused by the wind.

15.5 Due to the substantial scope of scenarios and area coverage of the Site, the Wind Microclimate assessment for the Proposed Development was carried out using a combination of methods – i.e., Computational Fluid Dynamics (CFD) for Outline Application 4 and wind tunnel testing for NT02-NT04 Full Application 5. The primary difference between the two methods is the approach taken for the evaluation of the aerodynamic effects generated by the urban wind environment on on-coming winds (details of the respective methods are presented in the relevant sections further on in this chapter). However, the same set of historical wind data and criteria for the quantification of pedestrian *safety* and wind *comfort* were applied in both methods to ensure consistency.

15.6 The criteria used to assess pedestrian *safety* and wind *comfort* ratings in this study were based on the LDDC version of the Lawson Criteria[1] (henceforth referred to as 'LDDC Lawson Criteria') and have been reproduced in **Table 15.1.** Like most criteria used in assessments of pedestrian wind conditions, they relate a threshold wind speed (mean and gust equivalent mean (GEM) wind speed) and a threshold frequency to the suitability of an activity.

15.7 The frequency threshold for each criterion is 5% - or about three weeks per year. It is also useful to assess frequency on a seasonal basis. For example, an outdoor seating area may require wind conditions suitable for sitting (or standing/shorts period of sitting) in summer, but not in winter when the seating is unlikely to be practical due to other factors, e.g. ambient temperature and precipitation. For season-specific results, the criteria are based on 5% of hours across the months in that season.

15.8 Additionally, criteria for safety have been defined based on 0.025% exceedance (~2.2 hours) per year. These are areas where someone could find walking difficult or even lose their footing. The criterion is reproduced in **Table 15.2** below.

***Table 15.1:*** *LDDC Lawson Criteria for Pedestrian Wind Comfort*

| Category | Mean and GEM wind speed (5% exceedance) | Description |
|---|---|---|
| **Sitting** | 4m/s | Acceptable for frequent outdoor sitting use, e.g. restaurant, café. |
| **Standing** | 6m/s | Acceptable for occasional outdoor seating, e.g. general public outdoor spaces, balconies and terraces intended for occasional use, entrances, bus stops, covered walkways or passageways beneath buildings, etc. |
| **Walking** | 8m/s | Acceptable for strolling and general thoroughfare usage. |
| **Business Walking** | 10m/s | Can be tolerated if one's objective is to walk, run or cycle without lingering, e.g. external pavements, walkways. |
| **Uncomfortable** | >10m/s | Not comfortable for regular pedestrian access. |

[1] *Lawson, T. V., "The determination of the wind environment of a building complex before construction". University of Bristol, Department of Aeronautical Engineering, 1990.*

***Table 15.2:*** *LDDC Lawson Criteria for Pedestrian Safety*

| Category | Mean and GEM wind speed from any wind direction (0.025% exceedance) | Description |
|---|---|---|
| **S15** | 15m/s | Presents a safety risk for pedestrians, especially to more vulnerable members of the public. |
| **S20** | 20m/s | Presents a safety risk for all pedestrians. |

## Significance Criteria

15.9 The significance of on-site measurement locations is defined by comparing the wind comfort/safety levels with the intended pedestrian activity at each location. Tables to assess the significance of effects are presented below (refer to **Table 15.3** and **Table 15.4**).

15.10 The wind microclimate conditions of new/introduced receptors created as part of the Proposed Development have been assessed on the basis of their level of adherence to the LDDC Lawson Criteria only. This is because the magnitude of change from a baseline position does not apply as it does to an existing receptor, since there is no baseline. Additionally, there are also a number of existing receptors within the Site boundary of the Proposed Development that either retain or observe a change in usage when the Proposed Development is introduced. These on-site receptors are therefore also assessed on the basis of their level of adherence to the LDDC Lawson Criteria and not compared against the baseline.

***Table 15.3:*** *Matrix for determining the significance of effects at existing/off-site receptors*

| Existing / Off-Site Receptors | | |
|---|---|---|
| **Significance** | **Trigger** | **Mitigation Required** |
| **Major Adverse** | Conditions that were 'safe' in the baseline scenario become 'unsafe' as a result of the Proposed Development<br>OR<br>Conditions that were 'suitable' in terms of comfort in the baseline scenario become 'unsuitable' as a result of the Proposed Development<br>OR<br>Conditions that were 'unsafe' in the baseline scenario are made worse as a result of the Proposed Development | Yes |

| Existing / Off-Site Receptors | | |
|---|---|---|
| **Significance** | **Trigger** | **Mitigation Required** |
| **Moderate Adverse** | Conditions that were 'suitable' in terms of comfort in the baseline scenario are made windier (by at least one comfort category) as a result of the Proposed Development but remain 'suitable' for the intended pedestrian activity. | No |
| **Negligible** | Conditions remain the same as in the baseline scenario. | No |
| **Moderate Beneficial** | Conditions that were 'unsuitable' in terms of comfort in the baseline scenario become 'suitable' as a result of the Proposed Development<br>OR<br>Conditions that were 'unsafe' in the baseline scenario are made better as a result of the Proposed Development (but not so as to make them 'safe'). | No |
| **Major Beneficial** | Conditions that were 'unsafe' in the baseline scenario become 'safe' as a result of the Proposed Development | No |

***Table 15.4**: Matrix for determining the significance of effects at introduced/on-site receptors*

| Introduced / On-Site Receptors | | |
|---|---|---|
| **Significance** | **Trigger** | **Mitigation Required** |
| **Major Adverse** | Conditions are 'unsafe' | Yes |
| **Moderate Adverse** | Conditions are 'unsuitable' (in terms of comfort) for the intended pedestrian use. | Yes |
| **Negligible** | Conditions are 'suitable' for the intended pedestrian use. | No |
| **Moderate Beneficial** | Conditions are calmer than required for the intended pedestrian use (by at least one comfort category). | No |

15.11 For off-site receptors, a major adverse effect is a 'significant effect' because it implies that a location, or area, which was previously suitable in terms of pedestrian comfort and / or safety, has become unsuitable for the desired use of that area. On this basis, only effects that are major adverse need mitigating.

15.12 For on-site receptors, any adverse effect is a 'significant effect' because it implies that a location, or area, has a wind microclimate that is unsuitable in terms of pedestrian safety and / or comfort for the desired use of that area. On this basis, effects that are adverse need mitigating.

15.13 Beneficial effects that are moderate or major in scale are not considered to be 'significant' or a material consideration for planning.

## Red Bank Methodology (Outline Application 4)

### Study Area

15.14 The Outline Application 4 area of the Site contains the Red Bank Plateau (an area of hardstanding, prepared ground and woodland); Travis Island (an area of hardstanding and vacant commercial premises along the eastern bank of the River Irk); and the Red Bank Viaduct, which contains large areas of hardstanding, along with the viaduct itself.

15.15 To the north, the Outline Application 4 area of the Site is bound by existing commercial and industrial uses. To the north-east, the HMG Paint complex bounds the Application 4 area. To the east, the Outline Application 4 area is bound by Collyhurst Road and an area of open greenspace and woodland. To the south, the Outline Application 4 area is bound by Dantzic Street, on the opposite side of which is the [Full] Application 5 area of the Site and the emerging Victoria Riverside development. To the south-west, the Outline Application 4 area of the Site is bound by an area of hardstanding currently in-use as a car park and the Red Bank viaduct. To the west, the Outline Application 4 area is bound by Red Bank Road, along which is a residential neighbourhood consisting of a number of mid-rise buildings.

15.16 To understand and quantify the baseline conditions at the Outline Application 4 area of the Site, Computational Fluid Dynamics (CFD) simulations were conducted on a 3D model reflecting the existing built form of the Site and the surrounding area within a radius of 750m to allow the wind microclimate conditions to be quantified. CFD, as a tool for pedestrian wind modelling, is well validated against wind tunnel tests and real-world data and is often considered advantageous due to its advanced visualisation and domain wide measurement capabilities. Like any other tool, it has its own limitations - however - good quality CFD is increasingly becoming an accepted tool in modern standards and guidance documents.

### Survey and Data Sources

15.17 The existing site, terrain and surrounding context model for the Wind Microclimate assessment has been modelled based on information provided by the wider design team as well as publicly available information.

### Construction Phase

15.18 Generally, for wind microclimate assessments undertaken for schemes in the UK, the potential effects during enabling and construction are assessed based on the professional judgement of an experienced wind engineer, taking into account an assessment of the background wind microclimate at the Site and an understanding of the effects of wind in the built environment. A qualitative approach was therefore taken to the assessment of the demolition and construction works.

## Operational Phase

15.19 CFD simulations were used to quantify the local wind speeds within and in the vicinity of the Application 4 area of the Site at various receptors (e.g. pedestrian access routes, building entrances, outdoor seating areas, terraces and balconies) for a comprehensive range of wind directions

15.20 The local wind speeds obtained from the numerical simulations were combined with wind statistics obtained from the meteorological station at Manchester Airport, corrected for the Site (accounting for upwind terrain and reference height at the Site), to determine the probability of local wind speeds exceeding comfort and safety thresholds (defined in 15.6 and 15.8 above) for a range of common pedestrian activities. Additionally, targeted wind mitigation measures were developed and implemented where necessary with feedback from the wider design team, in order to alleviate exceedances of the applicable pedestrian safety and comfort criteria.

15.21 The assessment of the wind microclimate impacts of Outline Application 4 comprised the following nine (9) scenarios:

- Scenario 1: assessment of the wind conditions across the Outline Application 4 area in its present conditions in the context of the existing surroundings, i.e. the Baseline.
- Scenario 2: as per 'Scenario 1' but with the addition of Outline Application 4.
- Scenario 3: as per 'Scenario 2' but with the addition of future developments with planning consent in the surrounding area which may influence the local wind conditions across the Site.
- Scenario 4: as per 'Scenario 2' but with the addition of Full Application 5.
- Scenario 5: as per 'Scenario 4' but with the addition of future developments with planning consent in the surrounding area which may influence the local wind conditions across the site.
- Scenario 6: as per 'Scenario 2' but with the addition of the proposed landscaping strategy for Outline Application 4 and wind mitigation measures.
- Scenario 7: as per 'Scenario 3' but with the addition of the proposed landscaping strategy for Outline Application 4 and wind mitigation measures.
- Scenario 8: as per 'Scenario 4' but with the addition of the proposed landscaping strategy for Outline Application 4 and wind mitigation measures.
- Scenario 9: as per 'Scenario 5' but with the addition of the proposed landscaping strategy for Outline Application 4 and wind mitigation measures.

15.22 It should be noted that the 'Maximum Parameters' version of Outline Application 4 was modelled in the relevant scenarios listed above, as this is expected to represent the conservative option (worst-case scenario) in terms of impact on wind conditions across the Site.

## Identification of Sensitive Receptors

15.23 The impact of Outline Application 4 on the wind microclimate conditions, both in terms of comfort and safety, have been considered for both on-site and off-site receptors.

15.24 The following on-site and off-site sensitive receptors have been identified and assessed within the ES:

- All pedestrian circulation routes, building entrances, waiting areas and leisure open areas in the surrounding vicinity; and
- All pedestrian circulation routes, and leisure open areas within the site boundary of Outline Application 4.

15.25 The existing/proposed usages at the various receptors within the wind microclimate assessment for Outline Application 4 are listed in **Table 15.5** and illustrated in **Figure 15.1** and **Figure 15.2**. As is typically observed in the case of Outline Planning Applications, detailed usages for various external spaces (e.g., building access points, amenity terraces and seating areas) within the site of Outline Application 4 have not been developed at this stage. Therefore, in this assessment, most of the receptors within the boundary of the Application 4 site have been assessed as thoroughfares, on the basis that pedestrian access throughout the site would be a fundamental requirement.

***Table 15.5:*** *Receptors for Assessment*

| Receptor Number | Description | Use | On-site / Off-site |
|---|---|---|---|
| 1 | Redbank OPA - RB05a | Thoroughfare | On-site |
| 2 | Redbank OPA - RB05a/RB05b | Thoroughfare | On-site |
| 3 | Redbank OPA - RB05b | Thoroughfare | On-site |
| 4 | Redbank Outline Application | Thoroughfare | On-site |
| 5 | Redbank Outline Application | Thoroughfare | On-site |
| 6 | Redbank Outline Application | Thoroughfare | On-site |
| 7 | Redbank OPA - RB16/RB17 | Thoroughfare | On-site |
| 8 | Redbank OPA - RB16/RB17 | Thoroughfare | On-site |
| 9 | Redbank OPA - RB16/RB17 | Thoroughfare | On-site |
| 10 | Redbank OPA - RB16/RB17 | Thoroughfare | On-site |
| 11 | Redbank OPA - RB06/RB01 | Thoroughfare | On-site |
| 12 | Redbank OPA - RB06/RB07 | Thoroughfare | On-site |
| 13 | Redbank OPA - RB06/RB07 | Thoroughfare | On-site |
| 14 | Redbank OPA - RB06/RB07 | Thoroughfare | On-site |
| 15 | Redbank OPA - RB06/RB07 | Thoroughfare | On-site |
| 16 | Redbank OPA - RB06/RB07 | Thoroughfare | On-site |
| 17 | Redbank OPA - RB01-RB05a | Thoroughfare | On-site |
| 18 | Redbank OPA - RB01/RB12 | Thoroughfare | On-site |
| 19 | Redbank OPA - RB12 | Thoroughfare | On-site |
| 20 | Redbank OPA - RB12 | Thoroughfare | On-site |
| 21 | Redbank OPA - RB12 | Thoroughfare | On-site |
| 22 | Redbank OPA - RB10 | Thoroughfare | On-site |
| 23 | Redbank OPA - RB10 | Thoroughfare | On-site |
| 24 | Redbank OPA - RB10 | Thoroughfare | On-site |
| 25 | Pavement (Red Bank Rd.) | Thoroughfare | Off-site |
| 26 | Residential Entrance (Red Bank Rd.) | Entrance | Off-site |
| 27 | Pavement (Red Bank Rd.) | Thoroughfare | Off-site |

| Receptor Number | Description | Use | On-site / Off-site |
|---|---|---|---|
| 28 | Pavement (Red Bank Rd.) | Thoroughfare | Off-site |
| 29 | Pavement (Red Bank Rd.) | Thoroughfare | Off-site |
| 30 | Pavement (Red Bank Rd.) | Thoroughfare | Off-site |
| 31 | Entrance to Redbank House | Entrance | Off-site |
| 32 | Redbank OPA - RB01-RB05a | Thoroughfare | On-site |
| 33 | Redbank OPA - RB01-RB05a | Thoroughfare | On-site |
| 34 | Redbank OPA - RB01-RB05a | Thoroughfare | On-site |
| 35 | Redbank OPA - RB05a | Thoroughfare | On-site |
| 36 | Redbank OPA - RB05a/RB05b | Thoroughfare | On-site |
| 37 | Redbank OPA - RB01-RB05a | Thoroughfare | On-site |
| 38 | Redbank OPA - RB01-RB05a | Thoroughfare | On-site |
| 39 | Redbank OPA - RB01-RB05a | Thoroughfare | On-site |
| 40 | Redbank OPA - RB16/RB17 | Thoroughfare | On-site |
| 41 | Redbank OPA - RB16/RB17 | Thoroughfare | On-site |
| 42 | Redbank OPA - RB05b | Thoroughfare | On-site |
| 43 | Commercial Units (Collyhurst Rd.) | Entrance | Off-site |
| 44 | Commercial Units (Collyhurst Rd.) | Entrance | Off-site |
| 45 | Pavement (Collyhurst Rd.) | Thoroughfare | Off-site |
| 46 | Existing Site | Thoroughfare | On-site |
| 47 | Existing Site | Thoroughfare | On-site |
| 48 | Existing Site | Thoroughfare | On-site |
| 49 | Existing Site | Thoroughfare | On-site |
| 50 | Existing Site | Thoroughfare | On-site |
| 51 | Pavement (Honey St.) | Thoroughfare | Off-site |
| 52 | Pavement (Collingham St.) | Thoroughfare | Off-site |
| 53 | Pavement (Stanley St./Knowsley St.) | Thoroughfare | Off-site |
| 54 | Redbank OPA - RB05b | Thoroughfare | On-site |

## NT02 – NT04 Methodology (Full Application 5)

### Study Area

15.26 The [Full] Application 5 area of the Site largely consists of hardstanding and prepared ground.

15.27 To the north, the [Full] Application 5 area of the Site is bound by Dantzic Street, beyond which is the Outline Application 4 area of the Site. To the east, the [Full] Application 5 area is bound by Dalton Street and a small number of two-storey homes and a mid-rise residential tower building. To the south, the [Full] Application 5 area is bound by the railway line into Victoria Station. To the west, the [Full] Application 5 area is bound by the emerging Victoria Riverside development.

### Survey and Data Sources

15.28 The existing site, terrain and surrounding context model for the Wind Microclimate assessment has been modelled based on information provided by the wider design team as well as publicly available information.

## Construction Phase

15.29 Generally, for wind microclimate assessments undertaken for schemes in the UK, the potential effects during enabling and construction are assessed based on the professional judgement of an experienced wind engineer, taking into account an assessment of the background wind microclimate at the site and an understanding of the effects of wind in the built environment. A qualitative approach was taken to the assessment of the enabling and construction works.

## Operational Phase

15.30 In order to assess the impact of NT02-NT04 Full Application 5 on the wind microclimate within the area, wind tunnel tests were carried out utilising the massing of the proposed Plots NT02-NT04 together with the finalised scenarios of the surrounding area, both of which were based on information and input provided by the design team. A total of five (5) configurations of the Application 5 area and surrounding context were assessed without any existing or proposed soft landscaping elements incorporated for a conservative representation of the pedestrian level wind conditions. In the wind tunnel tests, local wind speeds were measured at a total of 184 locations (126 at street level and 58 at elevated levels across Full Application 5) at a scaled height of 1.5m above the local ground and in 10° increments. Fluctuating local wind speeds were recorded at each location and the corresponding mean as well as 'gust equivalent mean' wind speeds computed. The data was then combined with the wind statistics derived from Manchester Airport meteorological data, corrected for the Site (accounting for upwind terrain and reference height at the Site), to determine the probability of local wind speeds exceeding comfort and safety thresholds (defined in Paragraphs 15.6 and 15.8 above) for a range of common pedestrian activities. Additionally, an interactive workshop was also conducted with input from the Applicant and the design team, in which targeted mitigation measures were sequentially explored and implemented where necessary, in order to alleviate exceedances of the applicable pedestrian safety and comfort criteria.

15.31 The assessment of the wind microclimate impacts of Full Application 5 comprised the following nine (9) scenarios:

- Scenario 1: assessment of the wind conditions across the proposed Full Application 5 area in its present conditions in the context of the existing surroundings but with the HIF Works substantially complete, i.e. the Baseline.
- Scenario 2: as per 'Scenario 1' but with the addition of Full Application 5.
- Scenario 3: as per 'Scenario 2' but with the addition of future developments with planning consent in the surrounding area which may influence the local wind conditions across the site.
- Scenario 4: as per 'Scenario 2' but with the addition of Outline Application 4.
- Scenario 5: as per 'Scenario 4' but with the addition of future developments with planning consent in the surrounding area which may influence the local wind conditions across the site.

- Scenario 6: as per 'Scenario 2' but with the addition of the proposed landscaping strategy for Full Application 5 and wind mitigation measures.
- Scenario 7: as per 'Scenario 3' but with the addition of the proposed landscaping strategy for Full Application 5 and wind mitigation measures.
- Scenario 8: as per 'Scenario 4' but with the addition of the proposed landscaping strategy for Full Application 5 and wind mitigation measures.
- Scenario 9: as per 'Scenario 5' but with the addition of the proposed landscaping strategy for Full Application 5 and wind mitigation measures.

15.32 It should be noted that the 'Maximum Parameters' version of Outline Application 4 was modelled in the relevant scenarios listed above, as this is expected to represent the conservative option (worst-case scenario) in terms of impact on wind conditions across the Site.

### Identification of Sensitive Receptors

15.33 The impact of Full Application 5 on the wind microclimate conditions, both in terms of comfort and safety, have been considered for both on-site and off-site receptors.

15.34 The following on-site and off-site sensitive receptors have been identified and assessed within the ES:

- All pedestrian circulation routes, building entrances, and leisure open areas in the surrounding vicinity;
- All pedestrian circulation routes, building entrances, leisure open areas and outdoor seating spaces within the site boundary of Full Application 5; and
- Elevated terraces and balconies within the proposed Full Application 5 where occupants are expected to use as outdoor recreational spaces.

15.35 The existing/proposed usages at the various receptors within the wind microclimate assessment for Full Application 5 are illustrated in **Figure 15.3** through to **Figure 15.7**.

## Assumptions/Limitations

15.36 The assessment of the wind conditions in relation to on-site construction workers lies outside the scope of the Wind Microclimate chapter: the safety, health and welfare of workers within the construction site is in fact a matter that will need to be managed through detailed CDM construction phase plan and site risk assessments.

15.37 The models and calculations for the wind assessment have been based on the drawings and models of proposed and existing properties provided by the project design team and supplemented with the available satellite images of the existing surroundings.

15.38 Within open leisure spaces and terraces, outdoor seating amenities (i.e. areas where seating furniture is intended) are to be in use primarily during the summer season. During the windier times of the year, it would be

expected that these spaces would be suitable for 'standing' use as usability is lower during these seasons (also due to other factors such as temperature and precipitation).

15.39 Amenity spaces that are recreational terraces and dedicated exercise / play areas are generally expected to be suitable for standing use in summer and at least walking in winter, which reflects the more active nature of the recreational pursuits expected within these areas.

15.40 The wind study detailed in this ES Chapter is focused on the pedestrian level wind environment and excludes façade pressure, wind loads, inputs to structural engineering; internal airflows within buildings or impacts on vehicles.

15.41 The Wind Microclimate assessment detailed in this ES Chapter relies on historical wind data as the basis for derivation of the wind statistics used in the assessment. [The following should be noted as regards future wind conditions in the context of climate change]:

- The UK Climate Projections (UKCP18) published by the Met Office presents a number of different predicted scenarios. The 'Climate Projects Report' published by UKCP18 presents the probable changes in wind speed for 2070 - 2099 in both the summer and winter seasons. With these predictions, the current trends in the climate change are not likely to have any significant effects on the predicted wind microclimate conditions in and around the Proposed Development.
- Further to the UKCP18, an update to the 'ABI Research Paper No 19' of 2009 on "UK Windstorms and Climate Change" was published by AIR WORLDWIDE and the Met Office on the 31st January 2017, it is stated that:
    - "Under a global temperature increase of 1.5°C, the number of storms over the UK generally decreases with the largest decrease in storm occurrence over the southwestern UK. Under a global temperature increase of 3.0 and 4.5° C, the number of storms over the UK generally increases by up to 15% of the CMIP5 baseline. An exception to this is over southern UK where we see a decrease which gradually lessens with increasing temperature".
- As expected, the changes generally follow the same pattern as the changes in track density, with areas of decreased frequency experiencing weaker wind speeds and areas of increased frequency experiencing stronger ones.
- These findings would seem to suggest that the impact of climate change on frequency of storms and strength of wind speeds at the Site and surrounds of the Proposed Development are likely to slightly reduce over the course of the next few decades. In this context, the use of historical data, is therefore deemed to be slightly conservative.

15.42 The Wind Microclimate assessment for the proposed Outline Application 4 and Full Application 5 presented in this ES Chapter have been conducted using CFD simulations and wind tunnel testing respectively. Both methods (numerical and experimental) feature inherent advantages and limitations. The following factors were taken into

careful consideration and form the basis for the combination of assessment methods utilised. These are listed as follows:

- Strengths and limitations of experimental measurements[2] (wind tunnel testing), specifically:
    - Ease of generating realistic atmospheric turbulence.
    - High temporal resolution measurement of time-dependent flow behaviour (e.g. gusts).
    - Robust and well-established methodology that benefit from several decades of practice, developments and validations at full scale.
    - Measurement can only be made at discrete points/sensor locations. The placement of sensors is reliant on the good judgement and experience of the practitioner.
- Strengths and limitations of numerical simulations[2] (CFD), specifically:
    - Ability to explicitly model large study areas, in principle much larger than the typical full-scale radius used in wind tunnel testing campaign.
    - Good visualisation capabilities to help explain concepts and results.
    - Challenges associated with the reproduction of "real" turbulence and reliable quantification of gusts (non-SRS (Scale-Resolving Simulations) techniques only).
- The site boundary of Outline Application 4 covers a significant physical area (approximately twice the area coverage of the site for Full Application 5). Given the extensive area coverage and preliminary/illustrative nature of the pedestrian usages across the site of Outline Application 4, CFD simulations was considered the more suitable/advantageous method for the corresponding Wind Microclimate assessment.
- As expected, the massing of Plots NT02-NT04 within Full Application 5 featured a higher level of architectural detail in comparison to Outline Application 4. Consequently, a greater degree of emphasis was placed on the accurate resolution of gusts, particularly where complex flow features would be expected (e.g. central courtyards, balconies, terraces, etc.). Within the context of Full Application 5, wind tunnel testing was considered the more suitable/advantageous method for the corresponding Wind Microclimate assessment.
- Considering the current state-of-the-art in pedestrian level wind studies in the UK, both experimental and computational methods are viable and useful for the purpose of assessing Wind Microclimate conditions. There are often good reasons to make use of both experimental and computational methods on a project to take advantage of the inherent benefits of one method whilst offsetting its disadvantages.
- Both experimental and computational methods applied in this assessment comply with the respective best practice guidelines[2], which state the minimum requirements to be met by the chosen methodology for its results to be robust.

[2] *Cammelli, S., Dorigatti, F., Hackett, D., To, A.P., Vazquez, B., "A position paper on experimental and computational methods in wind engineering". UK Wind Engineering Society, 2022.*

## Consultation

15.43 The scope and methodology for the Wind Microclimate assessment was presented in the Scoping Report, which was submitted to Manchester City Council (MCC) on 31st January 2023. In the Scoping Opinion received on 16th March 2023, feedback from MCC indicated that the comments within the Scoping Report were noted and found acceptable in terms of their consideration in the ES. The assessment for Wind Microclimate detailed within this ES Chapter has been carried out in accordance with the methodology proposed in the Scoping Report.

# Red Bank (Outline Application 4)

## Baseline Conditions (Application 4)

15.44 The results of the Wind Microclimate assessment scenario relevant to the Outline Application 4 Baseline Conditions (Scenario 1) are presented in **Appendix 15.1**.

15.45 Within the context of the Baseline, wind conditions at all receptors within and around the site of Outline Application 4 are *safe* and suitable, in terms of wind *comfort*, for the intended use.

## Embedded Mitigation (Application 4)

### Demolition and Construction

15.46 No specific embedded wind mitigation measures have been proposed for the demolition and construction phase of Outline Application 4 (see Paragraph 15.49 for further details).

### The Completed and Operational Development

15.47 No specific embedded wind mitigation measures have been proposed for the Completed and Operational Development of Outline Application 4.

## Assessment of Likely Significant Effects (Application 4)

### Demolition and Construction

15.48 A quantitative assessment of the impacts of the proposed Application 4 development during demolition and construction has not been included in this ES Chapter. This is because wind effects at pedestrian level are closely associated with the size and shape of the massing of buildings and, during the demolition and construction stage, this condition will be continuously changing. However, using professional judgement, it can be stated that as demolition and construction work progress, the wind microclimate conditions within and around the Outline Application 4 area of the Site are expected to gradually transition between those of the baseline and the final completed Outline Application 4. The wind microclimate conditions are therefore not expected to exceed the ones of the completed Outline Application 4 provided that the landscaping scheme and the wind mitigation measures are introduced prior to the development itself being fully constructed.

15.49 The potential effects during various stages of construction will vary and are likely to be of lesser magnitude than those that will be experienced once Outline Application 4 has been completed. Additionally, demolition and construction activities are less sensitive to wind conditions and a Construction Environment Management Plan (CEMP) would typically be implemented to protect construction workers. Access to the Site of Outline Application 4 will also be restricted via perimeter hoardings. The presence of cranes on-site is unlikely to present a significant

impact on wind conditions at the Site of Outline Application 4 due to the typical open-truss type construction of the frame used, which is relatively 'transparent' to wind and thus unlikely to generate downdrafts. Any undesirable wind conditions during construction are temporary and as construction of Outline Application 4 proceeds, the wind conditions at the Site of Outline Application 4 would gradually vary, approaching those of the completed development, the assessment of which is covered in the next section.

### The Completed and Operational Development

15.50 The full results of the Wind Microclimate assessment scenario relevant to the Application 4 Completed and Operational Development (Scenario 2) are presented in **Appendix 15.1**.

15.51 With the introduction of the proposed Outline Application 4, in the absence of landscaping strategy and wind mitigation, wind conditions within and around the development are generally safe for intended use. The nature and scale of the effects are therefore **Negligible** and considered **Not Significant**.

15.52 However, exceedances of the pedestrian *safety* criteria occur at a few locations: to the north of RB05a (Receptor 1); at the southeast corner of RB17 (Receptor 7); between RB01 and RB06 (Receptor 11); between RB01 and RB12b (Receptor 18); and thoroughfares around the building corners of RB10 (Receptors 22 and 23). The nature and scale of the effects are **Major Adverse** and considered **Significant**.

15.53 In terms of wind *comfort*, wind conditions at all receptors within and surrounding the Outline Application 4 area are suitable for their intended uses. The nature and scale of the effects are therefore **Negligible** and considered **Not Significant**.

#### Swing Plot RB05b (Outline Application 4)

15.54 The proposed Plot RB05b of Outline Application 4 could be brought forward as either a primary school or a residential development at later design stages.

15.55 Regardless of the end-use for the plot, the pedestrian usages in and around the plot are likely to be similar, i.e. thoroughfares, entrances, amenity areas etc. In this respect, the assessment criteria applied for the wind microclimate assessment for either option is expected to be comparable.

15.56 It is expected that any material impact on the local wind microclimate will culminate from differences in massing related to the end-use of the plot. For example, if the massing of the residential option for RB05b is more substantial (taller) than the school option, the local wind conditions around the residential plot could potentially be windier due to the presence of stronger downdrafts.

## Additional Mitigation / Enhancement Measures (Application 4)

### Demolition and Construction

15.57 No specific wind mitigation measures have been proposed for the demolition and construction phase of Outline Application 4 (see 15.49 for further details).

### The Completed and Operational Development

15.58 As part of the wind mitigation exercise, the illustrative landscape masterplan for Outline Application 4 (detailed in the document '*RDB-SPG-00-XX-DR-LA-819601_ Illustrative Landscape Masterplan.pdf*' provided by the design team) was modelled to demonstrate that viable mitigation options are available at the detailed design stage. Further detailed studies at the detailed design stage will be undertaken to minimise any significant adverse effects to neighbouring adjacent buildings, with further refinement of the Landscape Strategy to be made for subsequent detailed planning applications.

15.59 In addition to the landscaping strategy detailed above, the following wind mitigation measures were also incorporated within the wind tunnel model:

- A small number of additional trees, ranging from 4m to 6m diameter placed at the corners of RB10 to counteract the effects of westerly winds down-drafting along the side of RB10 and accelerating through the gap between RB10 and the railway viaduct.
- Two 50% porous screens at the corners of RB10, with a width and height of 2m x 4m respectively; and
- A single 50% porous screen placed at the corner of RB17, with a width and height of 2m x 4m respectively.

15.60 Notably, the wind mitigation measures in the form of porous screens listed above were explored with the aim of ascertaining a viable solution for alleviating the adverse local wind conditions. However, these are unlikely to become necessary moving forward – it is fully expected that the corresponding exceedances of the safety and wind comfort criteria can be successfully mitigated through optimisation of the massing and/or landscaping strategy of the relevant plots (RB01, RB10, RB12b and RB17) when brought forward for detailed application.

## Likely Residual Effects of the Development and their Significance (Application 4)

15.61 The results of the Wind Microclimate assessment scenario relevant to the Residual Effects of Outline Application 4 (Scenario 6) are presented in **Appendix 15.1**.

15.62 With the implementation of the landscaping strategy and wind mitigation measures, all exceedances of the pedestrian *safety* criteria resulting from the introduction of Outline Application 4 are alleviated. The residual effects are therefore **Negligible** and considered **Not Significant**.

***Table 15.6:*** *Residual Effects Summary*

| Potential effect including significance | Receptor(s) | Mitigation | Residual Effect including Significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Negligible | - | None | Negligible / Temporary |
| ***Completed Development*** | | | |
| Major Adverse | 1, 7, 11, 18, 22, 23 | As described in 15.58 and 15.59 | Negligible / Permanent |
| Negligible | All other receptors | As described in 15.58 and 15.59 | Negligible / Permanent |

## Conclusions (Application 4)

15.63 With the introduction of Outline Application 4, a few exceedances of the pedestrian *safety* criteria occur at localised areas around Plots RB01, RB10, RB12b and RB17. However, with the introduction of the illustrative landscaping strategy and wind mitigation measures, these exceedances are fully mitigated.

15.64 It should be noted that the illustrative landscaping scheme and wind mitigation measures assessed were intended to demonstrate a viable option in terms of alleviating exceedances of the pedestrian *safety* and *comfort* criteria. It is likely that the final landscaping and wind mitigation scheme will be different from the one assessed, and its effectiveness will be verified as part of further assessments when the relevant plots of the current Outline Application 4 are brought forward for detailed application.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 4)

### Approach

15.65 As part of the Cumulative Effects assessment for Outline Application 4, the following schemes (within 750m radius of the Site) have been included within the CFD context model:

- The Gasworks (Ref: 128248/FO/2020)
- 25 Rochdale Road (Ref: 127537/FO/2020)
- 2 and 3 Angel Square (Ref: 124973/FO/2019)
- 87 Rochdale Road (Ref: 131708/FO/2021)
- 40 Swan Street (Ref: 128997/FO/2020)
- Great Ducie Street (Ref: 132416/FO/2021)
- 1 Lord Street (113914/FO/2016).

15.66 CFD simulations for the assessment of cumulative effects were conducted in accordance with the methodology described in 15.20 to assess the Cumulative Effects for Outline Application 4.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

15.67 A quantitative assessment of the impacts of the Proposed Development during demolition and construction has not been included in this ES Chapter. This is because wind effects at pedestrian level are closely associated with the size and shape of the massing of buildings and, during the demolition and construction stage, this condition will be continuously changing. However, using professional judgement, it can be stated that as demolition and construction work progress, the conditions within and around the Site are expected to gradually transition between those of the baseline and the final completed Outline Application 4. The wind microclimate conditions are therefore not expected to exceed the ones of the completed Outline Application 4 provided that the landscaping scheme and the wind mitigation measures are introduced prior to the development itself being fully constructed.

15.68 The potential effects during various stages of construction will vary and are likely to be of lesser magnitude than those that will be experienced once Outline Application 4 has been completed. Additionally, demolition and construction activities are less sensitive to wind conditions and a Construction Environment Management Plan (CEMP) would typically be implemented to protect construction workers. Access to the Site will also be restricted via perimeter hoardings. The presence of cranes on site is unlikely to present a significant impact on wind conditions at the Site due to the typical open-truss type construction of the frame used, which is relatively 'transparent' to wind and thus unlikely to generate downdrafts. Any undesirable wind conditions during construction are temporary and as construction of Outline Application 4 proceeds, the wind conditions at the Site would gradually vary, approaching those of the completed development, the assessment of which is covered in the next section.

### The Completed and Operational Development

15.69 The results of the Wind Microclimate assessment scenario relevant to the Residual Cumulative Effects of Outline Application 4 (Scenario 7) are presented in **Appendix 15.1**.

15.70 With the introduction of the proposed Outline Application 4 and the cumulative schemes, including the landscaping strategy and wind mitigation, wind conditions at all receptors within and around the Site of the development are *safe* and suitable, in terms of wind *comfort*, for the intended use. The nature and scale of the effects are therefore **Negligible** and considered **Not Significant**.

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 4)

15.71 The Cumulative Effects of Application 4 and the SRF have been qualitatively assessed based on information provided in the document entitled 'Strategic Regeneration Framework, Manchester Northern Gateway, February 2019" (SRF), which is publicly available.

15.72 The SRF comprises 7 interconnected neighbourhoods that span across large areas toward the south, east and northeast of the Outline Application 4 site. Outline Application 4 is located within the Red Bank neighbourhood within the SRF.

15.73 In general, the aerodynamic effects generated by a development is dependent on its massing and has a limited radius of influence, therefore only developments that are within relative proximity of Outline Application 4 are likely to result in significant In Combination Effects. As further developments emerge within the SRF (particularly within the New Town and Vauxhall Gardens neighbourhoods), it is expected that the wind conditions within the Site of Outline Application 4 will become calmer (as compared to the respective assessments for Scenario 3 and Scenario 7 for Outline Application 4) due to increased shielding from prevailing and less-prevailing winds.

# In Combination Effects of Applications 4 and 5 (within the area of study for Outline Application 4)

## Assessment of Likely Significant Effects

### Demolition and Construction

15.74 A quantitative assessment of the impacts of the Proposed Development during demolition and construction has not been included in this ES Chapter. This is because wind effects at pedestrian level are closely associated with the size and shape of the massing of buildings and, during the demolition and construction stage, this condition will be continuously changing. However, using professional judgement, it can be stated that as demolition and construction work progress, the conditions within and around the Site are expected to gradually transition between those of the baseline and the final completed Outline Application 4 and Full Application 5. The wind microclimate conditions are therefore not expected to exceed the ones of the completed Outline Application 4 and Full Application 5 provided that the landscaping scheme and the wind mitigation measures are introduced prior to the Proposed Development being fully constructed.

15.75 The potential effects during various stages of construction will vary and are likely to be of lesser magnitude than those that will be experienced once Outline Application 4 and Full Application 5 have been completed. Additionally, demolition and construction activities are less sensitive to wind conditions and a CEMP would typically be implemented to protect construction workers. Access to the Site will also be restricted via perimeter hoardings. The presence of cranes on site is unlikely to present a significant impact on wind conditions at the Site due to the typical open-truss type construction of the frame used, which is relatively 'transparent' to wind and thus unlikely to generate downdrafts. Any undesirable wind conditions during construction are temporary and as construction of Outline Application 4 and Full Application 5 proceeds, the wind conditions at the Site would gradually vary, approaching those of the completed development, the assessment of which is covered in the next section.

### The Completed and Operational Development

15.76 The results of the Wind Microclimate assessment scenario relevant to the In Combination Effects of Outline Application 4 and Full Application 5 (Scenario 4) are presented in **Appendix 15.1**.

15.77 With the introduction of the proposed Outline Application 4 and Full Application 5, in the absence of landscaping strategy and wind mitigation, wind conditions within and around the development are generally safe for intended use. The nature and scale of the effects are therefore **Negligible** and considered **Not Significant**.

15.78 However, exceedances of the pedestrian *safety* criteria occur at a few locations: to the north of RB05a (Receptor 1); between RB01 and RB06 (Receptor 11); between RB01 and RB12b (Receptor 18); and thoroughfares around the building corners of RB10 (Receptors 22 and 23). The nature and scale of the effects are **Major Adverse** and considered **Significant**.

15.79 In terms of wind *comfort*, wind conditions at all receptors within the Site and surrounding area of Outline Application 4 are suitable for their intended uses. The nature and scale of the effects are therefore **Negligible** and considered **Not Significant**.

15.80 The results of the Wind Microclimate assessment scenario relevant to the In Combination Effects of Outline Application 4 and Full Application 5 (Scenario 4) are presented in **Appendix 15.1**.

## Additional Mitigation / Enhancement Measures

### Demolition and Construction

15.81 No specific wind mitigation measures have been proposed in relation to the In Combination Effects of Applications 4 and 5 on the demolition and construction phase of Outline Application 4 (see 15.49 for further details).

### The Completed and Operational Development

15.82 The landscaping strategy and wind mitigation measures are as described in 15.58 and 15.59.

## Likely Residual Effects of the Development and their Significance

15.83 The results of the Wind Microclimate assessment scenario relevant to the Residual In Combination Effects of Outline Application 4 and Full Application 5 (Scenario 8) are presented in **Appendix 15.1**.

15.84 With the introduction of the proposed Outline Application 4 and Full Application 5, including the landscaping strategy and wind mitigation, wind conditions at all receptors within and around the Site of the development *safe* and suitable, in terms of wind *comfort*, for the intended use. The nature and scale of the effects are therefore **Negligible** and considered **Not Significant**.

***Table 15.7:*** *Residual Effects Summary*

| Potential effect including significance | Receptor(s) | Mitigation | Residual Effect including Significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Negligible | - | None | Negligible / Temporary |
| ***Completed Development*** | | | |
| Major Adverse | 1, 11, 18, 22, 23 | As described in 15.58 and 15.59 | Negligible / Permanent |
| Negligible | All other receptors | As described in 15.58 and 15.59 | Negligible / Permanent |

## Conclusions

15.85 With the introduction of the proposed Outline Application 4 and Full Application 5, a few exceedances of the pedestrian *safety* criteria occur at localised areas around Plots RB01, RB10 and RB12b. However, with the introduction of the proposed landscaping strategy and wind mitigation measures, these exceedances are alleviated.

## Assessment of Cumulative Effects and their Significance

15.86 As part of the Cumulative In Combination Effects assessment for Applications 4 and 5, the following schemes (within a 1km radius of the Site) have been included within the CFD context model:

- The Gasworks (Ref: 128248/FO/2020)
- 25 Rochdale Road (Ref: 127537/FO/2020)
- 2 and 3 Angel Square (Ref: 124973/FO/2019)
- 87 Rochdale Road (Ref: 131708/FO/2021)
- 40 Swan Street (Ref: 128997/FO/2020)
- Great Ducie Street (Ref: 132416/FO/2021)
- 1 Lord Street (113914/FO/2016).

### Approach

15.87 CFD simulations were conducted in accordance with the methodology described in 15.20.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

15.88 A quantitative assessment of the impacts of the Proposed Development during demolition and construction has not been included in this ES Chapter. This is because wind effects at pedestrian level are closely associated with

the size and shape of the massing of buildings and, during the demolition and construction stage, this condition will be continuously changing. However, using professional judgement, it can be stated that as demolition and construction work progress, the conditions within and around the Site are expected to gradually transition between those of the baseline and the final completed Outline Application 4 and/or Full Application 5. The wind microclimate conditions are therefore not expected to exceed the ones of the completed Outline Application 4 and/or Full Application 5 provided that the landscaping scheme and the wind mitigation measures are introduced prior to the development itself being fully constructed.

15.89 The potential effects during various stages of construction will vary and are likely to be of lesser magnitude than those that will be experienced once Outline Application 4 and/or Full Application 5 have been completed. Additionally, demolition and construction activities are less sensitive to wind conditions and a Construction Environment Management Plan (CEMP) would typically be implemented to protect construction workers. Access to the Site will also be restricted via perimeter hoardings. The presence of cranes on site is unlikely to present a significant impact on wind conditions at the Site due to the typical open-truss type construction of the frame used, which is relatively 'transparent' to wind and thus unlikely to generate downdrafts. Any undesirable wind conditions during construction are temporary and as construction of Outline Application 4 and/or Full Application 5 proceeds, the wind conditions at the Site would gradually vary, approaching those of the completed development, the assessment of which is covered in the next section.

### The Completed and Operational Development

15.90 With the introduction of the proposed Outline Application 4, Full Application 5, and the cumulative schemes, including the landscaping strategy and wind mitigation, wind conditions at all receptors within and around the Site of the development are *safe* and suitable, in terms of wind *comfort*, for the intended use, for intended use. The nature and scale of the effects are therefore **Negligible** and considered **Not Significant**.

15.91 The results of the Wind Microclimate assessment scenario relevant to the Residual In Combination Cumulative Effects of Outline Application 4 and Full Application 5 (Scenario 9) are presented in **Appendix 15.1**.

# NT02-NT04 (Full Application 5)

## Baseline Conditions (Application 5)

15.92 The results of the Wind Microclimate assessment scenario relevant to the Application 5 Baseline Conditions (Scenario 1) are presented in **Appendix 15.2**.

15.93 Within the context of the Baseline, wind conditions at almost all receptors within and around the site of Full Application 5 are *safe* and suitable, in terms of wind *comfort*, for the intended use.

15.94 The sole exceedance of the pedestrian safety criteria was observed at Receptor 127 (thoroughfare at the southwest corner of Victoria Riverside Block A).

15.95 Inherent exceedances of the wind comfort criteria occur at:

- Receptors 113 and 116 - ground level entrances at the north and west facades of Victoria Riverside Block B.
- Receptor 123 - ground level entrance at the east façade of Victoria Riverside Block A.

## Embedded Mitigation (Application 5)

### Demolition and Construction

15.96 No specific wind mitigation measures have been proposed for the demolition and construction phase of Full Application 5 (see 15.99 for further details).

### The Completed and Operational Development

15.97 No specific embedded wind mitigation measures have been proposed for the Completed and Operational Development of Full Application 5.

## Assessment of Likely Significant Effects (Application 5)

### Demolition and Construction

15.98 A quantitative assessment of the impacts of Full Application 5 during demolition and construction has not been included in this ES Chapter. This is because wind effects at pedestrian level are closely associated with the size and shape of the massing of buildings and, during the demolition and construction stage, this condition will be continuously changing. However, using professional judgement, it can be stated that as demolition and construction work progress, the conditions within and around the Site are expected to gradually transition between those of the baseline and the final completed Full Application 5. The wind microclimate conditions are therefore not expected to exceed the ones of the completed Full Application 5 provided that the landscaping scheme and the wind mitigation measures are introduced prior to the development itself being fully constructed.

15.99 The potential effects during various stages of construction will vary and are likely to be of lesser magnitude than those that will be experienced once Full Application 5 has been completed. Additionally, demolition and construction activities are less sensitive to wind conditions and a CEMP would typically be implemented to protect construction workers. Access to the Site will also be restricted via perimeter hoardings. The presence of cranes on site is unlikely to present a significant impact on wind conditions at the Site due to the typical open-truss type construction of the frame used, which is relatively 'transparent' to wind and thus unlikely to generate downdrafts. Any undesirable wind conditions during construction are temporary and as construction of Full Application 5 proceeds, the wind conditions at the Site would gradually vary, approaching those of the completed development, the assessment of which is covered in the next section.

## The Completed and Operational Development

15.100 The results of the Wind Microclimate assessment scenario relevant to the Application 5 Completed and Operational Development (Scenario 2) are presented in **Appendix 15.2**.

15.101 With the introduction of the proposed Full Application 5, in the absence of the landscaping strategy and wind mitigation measures, the following exceedances of the pedestrian safety criteria were observed:

- Receptor 14 (thoroughfare to the east of NT04)
- Receptor 55 (thoroughfare between 2D.1 and 2D.3 of NT04)
- Receptors 49, 60 and 62 (thoroughfare locations within Travis Square)

15.102 The nature and scale of the effects at these receptors are **Major Adverse** and considered **Significant**.

15.103 Additionally, the inherent exceedance of the *safety* criteria at Receptor 127 (southwest corner of Victoria Riverside Block A) persists. The nature and scale of the effect is **Negligible** and considered **Not Significant**.

15.104 At the elevated levels, wind conditions at all receptors are safe for intended use. The nature and scale of the effects are **Negligible** and considered **Not Significant**.

15.105 In terms of pedestrian wind *comfort*, wind conditions are generally suitable for their intended uses. The following exceptions occur:

- Thoroughfares:
    - Receptor 14 (to the east of NT04)
    - Receptor 30 (2D.3 - NT04)
    - Receptors 49, 60 and 62 (southern end of Travis Square)
    - Receptor 55 (between 2D.1 and 2D.3 of NT04).
- Entrances / Waiting Areas:

- Receptor 16 (2D.3 - NT04 lobby)
- Receptor 20 (2D.3 - NT04 co-working space)
- Receptor 29 (2D.3 - NT04 maisonettes)
- Receptor 44 (2D.1 - NT04 commercial units)
- Receptor 48 (2D.1 - NT04 lobby)
- Receptor 50 (2D.1 - NT04 maisonettes)
- Receptor 77 (NT03 Midrise 3 commercial unit)
- Receptor 96 (NT02 Clubhouse lobby)

- Recreational Spaces / Terraces:
  - Receptors 201 and 203 (NT04 podium terrace)
  - Receptor 214 (NT03 podium terrace)
- Outdoor Seating:
  - Receptor 205 (NT04 podium terrace)
  - Receptors 213, 215 and 220 (NT03 podium terrace)
  - Receptors 221 and 223 (NT02 Tower 1 podium terraces)
  - Receptor 304 (2D.3 - NT04 private amenity terrace)
  - Receptors 334 and 335 (NT02 Clubhouse terrace)
- Balconies:
  - Receptor 333 (indicative of wind conditions at the lower balconies near the northwest corner of NT03 Midrise 3)

15.106 The nature and scale of the effects at these receptors are **Moderate Adverse (On-Site)** and considered **Significant**.

15.107 At all other receptors, the nature and scale of the effects range between **Moderate Adverse (Off-Site)** and **Moderate Beneficial** and are therefore considered **Not Significant**.

## Additional Mitigation / Enhancement Measures (Application 5)

### Demolition and Construction

15.108 No specific wind mitigation measures have been proposed for the demolition and construction phase of Full Application 5 (see 15.99 for further details).

## The Completed and Operational Development

15.109 As part of the wind mitigation exercise in the wind tunnel, the landscaping scheme was modelled in accordance with the information outlined within the following documents provided by the landscape architects of the scheme (OP-EN):

- M10394_NT02-04 Landscape Plan_Courtyards_230213.pdf
- M10394_NT02-04 Landscape Plan_PublicRealm_230213.pdf

15.110 All trees were initially implemented as winter/bare format trees, for conservatism. Based on tree height information provided by OP-EN, a mix of small trees (4m tall) and standard trees (6m tall) were modelled. During the wind mitigation exercise, a number of these trees were subsequently replaced with evergreen trees, which – due to the additional foliage – were more effective in alleviating adverse wind effects. The changes to the initial landscaping strategy are illustrated in **Appendix 15.2**.

15.111 In addition to the landscaping strategy detailed above, the following wind mitigation measures were also developed with input from the design team and the Applicant:

- 1.5m (D) x 2m (H) solid side screens on both sides of the entrances within the vicinity of Receptors 29, 44, 50, 77 and 96.
    - In lieu of these screens, it is understood that the entrances indicated by Receptors 44, and 96 will be recessed by an equivalent depth of 1.5m; the entrance indicated by Receptor 77 will be relocated southward by 12m along the façade line – where wind conditions are expected to be more suitable for standing; whereas at Receptors 29 and 50, fences of 1.5m height and comprising 50% perforated panels will be implemented around the perimeter of the gardens within proximity of the maisonette entrances. It is expected that the recessing/relocation of entrances and incorporation of fences as described above will be similarly effective in terms of mitigating the adverse local wind conditions observed.
- 1m (H) x 3m (W) planter with hedges near the rounded building corner at the NT02 Clubhouse terrace.
- 1.5m (H) parapet, comprising 0.5m (H) perforated panels (50% solid) on top of a 1m (H) solid balustrade, along the perimeter of the NT02 Clubhouse terrace.
- 1.5m (H) parapet, comprising perforated panels (50% solid), at the private amenity terraces of NT04.
- 2m (H) solid screens/dividers at the private amenity terraces of NT04.
- 1.5m (H) parapet, comprising 0.6m (H) perforated panels (50% solid) on top of a 0.9m (H) solid balustrade, along the perimeter of the NT04 external amenity terrace.
- 1.8m (H) fence, comprising perforated panels (50% solid), along the southern boundary between the podium and 2D.3 of NT04.

- 1.5m (H) backrests/screens, comprising perforated panels (50% solid), at the seating areas within the central courtyard on the NT03 podium terrace. These should be strategically oriented to shield the seating areas from southerly winds.
- 1.5m (H) solid side screen and 1.2m (H) balustrade comprising 50% perforated panels, at the lower balconies along the west elevation of NT03 Midrise 3.
    - In lieu of the 1.2m (H) balustrade comprising 50% perforated panels, it is understood that an open-picket type balustrade of the same height but with 100mm spacing between balusters will be implemented at the relevant balconies. It is expected that the latter implementation will be similarly effective in terms of mitigating the adverse local wind conditions observed.

## Likely Residual Effects of the Development and their Significance (Application 5)

15.112 The results of the Wind Microclimate assessment scenario relevant to the Residual Effects of the Completed and Operational Development (Scenario 6) are presented in **Appendix 15.2**.

15.113 With the implementation of the landscaping strategy and wind mitigation measures, all exceedances of the pedestrian *safety* and wind *comfort* criteria resulting from the introduction of Full Application 5 are alleviated. The residual effects at these receptors are therefore **Negligible** and considered **Not Significant**.

15.114 At all other receptors, the nature and scale of the effects range between **Moderate Adverse (Off-Site)** and **Moderate Beneficial** and are therefore considered **Not Significant**.

***Table 15.8:*** *Residual Effects Summary*

| Potential effect including significance | Receptor(s) | Mitigation | Residual Effect including Significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Negligible | - | None | Negligible / Temporary |
| ***Completed Development*** | | | |
| Major Adverse | 14, 49, 55, 60, 62 | As described in 15.109 to 15.111 | Negligible / Permanent |
| Moderate Adverse (On-Site) | 16, 20, 29, 30, 44, 48, 50, 77, 96, 201, 203, 205, 213, 214, 215, 220, 221, 223, 304, 305, 333, 334, 335 | As described in 15.109 to 15.111 | Negligible / Permanent |
| Moderate Adverse (Off-Site) to Moderate Beneficial | All other receptors | As described in 15.109 to 15.111 | Moderate Adverse (Off-Site) to Moderate Beneficial / Permanent |

## Conclusions (Application 5)

15.115 With the introduction of the proposed Full Application 5, exceedances of the pedestrian *safety* and/or *comfort* criteria are observed at several receptors. However, with the introduction of the proposed landscaping strategy and wind mitigation measures, these exceedances are fully mitigated.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 5)

### Approach

15.116 As part of the Cumulative Effects assessment for Full Application 5, the following schemes (within a 600m radius of the Site) have been included within the surrounding context of the wind tunnel model:

- The Gasworks (128248/FO/2020).
- 25 Rochdale Road (127537/FO/2020.
- 2 and 3 Angel Square (124973/FO/2019).
- 87 Rochdale Road (131708/FO/2021).
- 1 Lord Street (113914/FO/2016).

15.117 Wind tunnel tests were conducted in accordance with the methodology described in 15.30 to assess the Cumulative Effects of Full Application 5.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

15.118 A quantitative assessment of the impacts of Full Application 5 during demolition and construction has not been included in this ES Chapter. This is because wind effects at pedestrian level are closely associated with the size and shape of the massing of buildings and, during the demolition and construction stage, this condition will be continuously changing. However, using professional judgement, it can be stated that as demolition and construction work progress, the conditions within and around the Site are expected to gradually transition between those of the baseline and the final completed Full Application 5. The wind microclimate conditions are therefore not expected to exceed the ones of the completed Full Application 5 provided that the landscaping scheme and the wind mitigation measures are introduced prior to the development itself being fully constructed.

15.119 The potential effects during various stages of construction will vary and are likely to be of lesser magnitude than those that will be experienced once Full Application 5 has been completed. Additionally, demolition and construction activities are less sensitive to wind conditions and a CEMP would typically be implemented to

protect construction workers. Access to the Site will also be restricted via perimeter hoardings. The presence of cranes on site is unlikely to present a significant impact on wind conditions at the Site due to the typical open-truss type construction of the frame used, which is relatively 'transparent' to wind and thus unlikely to generate downdrafts. Any undesirable wind conditions during construction are temporary and as construction of Full Application 5 proceeds, the wind conditions at the Site would gradually vary, approaching those of the completed development, the assessment of which is covered in the next section.

### The Completed and Operational Development

15.120 The results of the Wind Microclimate assessment scenario relevant to the Residual Cumulative Effects for the Completed and Operational Development (Scenario 7) are presented in **Appendix 15.2.**

15.121 With the implementation of the landscaping strategy and wind mitigation measures, all exceedances of the pedestrian safety and wind comfort criteria resulting from the introduction of Full Application 5 and the cumulative schemes are fully mitigated. The residual effects are therefore **Negligible** and considered **Not Significant**.

15.122 At all other receptors, the nature and scale of the effects range between **Moderate Adverse (Off-Site)** and **Moderate Beneficial** and are therefore considered **Not Significant**.

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 5)

15.123 The Cumulative Effects of Application 5 and the SRF have been qualitatively assessed based on information provided in the SRF, which is publicly available.

15.124 The SRF comprises 7 interconnected neighbourhoods that span across large areas toward the south, east and northeast of the Site for Application 5. Full Application 5 is located within the New Town neighbourhood within the SRF.

15.125 In general, the aerodynamic effects generated by a development is dependent on its massing and has a limited radius of influence, therefore only developments that are within relative proximity of Full Application 5 are likely to result in significant In Combination Effects. As further developments emerge within the SRF (particularly within the New Town and Vauxhall Gardens neighbourhoods), it is expected that the wind conditions within the Site of Application 5 will become calmer (as compared to the respective assessments for Scenario 3 and Scenario 7 for Full Application 5) due to increased shielding from prevailing and less-prevailing winds.

# In Combination Effects of Applications 4 and 5 (within the area of study for Full Application 5)

## Assessment of Likely Significant Effects

### Demolition and Construction

15.126 A quantitative assessment of the impacts of the Proposed Development during demolition and construction has not been included in this ES Chapter. This is because wind effects at pedestrian level are closely associated with the size and shape of the massing of buildings and, during the demolition and construction stage, this condition will be continuously changing. However, using professional judgement, it can be stated that as demolition and construction work progress, the conditions within and around the Site are expected to gradually transition between those of the baseline and the final completed Outline Application 4 and Full Application 5. The wind microclimate conditions are therefore not expected to exceed the ones of the completed Outline Application 4 and Full Application 5 provided that the landscaping scheme and the wind mitigation measures are introduced prior to the Proposed Development itself being fully constructed.

15.127 The potential effects during various stages of construction will vary and are likely to be of lesser magnitude than those that will be experienced once Outline Application 4 and Full Application 5 have been completed. Additionally, demolition and construction activities are less sensitive to wind conditions and a CEMP would typically be implemented to protect construction workers. Access to the Site will also be restricted via perimeter hoardings. The presence of cranes on site is unlikely to present a significant impact on wind conditions at the Site due to the typical open-truss type construction of the frame used, which is relatively 'transparent' to wind and thus unlikely to generate downdrafts. Any undesirable wind conditions during construction are temporary and as construction of Outline Application 4 and Full Application 5 proceeds, the wind conditions at the Site would gradually vary, approaching those of the completed development, the assessment of which is covered in the next section.

### The Completed and Operational Development

15.128 The results of the Wind Microclimate assessment scenario relevant to the In Combination Effects for Outline Application 4 and Full Application 5 (Scenario 4) are presented in **Appendix 15.2**.

15.129 With the introduction of the proposed Outline Application 4 and Full Application 5, in the absence of the landscaping strategy and wind mitigation measures, the following exceedances of the pedestrian safety criteria were observed:

- Receptor 14 (thoroughfare to the east of NT04)
- Receptor 46 (thoroughfare at the northwest corner of 2D.1 - NT04)

- Receptor 49 (thoroughfare location within Travis Square)
- Receptor 55 (thoroughfare between 2D.1 and 2D.3 of NT04)
- Receptor 125 (entrance along north façade of Victoria Riverside Block A)

15.130 The nature and scale of the effects at these receptors are **Major Adverse** and considered **Significant.**

15.131 Wind conditions at Receptor 127 (southwest corner of Victoria Riverside Block A) improve, such that the inherent exceedance of the safety criteria is alleviated. The nature and scale of the effect is **Major Beneficial** and considered **Not Significant**.

15.132 At the elevated levels, wind conditions at all receptors are safe from a wind standpoint. The nature and scale of the effects are **Negligible** and considered **Not Significant**.

15.133 In terms of pedestrian wind *comfort*, wind conditions are generally suitable for their intended uses. The following exceptions occur:

- Thoroughfares:
  - Receptor 14 (to the east of NT04)
  - Receptor 46 (northwest corner of 2D.1 - NT04)
  - Receptor 49 (within Travis Square)
  - Receptor 55 (between 2D.1 and 2D.3 of NT04)
- Entrances / Waiting Areas:
  - Receptor 20 (2D.3 - NT04 co-working space)
  - Receptor 29 (2D.3 - NT04 maisonettes)
  - Receptor 48 (2D.1 - NT04 lobby)
  - Receptor 125 (north façade of Victoria Riverside Block A)
- Recreational Spaces / Terraces:
  - Receptor 201 (NT04 podium terrace)
- Outdoor Seating:
  - Receptor 213 (NT03 podium terrace)
  - Receptors 221 and 223 (NT02 Tower 1 podium terraces)
  - Receptor 303 (2D.3 - NT04 private amenity terrace)
- Balconies:

- Receptor 333 (indicative of wind conditions at the lower balconies near the northwest corner of NT03 Midrise 3)

15.134 The nature and scale of the effects at these receptors are **Moderate Adverse (On-Site)** and considered **Significant**.

At all other receptors, the nature and scale of the effects range between **Moderate Adverse (Off-Site)** and **Moderate Beneficial** and are therefore considered **Not Significant**.

## Additional Mitigation / Enhancement Measures

### Demolition and Construction

15.135 No specific wind mitigation measures have been proposed in relation to the In Combination Effects of Applications 4 and 5 on the demolition and construction phase of Full Application 5 (see 15.49 for further details).

### The Completed and Operational Development

15.136 The landscaping strategy and wind mitigation measures are as described in 15.109 to 15.111.

15.137 Additionally, two planters with hedges, with dimensions of 1m (D) x 1.5m (H), were incorporated on both sides of the commercial entrances along the north façade of Block A of the Victoria Riverside scheme. It should be noted that this mitigation measure was developed during the wind tunnel tests to demonstrate a viable option for the mitigation of the adverse wind effects observed within the site boundary of the Victoria Riverside scheme when both the detailed and outline applications are present. However, it is expected that this will not become necessary as the exceedance will be addressed through the massing and/or landscaping strategy for Plots RB06 and RB07 (part of the current Outline Application 4) when they are brought forward for detailed application.

## Likely Residual Effects of the Development and their Significance

15.138 The results of the Wind Microclimate assessment scenario relevant to the Residual In Combination Effects of Outline Application 4 and Full Application 5 (Scenario 8) are presented in **Appendix 15.2**.

15.139 With the introduction of the proposed Outline Application 4 and Full Application 5, including the landscaping strategy and wind mitigation, wind conditions at all receptors within and around the Site of the development are *safe* and suitable, in terms of wind *comfort*, for the intended use. The nature and scale of the effects range between **Moderate Adverse (Off-Site)** and **Major Beneficial** and are therefore considered **Not Significant**.

***Table 15.9:*** *Residual Effects Summary*

| Potential effect including significance | Receptor(s) | Mitigation | Residual Effect including Significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Negligible | - | None | Negligible / Temporary |

| Potential effect including significance | Receptor(s) | Mitigation | Residual Effect including Significance |
|---|---|---|---|
| ***Completed Development*** | | | |
| Major Adverse | 14, 46, 49, 55, 125 | As described in 15.109 to 15.111 | Negligible / Permanent |
| Moderate Adverse (On-Site) | 20, 29, 48, 201, 213, 221, 223, 303, 305, 333 | As described in 15.109 to 15.111 | Negligible / Permanent |
| Moderate Adverse (Off-Site) to Moderate Beneficial | All other receptors | As described in 15.109 to 15.111 | Moderate Adverse (Off-Site) to Moderate Beneficial / Permanent |
| Major Beneficial | 127 | As described in 15.109 to 15.111 | Major Beneficial / Permanent |

15.140 Conclusions With the introduction of the proposed Outline Application 4 and Full Application 5, exceedances of the pedestrian *safety* and/or *comfort* criteria are observed at several receptors. However, with the introduction of the proposed landscaping strategy and wind mitigation measures, these exceedances are fully mitigated.

## Cumulative Effects with Identified Committed Schemes

### Approach

15.141 As part of the Cumulative Effects assessment for Full Application 5, the following schemes (within a 600m radius of the Site) have been included within the surrounding context of the wind tunnel model:

- The Gasworks (128248/FO/2020)
- 25 Rochdale Road (127537/FO/2020)
- 2 and 3 Angel Square (124973/FO/2019)
- 87 Rochdale Road (131708/FO/2021)
- 1 Lord Street (113914/FO/2016)

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

15.142 A quantitative assessment of the impacts of the Proposed Development during demolition and construction has not been included in this ES Chapter. This is because wind effects at pedestrian level are closely associated with the size and shape of the massing of buildings and, during the demolition and construction stage, this condition will be continuously changing. However, using professional judgement, it can be stated that as demolition and

construction work progress, the conditions within and around the Site are expected to gradually transition between those of the baseline and the final completed Outline Application 4 and Full Application 5. The wind microclimate conditions are therefore not expected to exceed the ones of the completed Outline Application 4 and Full Application 5 provided that the landscaping scheme and the wind mitigation measures are introduced prior to the development itself being fully constructed.

15.143 The potential effects during various stages of construction will vary and are likely to be of lesser magnitude than those that will be experienced once Outline Application 4 and Full Application 5 have been completed. Additionally, demolition and construction activities are less sensitive to wind conditions and a Construction Environment Management Plan (CEMP) would typically be implemented to protect construction workers. Access to the Site will also be restricted via perimeter hoardings. The presence of cranes on site is unlikely to present a significant impact on wind conditions at the Site due to the typical open-truss type construction of the frame used, which is relatively 'transparent' to wind and thus unlikely to generate downdrafts. Any undesirable wind conditions during construction are temporary and as construction of Outline Application 4 and Full Application 5 proceeds, the wind conditions at the Site would gradually vary, approaching those of the completed development, the assessment of which is covered in the next section.

### The Completed and Operational Development

15.144 The results of the Wind Microclimate assessment scenario relevant to the Residual In Combination Cumulative Effects of Outline Application 4 and Full Application 5 (Scenario 9) are presented in **Appendix 15.2**.

15.145 With the introduction of the proposed Outline Application 4, Full Application 5 and cumulative schemes, including the landscaping strategy and wind mitigation, wind conditions at all receptors within and around the Site of the development are *safe* and suitable, in terms of wind *comfort*, for the intended use. The nature and scale of the effects are therefore **Negligible** and considered **Not Significant**.

# In Combination Effects of Applications 4 and 5 and SRF

15.146 The In Combination Effects of Applications 4 and 5 and the Northern Gateway Strategic Regeneration Framework (referred to as SRF henceforth) have been qualitatively assessed based on information provided in the document entitled 'Strategic Regeneration Framework, Manchester Northern Gateway, February 2019", which is publicly available.

15.147 The SRF comprises 7 interconnected neighbourhoods that span across large areas toward the south, east and northeast of the Site for Applications 4 and 5. Outline Application 4 and Full Application 5 are located within the Red Bank and New Town neighbourhoods within the SRF.

15.148 In general, the aerodynamic effects generated by a development is dependent on its massing and has a limited radius of influence, therefore only developments that are within relative proximity of the Proposed Development are likely to result in significant In Combination Effects. As further developments emerge within the SRF (particularly within the New Town and Vauxhall Gardens neighbourhoods), it is expected that the wind conditions within the Site will become calmer (as compared to the respective assessments for Scenario 4 and Scenario 8 for both Outline Application 4 and Full Application 5) due to increased shielding from prevailing and less-prevailing winds.

## Cumulative Effects with Identified Committed Schemes (Applications 4 and 5 and SRF)

15.149 The Cumulative Effects of Applications 4 and 5 and the SRF have been qualitatively assessed based on information provided in the document entitled 'Strategic Regeneration Framework, Manchester Northern Gateway, February 2019", which is publicly available.

15.150 The SRF comprises 7 interconnected neighbourhoods that span across large areas toward the south, east and northeast of the Site for Applications 4 and 5. Outline Application 4 and Full Application 5 are located within the Red Bank and New Town neighbourhoods within the SRF.

15.151 In general, the aerodynamic effects generated by a development is dependent on its massing and has a limited radius of influence, therefore only developments that are within relative proximity of the Proposed Development are likely to result in significant In Combination Effects. As further developments emerge within the SRF (particularly within the New Town and Vauxhall Gardens neighbourhoods), it is expected that the wind conditions within the Site will become calmer (as compared to the respective assessments for Scenario 5 and Scenario 9 for both Outline Application 4 and Full Application 5) due to increased shielding from prevailing and less-prevailing winds.

# 16. Socioeconomics

## Introduction

16.1 This chapter assesses the effects of the Proposed Development on Socioeconomics considerations. In particular it considers effects that may arise as a result of the Development on local population levels and employment levels and the associated impacts on social infrastructure including that relating to education and open space.

16.2 The chapter describes the methods used to assess the likely significant effects, the baseline conditions currently existing at the site and surroundings, the potential direct and indirect effects of the Proposed Development arising in terms of Socioeconomic considerations, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It has been written by WSP.

16.3 This chapter is supported by appendices which to are to be read in conjunction and are as follows:

- **Appendix 16.1**: Population Yields;
- **Appendix 16.2**: Primary Schools within a 1-mile Radius;
- **Appendix 16.3**: Secondary Schools within a 3-mile Radius; and
- **Appendix 16.4**: Open Spaces within a 1-mile Radius.

## Assessment Methodology and Significance Criteria

16.4 In order to provide a robust assessment of the Proposed Development across Applications 4 and 5 and the Cumulative Schemes and the SRF, this Chapter has assessed the Proposed Development across several Assessment Scenarios (as detailed within **Volume 2: Main Text, Chapter 2: Approach**).

16.5 The scope of this assessment has been established through an ongoing scoping process. Further information can be found in **Volume 2: Main Text, Chapter 2: Approach**.

16.6 The assessment of significant effects was undertaken in accordance with professional judgement, as there are no industry standard significance criteria for the assessment of socio-economic effects. The assessment was aimed to be objective and to quantify effects where possible. In circumstances where this is not possible, qualitative assessments were made and justified.

16.7 The identified effects have then been evaluated against three main criteria, drawing on the evaluation criteria typically used in environmental impact assessment. The evaluation criteria used in this chapter are as follows:

- **Scale of the effect** – this includes the magnitude and likely severity of the effect.

- **Permanence of the effect** – this distinguishes between temporary effects and those that will continue to have an effect in the long run.
- **Importance of the effect** – to the affected communities in the impact area e.g. the sensitivity of the receptor.

16.8 Effects were defined as either:

- **Beneficial:** Advantageous or positive effect to an environmental resource or receptor.
- **Insignificant:** No significant effect to an environmental resource or receptor.
- **Adverse:** Detrimental or negative effect to an environmental resource or receptor.

16.9 The magnitude of change are classified as either negligible, small, medium or large as set out below:

- **Negligible:** The change does not result in notable variation beyond baseline conditions, and is unlikely to measurably affect people and/or businesses.
- **Small:** The change will result in a perceptible difference from baseline conditions, and is likely to affect a small number of people and/or businesses over a short duration. The change is unlikely to be critical in decision-making process.
- **Medium:** The change can be demonstrated to baseline conditions, and is likely to affect a moderate number of people and/or businesses over a medium duration. The change may be important, but is not likely to be a key decision-making factor unless the cumulative effects of such factors lead to an increase in the overall effect on a particular socio-economic resource or receptor.
- **Large:** The change will result in significant changes to baseline conditions, or will be highly likely to affect large numbers of people and/or businesses over the long term. Considered to be a very important consideration, and likely to be material in the decision-making process.

16.10 Temporary, short to medium term effects were considered to be those associated with 'Demolition and Construction' and long-term effects were those associated with the Proposed Development once completed and operational.

16.11 The significance of the identified socio-economic effects has been assessed by considering both the magnitude of change and the sensitivity of the receptor. Receptors are considered to be of low, moderate or high sensitivity, with this considered within each assessment methodology section. **Table 16.1** below shows the range of significance of socio-economic effects. Where the Significance Matrix (**Table 16.1**) results in a range of possible effects (e.g. Moderate – Minor Beneficial), professional judgement has been used to ascertain the most appropriate and likely effect.

***Table 16.1****: Significance Matrix*

| | **Sensitivity of Receptor** |
|---|---|

| | | High | Moderate | Low |
|---|---|---|---|---|
| **Magnitude of Change** | Large | Major Adverse / Beneficial | Major – Moderate Adverse / Beneficial | Moderate – Minor Adverse / Beneficial |
| | Medium | Major – Moderate Adverse / Beneficial | Moderate – Minor Adverse / Beneficial | Minor Adverse / Beneficial |
| | Small | Moderate – Minor Adverse / Beneficial | Minor Adverse / Beneficial | Minor Adverse / Beneficial – Negligible |
| | Negligible | Negligible | Negligible | Negligible |

16.12 For the purpose of the EIA, a **significant** impact is defined as any effects identified as **Moderate** and above (beneficial or adverse).

## Red Bank Methodology (Application 4)

16.13 In order to assess the likely socio-economic effects of the Application 4 Proposed Development, baseline information on a variety of socio-economic indicators was obtained and interpreted. Data included in this assessment were collected from nationally recognised and reputable resources, such as:

- The Office for National Statistics (ONS);
- The National Online Manpower Information System (NOMIS); and
- English Indices of Deprivation (IED).

16.14 The indicators were grouped into several subject areas. Taken together, it is considered that these subject areas provide a robust indication of the prevailing baseline socio-economic situation.

16.15 The baseline assessment was prepared through a desktop analysis of economic and social conditions. The main thematic areas considered within the baseline assessment are as follows:

- Population and household characteristics;
- Economic activity;
- Education and skills; and
- Deprivation and poverty.

16.16 The baseline assesses the economic and social conditions at a range of spatial scales (effect areas). The following effect areas were used in the assessment:

- **Neighbourhood** – as defined by the LSOA covering the majority of the site comprising Application 4 (Manchester 056C). This impact area will be used to assess the deprivation conditions;
- **Local** – as defined by the Cheetham ward boundary (the local ward in which the Application 4 area of the Site is located);
- **District** – as defined by the Manchester City Council (MCC) local authority administrative boundary;
- **Regional** – as defined as the wider North West Region; and
- **National** - Depending on the dataset used, national comparisons in the baseline assessment vary between England, England and Wales, Great Britain and the United Kingdom.

16.17 The baseline compares socio-economic indicator data across the above geographic scales. Data was provided for the local effect area of Cheetham ward where available, while the assessment has also drilled down to the smaller geography of Lower Layer Super Output Areas (LSOAs) when assessing deprivation conditions. The most up to date data available has been used for each socio-economic indicator.

16.18 The baseline includes a social infrastructure audit which assesses schools and open space surrounding the Application 4 area of the Site. The following catchment areas were applied:

- 1 mile - Primary schools;
- 3 miles - Secondary schools;
- 1 mile – Open space.

16.19 The 1-mile and 3-mile catchment areas were used in the assessment of primary and secondary schools, respectively, based on indicative average distances travelled to school across the UK for primary and secondary schools used in previous assessments[1].

16.20 For open space, a radius of 1-mile from the centre of the Application 4 area of the Site was used. This is considered to be a reasonable walking distance from the Site. It is widely accepted that one mile is a suitable radius when considering the provision of these facilities.

## Demolition and Construction

### Temporary Construction Employment

16.21 The temporary demolition and construction employment benefits associated with the demolition and construction phase have been assessed based on the anticipated build cost for the Proposed Development as provided by the Applicant.

[1] Department for Transport (2020) Trips to and from school by main mode, region and Rural-Urban Classification2: England, 2002/2003 onwards [Online] Available from: https://www.gov.uk/government/statistical-data-sets/nts06-age-gender-and-modal-breakdown#history [Accessed 16 February 2023].

16.22 Data from the Annual Business Survey 2020 published in June 2022[2] reveals that total turnover in the construction sector during 2020 was £271,550 million. The average number of people employed in the construction sector during 2020 was 1.54 million (1,544,000), suggesting that the average turnover per construction job in 2020 was £175,874.

16.23 Using the build cost estimate provided by the Applicant and the average turnover per construction job in 2020 of £175,874, the gross number of person years of temporary construction employment has been estimated based on the approximate construction costs of the Proposed Development.

## Net Additional Construction Employment

16.24 In order to calculate the net additional employment during the Demolition and Construction stage, adjustments have been made for several factors which, when considered together, allow an assessment of the net additional jobs that will be generated during the Demolition and Construction stage. The following adjustment factors have been considered:

- **Displacement effects** – would occur if some construction workers simply switch jobs from one location to another (and not at the Proposed Development);
- **Substitution effects** – would occur if a construction firm substitutes one activity for a similar one (such as recruiting a jobless person while another employee loses a job) to take advantage of public sector assistance. It can be thought of as 'within firm' displacement;
- **Leakage effects** – would occur if some of the construction jobs created by the Proposed Development are taken up by people living outside the impact areas assessed;
- **An indirect multiplier effect** – is likely to create supply chain effects which would benefit local firms such as maintenance contractors, training agencies and other suppliers of goods. This effect is known as a supply linkage multiplier; and
- **An induced multiplier effect** – is associated with increased expenditure in the local area by people deriving incomes from the direct and indirect effects of the construction employment. The induced effects of the Proposed Development would bring benefits to local shops and other service providers. This effect is known as a consumption multiplier.

16.25 These adjustment factors have been informed by the HCA Additionality Guide[3] and WSP's professional judgement.

16.26 The following formula has been used to assess the net additional construction employment generated by the Proposed Development:

[2] ONS (2022) Annual Business Survey 2020 Revised Results [Accessed 16 February 2023].
[3] HCA. Additionality Guide. Fourth Edition, 2014. [Accessed 16 February 2023].

*Gross on-site construction jobs x (1 – displacement) x (1 – substitution) x (1 – leakage) x Composite Multiplier = net additional jobs*

16.27 The assumptions outlined in **Table 16.2** below have been used to calculate the net additional construction jobs. To demonstrate the wider impacts of this Proposed Development, assumptions have been made based at both the district level (MCC) and at a regional level (North West).

***Table 16.2****1: Assumptions Used to Calculate Net Additional Construction Employment*

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| Displacement | 25%<br><br>As of 2021, 11,000 persons across MCC worked in the construction industry[4]. It is likely that this employment would have a minor impact on the local workforce and therefore displacement would be minimal. A conservative displacement rate of 25% has therefore been applied based on the HCA Additionality Guide. | 25%<br><br>This level of displacement is adopted to account for any potential local adverse effects and for consistency with the district level of displacement. |
| Substitution | 0%<br><br>It is not considered likely that any firms that will be operating within the construction industry will be substituting employment activities for other activities. Therefore, this has been considered to be negligible. | 0%<br><br>It is not considered likely that any firms that will be operating within the construction industry will be substituting employment activities for other activities. Therefore, this has been considered to be negligible. |
| Leakage | 62.3%<br><br>A high level of leakage at the local area has been assumed based on 2011 Census data Travel to Work patterns, where 62.3% of people who worked in MCC lived outside of the local authority. | 5.8%<br><br>A low level of leakage at the regional area has been assumed been assumed based on 2011 Census data Travel to Work patterns, where 5.8% of people who worked in MCC lived outside of the North West region. |
| Composite Multiplier | 1.1<br><br>It is assumed that 'average' linkages will be evident in the supply chain. Based on this, the Additionality Guide recommends a composite multiplier of 1.1 at the district level (which covers both the indirect and induced multiplier effect). | 1.5<br><br>It is assumed that 'average' linkages will be evident in the supply chain. Based on this, the Additionality Guide recommends a composite multiplier of 1.5 at the regional level (which covers both the indirect and induced multiplier effect). |

[4] NOMIS. Labour Market Profile – Manchester [Online]. [Accessed 16 February 2023].

### Gross Value Added from Temporary Construction Employment

16.28 To estimate the Gross Value Added (GVA)[5] by construction employment, the Annual Business Survey 2020 provides estimates of the approximate GVA by different sectors of the UK economy. During 2020 the approximate GVA by the construction sector was £101,862 million[2]. With an average number of people employed in the construction sector during 2020 of 1.54 million, this suggests that the GVA per construction job in 2020 was £65,973. This has been used as a proxy figure to calculate the GVA generated during the construction phase.

## The Completed and Operational Development

16.29 Details of the operational phase assessment are set out by theme below.

### Gross On Site Employment

16.30 The likely number of gross full-time equivalent (FTE) jobs that would be supported by the commercial floorspace of the Application 4 Proposed Development was assessed using a combination of the HCA's Employment Density Guide (Third Edition 2015)[6,] information provided by the Applicant, and WSP's professional experience and expertise.

16.31 For health and education uses, additional sources (such as, London Healthy Urban Development Unit's figures) were used to develop sensible figures for approximate employment generation.

16.32 For the employment associated with the up to 3,250sqm of proposed Health Centre Uses, in the absence of workable employment density figures as part of the HCA guidance used elsewhere here, alternate benchmarks were used. For example, a figure for the average floorspace per clinician room (500 sq ft) and the average number of clinicians per room (one per room) were derived from the Department for Health's *Health Building Note 11-01: Facilities for Primary and Community Care Services*[7]. A more GP-specific estimate was derived from the NHS London Healthy Urban Proposed Development Unit (HUDU) *HUDU Planning Contribution Model Guidance Notes*, which set out an indicative idea of acceptable space requirement per individual GP, at around 165 sqm[8]. When the two estimates were applied and the 3,250 sqm of Health Centre floorspace converted to Net Internal Area (NIA) from Gross Internal Area (GIA) to reflect the likely layout of GP practices, this yielded an employment yield of 59 clinicians. This is considered a less conservative estimate than others identified, but unlike other estimates it factors for non-GP staff in health centre contexts, which is relevant to the relatively broad potential scope of a new health centre. Of this total, 17 GPs would be associated with the health centre uses floorspace (in NIA) when the HUDU approach is applied. However, as it is not given that the entirety or even the majority of the proposed Health

[5] Gross Value Added (GVA) is a conventional measure of economic well-being. It measures the value of goods and services produced in an area, industry, or sector of an economy.

[6] Homes & Communities Agency. 2015. Employment Density Guide 3rd Edition [Online]. [Accessed 16 February 2023].

[7] Department for Health, Health Building Note 11-01: Facilities for Primary and Community Care Services. [Online]. [Accessed 16 February 2023]

[8] London Healthy Urban Development Unit. 2009. HUDU Planning Contribution Model Guidance Notes. [Online]. [Accessed 16 February 2023]

Centre Uses would be given over to GP services and that the floorspace would also be taken up by other healthcare professionals, this figure has been revised down to 10 GPs reflecting a worst case scenario.

16.33 For the employment associated with the up to 2,750sqm of proposed Primary School uses, alternate employment figures were employed. In this instance, the Department for Education (DfE's) illustrative benchmarks of one adult for every 11 pupils per student was applied. This figure does not distinguish between teaching and non-teaching staff.

16.34 The Application 4 Proposed Development would support a number of permanent jobs across its commercial floorspace. As part of Application 4, commercial floorspace would comprise Use Classes E, F and Sui Generis and other employment-generating uses in the form of Clubhouse Buildings (amenity space in the form of dedicated buildings), Health Centre uses and Primary School uses. The commercial floorspace encompasses a wide range of practical uses including retail, eating and drinking establishments, financial services, professional services, other commercial space, indoor sport and recreation, medical/health, creches, offices, learning and non-residential institutions, local community, launderette, public houses, drinking establishments and hot food takeaways.

16.35 It is not known at this stage what the specific end use of the commercial space is likely to be, however it is anticipated that the majority of the floorspace would fall within Use Class E. Likewise, it is anticipated that certain uses which would fall within Use Class E and F are very unlikely to comprise much more than a small portion of the Proposed Development, such as Fitness Centre uses and Incubator workspace uses. Accordingly, their equivalent employment density figures have not been used to inform the overall calculations of on-site employment.

16.36 As a result, there are inherent difficulties in estimating the additional employment effects of the Application 4 Proposed Development. To overcome this, WSP has applied a worst-case and best-case scenario, which applies to the share of total floorspace by end-use and the employment densities stated within the HCA Employment Density Guide. This has calculated the jobs generated from the least job generating employment density of Use Class E and then calculated the jobs generated from the maximum job generating employment density of Use Class E (excluding creche and light industrial uses). In this way, a numerical range of jobs that could be generated by the Proposed Development is calculated and a corresponding range of significance criteria assigned.

16.37 Similarly, given that the up to 6,300 sqm of non-residential floorspace proposed as part of Application 4 would encompass Use Classes E, F and Sui Generis, and the share of the total floorspace assigned to each hasn't been specified in the Application, certain assumptions were made based on inputs from the Applicant. It has been presumed that uses falling under Use Class E were likely to comprise between 70% and 90% of the total and that Use Classes F and Sui Generis were likely to comprise between 5% and 15% of the total. As such, two floorspace scenarios were considered:

- Scenario 1 – Using a respective 70%-15%-15% split between Use Classes E, F and Sui Generis; and
- Scenario 2 – Using a respective 90%-5%-5% split between Use Classes E, F and Sui Generis.

16.38 Different calculations were run using these splits and the lowest employment yield of the two floorspace splits was adopted as the lowest employment estimate and the highest employment yield of the two floorspace splits was adopted as the highest employment estimate.

16.39 Further assumptions used when estimating the gross FTE jobs supported by the Application 4 Proposed Development are set out below.

- Employment density – evidence provided by the HCA Employment Density Guide has been used to estimate the employment created at the Proposed Development. Employment density refers to the average floor space in square metres (sqm) per full-time equivalent (FTE) job. Employment density describes the intensity of use within a building and is an indicator of the amount of space typically occupied by one person in a commercial building.
- Changes to Use Class Orders – in August 2020, the UK Government laid Statutory Instrument 2020/757, the Town and Country Planning (Use Classes) (Amendment) (England) Regulations 2020. This related to changes to the use class orders which came into effect in September 2020. One of the key changes is that the former Classes A1, A2, A3, B1a, B1b, B1c, and D2 were grouped together into the much broader Use Class E (which the Proposed Development is proposing). Pertinently however, at the time of writing, these changes have not been translated into a modified HCA Employment Density Guide. WSP, for the purpose of this assessment, has therefore continued to apply the employment densities recommended in the HCA Employment Density Guide to provide a nuanced and appropriate numerical range of jobs supported within the broader Use Class E.
- **Minimum Employment Density – B1a Office Space** (Use Class E) – an employment density of 10 sqm per employee has been applied to the commercial space (NIA) to be provided. This is the minimum employment density within Land Use Class E for non-call centre office use functions, which will generate the maximum employment figure for the Proposed Development. This has been informed by the HCA's Employment Density guide.
- **Maximum Employment Density** – **A1 – Retail- High Street (Use Class E)** – an employment density of 20 sqm per employee has been applied to the commercial space (NIA) to be provided. This is the maximum employment density within Land Use Class E of the uses which are likely for the site, which will generate the minimum employment figure for the Proposed Development. This has been informed by the HCA's Employment Density guide.
- **Minimum Employment Density – D2 Visitor & Cultural Attractions** (Use Class F) – an employment density of 300 sqm per employee has been applied to the space (GIA) to be provided under Use Class F. This is the minimum employment density within Land Use Class F, which will generate the maximum employment figure for the Proposed Development. This has been informed by the HCA's Employment Density guide.
- **Maximum Employment Density** – **D2 Visitor & Cultural Attractions (Use Class F)** - an employment density of 30 sqm per employee has been applied to the space (GIA) to be provided under Use Class F. This is the

maximum employment density within Land Use Class F, which will generate the minimum employment figure for the Proposed Development. This has been informed by the HCA's Employment Density guide.

- **Minimum Employment Density – A3 Restaurants & Cafes** ( Sui Generis Use) – an employment density of 20 sqm per employee has been applied to the commercial space (NIA) to be provided. This is the maximum employment density within Sui Generis use for which comparable employment density figures are available, which will generate the maximum employment figure for the Proposed Development. This has been informed by the HCA's Employment Density guide.
- **Maximum Employment Density – A3 Restaurants & Cafes ( Sui Generis Use)** - an employment density of 15 sqm per employee has been applied to the commercial space (GIA) to be provided. This is the maximum employment density within Sui Generis use for which comparable employment density figures are available, which will generate the minimum employment figure for the Proposed Development. This has been informed by the HCA's Employment Density guide.

16.40 For the 3,250 sqm GIA of proposed Clubhouse uses, corresponding to Use Classes E, F and Sui Generis, a conservative equivalent employment density figure was used from the HCA Employment Density Guide, to factor for the relatively low employment densities associated with facilities which are often for residents only in non-luxury Proposed Developments. As such, a figure of 100 sqm GIA per employee associated with 'D2-Fitness Centres - Budget' uses was applied for both the private and public component of the clubhouse uses.

## Net Additional Employment

16.41 To calculate the net additional employment of the complete and operational Proposed Development, adjustments have again been made for several factors which, when considered together, allow an assessment of the net additional jobs that would be generated as a result of the Proposed Development. The following adjustment factors have been considered:

- Displacement effects – would occur if some employees simply switch jobs from one location to another (and not within the Proposed Development).
- Substitution effects – would occur if a firm substitutes one activity for a similar one (such as recruiting a jobless person while another employee loses a job) to take advantage of public sector assistance. It can be thought of as 'within firm' displacement.
- Leakage effects – would occur if some of the jobs created by the Proposed Development are taken up by people living outside the impact areas assessed.
- An indirect multiplier effect – is likely to create supply chain effects which would benefit local firms such as cleaning and maintenance contractors, training agencies and other suppliers of goods and services to the occupiers of the Proposed Development. This effect is known as a supply linkage multiplier.
- An induced multiplier effect – is associated with increased expenditure in the local area by people deriving incomes from the direct and indirect effects of the Proposed Development. The induced effects of the

Proposed Development would bring benefits to local shops and other service providers. This effect is known as a consumption multiplier.

16.42 The following formula has been used to assess the net additional employment generated by the Proposed Development:

*Gross on-site jobs x (1 – displacement) x (1 – substitution) x (1 – leakage) x Multiplier = net additional jobs*

16.43 The assumptions used to calculate the net additional permanent employment are outlined in **Table 16.3**. To demonstrate the wider impacts of this Proposed Development, assumptions have been made based at both the district level (MCC) and at the regional level (North West).

***Table 16.3**: Assumptions Used to Calculate Net Additional Permanent Employment*

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| Displacement | 25%<br><br>As the new employment space is not considered to have a notably adverse effect on the existing businesses within MCC, a low-rate displacement of 25% from the HCA Additionality Guide was adopted. | 25%<br><br>This level of displacement is adopted to account for any potential local adverse effects and for consistency with the district level of displacement. |
| Substitution | 0%<br><br>It is not considered likely that any firms that will be operating within the construction industry will be substituting employment activities for other activities. Therefore, this has been considered to be negligible. | 0%<br><br>It is not considered likely that any firms that will be operating within the construction industry will be substituting employment activities for other activities. Therefore, this has been considered to be negligible. |
| Leakage | 62.3%<br><br>A high level of leakage at the local area has been assumed based on 2011 Census data Travel to Work patterns, where 62.3% of people who worked in MCC lived outside of the local authority. | 5.8%<br><br>A low level of leakage at the regional area has been assumed been assumed based on 2011 Census data Travel to Work patterns, where 5.8% of people who worked in MCC lived outside of the North West region. |
| Composite Multiplier | 1.1<br><br>It is assumed that 'average' linkages will be evident in the supply chain. Based on this, the Additionality Guide recommends a composite multiplier of 1.1 at the district level (which covers both the indirect and induced multiplier effect). | 1.5<br><br>It is assumed that 'average' linkages will be evident in the supply chain. Based on this, the Additionality Guide recommends a composite multiplier of 1.5 at the regional level (which covers both the indirect and induced multiplier effect). |

16.44 In addition to the above adjustment factors, the status of the employment currently supported on the Application 4 part of the Site was considered to determine the net employment created by the Proposed Development.

16.45 As it currently stands, there are several small-scale temporary employment uses on site. These include Connecting Dots, which is an events company currently based temporarily at plot NT02. Likewise, the warehouse on plot RB17

is being used as storage and site welfare space for the contractor working on the Victoria Riverside development. Given that these two uses never provided permanent employment on site, as they were explicitly set out as short-term meanwhile uses as per the terms of their short term leases, the loss of employment cannot be meaningful counted as a permanent loss of permanent on-site employment.

16.46 The arches at Red Bank Viaduct are currently in permanent use for employment purposes, including as a bakery. However, most employment uses located here will remain in use following development and therefore will not constitute a form of employment loss. The unit being leased as a bakery will be demolished to make way for RB10, in due course. However, the lease will have expired by that time and the bakery will have relocated.

16.47 As such, the small number of temporary and permanent employment on site has not been factored for when calculating net additional on-site employment.

## Gross Value Added from Net Additional Employment

16.48 To estimate the annual GVA created by the net additional employment associated with the Application 4 Proposed Development, information from the ONS Sub-regional Productivity tables[9] was used. This estimates that the GVA per job filled in the MCC local authority was £57,643 and for the North West region, £52,007 in 2021. These figures have been used as proxies to estimate the GVA to be generated per year of operation from the complete and operational Proposed Development.

## Housing Delivery

16.49 The effect of the Application 4 Proposed Development on housing delivery was calculated based on MCC's housing delivery targets as set out in the current Manchester Housing Strategy 2022-2032[10]. The Housing Strategy sets out the following targets:

- 36,000 new homes over the period 2022 to 2032 (or 3,600 per year)
- 10,000 new affordable homes over the period 2022 to 2032 (or 1,000 per year)

## Additional Household Expenditure

16.50 The report on Family Spending provides data for the financial year ending 2021 on household expenditure[11]. Family Spending reveals that the average weekly household expenditure in the North West for the period between the financial year ending 2019 and financial year ending 2021 was £507.80. The survey also shows that, on average, each household in the North West spends £73.20 per week on net housing (excluding mortgage interest payments and Council Tax), fuel and power costs. Since this spending typically goes to major national institutions with only

[9] ONS. Sub regional Productivity: Labour Productivity (GVA per Hour Worked and GVA per filled job) Indices. by UK NUTS2 and NUTS3 Subregions. 2021. [Accessed 16 February 2023]

[10] Manchester City Council. Manchester Housing Strategy 2022-2032. Available from: https://www.manchester.gov.uk/download/downloads/id/28615/ manchester_housing_strategy_2022-2032.pdf

[11] ONS. Family Spending in the UK: financial year ending 2021. Published July 2022. [Accessed 16 February 2023].

modest effects on the local economy, this spending has been deducted from average weekly household expenditure.

16.51 An estimation of the additional local expenditure created by the Application 4 Proposed Development was calculated by estimating the spending generated by future residents of the Proposed Development based on the estimated net average weekly household expenditure of £435.00 for the North West (this equates to an annual figure of £22,620). VAT of 20% was deducted from the annual household expenditure figure and a percentage figure of 25% was also assumed for leakage.

## Additional Council Tax Receipts

16.52 An estimate of the additional Council Tax receipts generated by the new residential accommodation at the Application 4 Proposed Development was calculated based on the assumption that all new properties at the Site are rated as Council Tax Band D - £1872.59 as of Manchester City Council's 2022/2023 Council Tax Charges[12]. This is a mid-rate Council Tax Band which generates a conservative estimate of Council Tax receipts. A single adult discount of 25% on the standard Band D charge has been applied to those residential units that would only be occupied by one person. It is also assumed that all residential units are fully occupied. The additional Council Tax revenue was assessed in relation to overall Council Tax revenue for MCC, which is at the district level.

## Effects of the Additional Residential Population

16.53 The effects of the additional population from the residential element of the Proposed Development encompassed by Application 4 on existing social infrastructure facilities were assessed based on the estimated net additional population yield of the completed and operational Proposed Development.

16.54 A consultation was undertaken with MCC in order to establish an appropriate means of estimating the likely population yield of the Proposed Development. Initially, MCC-level estimates of household size per unit and tenure type derived from the 2011 Census were used to inform estimates of likely yield by unit type. However, more specific multipliers were provided instead by MCC to factor for localised socio-economic features, such as large household sizes in social rented units and to ensure that the data was relatively up-to-date. For example, the MCC approach uses more recent data than the 2011 Census (the latest national level statistics provided on this topic as the results of the 2021 Census for this topic area are yet to be released). The use of more up to date data by MCC is significant, given the rapid increase in the local authority's population over the period since 2011. As such, the approach to calculating population yield is based on highly localised data and is likely to be a more accurate figure than equivalent datasets using national or regional data and reflects the approach agreed with the MCC Data and Insights team.

16.55 The breakdown of the proposals covered by Application 4 are indicative, given that the tenure split and the total number of units is not yet fixed, and will be confirmed in more detail in subsequent detailed applications. The

[12] Manchester City Council (2022) Council tax bands and charges [Online] Available from: https://www.manchester.gov.uk/info/500336/how_its_worked_out/6306/council_tax_bands_and_charges

indicative assumptions of the tenure and unit split is set out in Table 16.4 below. Of these proportions, it has been presumed for the purposes of this assessment that 20% will be affordable housing (comprising 5% social rent and 15% intermediate housing), with the remaining 80% of units being for private sale. This is purely an indicative figure to enable a robust assessment and should not be treated as a finalised figure. Instead, the ultimate quantum of affordable housing will be determined at the reserved matters or detailed planning application stage for each phase of the development, where a viability assessment will be undertaken which assesses the viability of the development and the amount of affordable housing that can be delivered. For the same reasons, delivery of affordable housing has not been assessed as part of this ES Chapter.

***Table 16.4**: Housing by property type for Application 4*

| Property Size | Share Total | Indicative Total Units |
|---|---|---|
| **1 Bedroom Property** | 24.5% | 797 |
| 2 Bedroom Property | 63.3% | 2,058 |
| 3 Bedroom Property | 12.1% | 394 |

## Education Facilities

16.56 To understand the effect on education facilities, the estimated child yield resulting from the Application 4 Proposed Development is calculated in **Appendix 16.1** and illustrated in **Table 16.14**.

16.57 The calculated child yield of the Application 4 Proposed Development was then compared against the existing capacity in primary and secondary school places within the vicinity of the Application 4 area of the Site, as calculated in the socio-economic baseline utilising Department for Education data.

16.58 The calculation set out later in this chapter assumes a worst-case scenario in which none of the new residents of the Proposed Development are already enrolled at local primary and secondary schools. Although it is not possible to quantify the exact proportion, it is likely there would be some residents already enrolled at local primary and secondary schools.

## General Practitioner Services

16.59 The calculations to ascertain the effects upon primary healthcare are not set out in this chapter and are instead included as part of **Volume 2: Main Text, Chapter 17: Health and Wellbeing** of the ES.

## Identification of Sensitive Receptors

16.60 A number of sensitive receptors have been identified, following the baseline review, as set out in **Table 16.5**. Given the short to medium-term nature of the receptors sensitive to the Demolition and Construction program, these have been assumed to have a moderate sensitivity. All other receptors are considered to have a high sensitivity, given the scale of residential and non-residential Proposed Development relative to what is currently there.

***Table 16.5**: Sensitivity of Receptors*

| Receptor | Description | Sensitivity |
|---|---|---|
| ***Demolition and Construction*** | | |
| District / Regional Population | Temporary Construction employment | Moderate |
| District / Regional Economy | Gross value added by temporary construction employment | Moderate |
| ***The Completed and Operational Development*** | | |
| **District / Regional Population** | Net Additional Employment | High |
| **District / Regional Economy** | Gross Value Added by Net Additional Employment | High |
| **District Population** | Housing Delivery | High |
| **District / Regional Economy** | Additional household expenditure | High |
| **District Economy** | Additional council tax receipts | High |
| **District Population** | Effect on demand for education facilities | High |
| **District Population** | Effect on demand for healthcare facilities | High |
| **District Population** | Effect on demand for open space | High |

## NT02 – NT04 Methodology (Application 5)

16.61 The socio-economic methodology and baseline findings presented for Application 4 remain consistent with those for Application 5. Further baseline data for the local area in terms of its health and socio-economic profile (alongside the methodology for **Application 4**) are contained within **Appendix 17.1: Baseline Assessment of Health and Wellbeing Conditions**, with details of the approach to calculating population yields set out in **Appendix 16.1**, alongside maps of local social infrastructure in **Appendices 16.2** to **16.4**.

16.62 In relation to the analysis of local schools and open space, the centre-point of the site and the corresponding search radiuses are consistent with the centre-points used in **Application 4**. In the case of Application 5, the centre point is marginally north of the Application 5 boundary. However, it was considered that alignment of

methodologies and comparability between assessments was more important and that having different search radiuses would overly complicate the in-combination assessment of the two applications.

## Construction and Demolition

### Temporary Construction Employment

16.63 The methodology for Application 5 is as described above for Application 4.

### Net Additional Construction Employment

16.64 The methodology for Application 5 is as described above for Application 4.

***Table 16.6***: *Assumptions Used to Calculate Net Additional Construction Employment*

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| Displacement | 25%<br><br>As of 2021, 11,000 persons across MCC worked in the construction industry[13]. As such, it is likely that this employment would have a minor impact on the local workforce and therefore displacement would be minimal. A conservative displacement rate of 25% has therefore been applied based on the HCA Additionality Guide. | 25%<br><br>This level of displacement is adopted to account for any potential local adverse effects and for consistency with the district level of displacement. |
| Substitution | 0%<br><br>It is not considered likely that any firms that will be operating within the construction industry will be substituting employment activities for other activities. Therefore, this has been considered to be negligible. | 0%<br><br>It is not considered likely that any firms that will be operating within the construction industry will be substituting employment activities for other activities. Therefore, this has been considered to be negligible. |
| Leakage | 62.3%<br><br>A high level of leakage at the local area has been assumed based on 2011 Census data Travel to Work patterns, where 62.3% of people | 5.8%<br><br>A low level of leakage at the regional area has been assumed been assumed based on 2011 Census data Travel to Work patterns, where 5.8% of people who worked in MCC |

[13] NOMIS. Labour Market Profile – Manchester [Online]. [Accessed 16 February 2023].

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| | who worked in MCC lived outside of the local authority. | lived outside of the North West region. |
| Composite Multiplier | 1.1<br><br>It is assumed that 'average' linkages will be evident in the supply chain. Based on this, the Additionality Guide recommends a composite multiplier of 1.1 at the district level (which covers both the indirect and induced multiplier effect). | 1.5<br><br>It is assumed that 'average' linkages will be evident in the supply chain. Based on this, the Additionality Guide recommends a composite multiplier of 1.5 at the regional level (which covers both the indirect and induced multiplier effect). |

### Gross Value Added from Temporary Construction Employment

16.65 The methodology for Application 5 is as described above for Application 4.

## The Completed and Operational Development

16.66 Details of the operational phase assessment are set out by theme below.

### Gross On Site Employment

16.67 The likely number of gross full-time equivalent (FTE) jobs that would be supported by the commercial floorspace of the Proposed Development was assessed using a combination of the HCA's Employment Density Guide (Third Edition 2015)[6], information provided by the Applicant, and WSP's professional experience and expertise.

16.68 The Proposed Development would support a number of permanent jobs across its commercial floorspace. As part of Application 5, commercial floorspace would comprise Use Classes E, F and Sui Generis (SG) and other employment-generating uses are proposed in the form of Clubhouse Buildings. The commercial floorspace encompasses a wide range of practical uses, however it is not known at this stage what the specific end use of the commercial space is likely to be. It is however anticipated that the majority of the floorspace would fall within Use Class E. Likewise, it is anticipated that certain use classes which would fall within Use Class E and F are very unlikely to comprise much more than a small portion of the Proposed Development, such as Fitness Centre uses and Incubator workspace uses. Accordingly, their equivalent employment density figures have not been used to inform the calculations.

16.69 As a result, there are inherent difficulties in estimating the additional employment effects of the Proposed Development. To overcome this, WSP has applied a worst-case and best-case scenario. This has entailed calculating the jobs generated from the least job generating employment density of Use Class E and then calculating the jobs generated from the maximum job generating employment density of Use Class E (excluding creche and light

industrial uses). In this way, a numerical range of jobs that could be generated by the Proposed Development is calculated and a corresponding range of significance criteria assigned.

16.70 Similarly, given that the non-residential floorspace set out as part of Application 5 would encompass Use Classes E, F and SG and the share of the total floorspace assigned to each hasn't been specified in the application, certain assumptions were made based on Applicant input. For Applications 5, it was established by the Applicant that uses falling under Use Class E were likely to comprise between 70% and 90% of the total and that Use Classes F and SG were likely to comprise between 5% and 15% of the total. As such, two floorspace scenarios were applied:

- Scenario 1 – Using a respective 70%-15%-15% split between Use Classes E, F and SG; and
- Scenario 2 – Using a respective 90%-5%-5% split between Use Classes E, F and SG.

16.71 Different calculations were run using these splits and the lowest employment yield of the two floorspace splits was adopted as the lowest employment estimate and the highest employment yield of the two floorspace splits was adopted as the highest employment estimate.

16.72 Further assumptions used when estimating the gross FTE jobs supported by the Site are set out below.

- Employment density – evidence provided by the HCA Employment Density Guide has been used to estimate the employment created at the Proposed Development. Employment density refers to the average floor space in square metres (sqm) per full-time equivalent (FTE) job. Employment density describes the intensity of use within a building and is an indicator of the amount of space typically occupied by one person in a commercial building.
- Changes to Use Class Orders – in August 2020, the UK Government laid Statutory Instrument 2020/757, the Town and Country Planning (Use Classes) (Amendment) (England) Regulations 2020. This related to changes to the use class orders which came into effect in September 2020. One of the key changes is that the former Classes A1, A2, A3, B1a, B1b, B1c, and D2 were grouped together into the much broader Use Class E (which the Proposed Development is proposing). Pertinently however, at the time of writing, these changes have not been translated into a modified HCA Employment Density Guide. WSP, for the purpose of this assessment, has therefore continued to apply the employment densities recommended in the HCA Employment Density Guide to provide a nuanced and appropriate numerical range of jobs supported within the broader Use Class E.
- **Minimum Employment Density – B1a Office Space** (Use Class E) – an employment density of 10 sqm per employee has been applied to the commercial space (NIA) to be provided. This is the minimum employment density within Land Use Class E for non-call centre office use functions, which will generate the maximum employment figure for the Proposed Development. This has been informed by the HCA's Employment Density guide.
- **Maximum Employment Density – A1 – Retail- High Street (Use Class E)** – an employment density of 20 sqm per employee has been applied to the commercial space (NIA) to be provided. This is the maximum

employment density within Land Use Class E of the uses which are likely for the site, which will generate the minimum employment figure for the Proposed Development. This has been informed by the HCA's Employment Density guide.

- **Minimum Employment Density – D2 Visitor & Cultural Attractions** (Use Class F) – an employment density of 300 sqm per employee has been applied to the space (GIA) to be provided under Use Class F. This is the minimum employment density within Land Use Class F, which will generate the maximum employment figure for the Proposed Development. This has been informed by the HCA's Employment Density guide.
- **Maximum Employment Density – D2 Visitor & Cultural Attractions (Use Class F)** – an employment density of 30 sqm per employee has been applied to the space (GIA) to be provided under Use Class F. This is the maximum employment density within Land Use Class F, which will generate the minimum employment figure for the Proposed Development. This has been informed by the HCA's Employment Density guide.
- **Minimum Employment Density – A3 Restaurants & Cafes** ( Sui Generis use) – an employment density of 20 sqm per employee has been applied to the commercial space (NIA) to be provided. This is the maximum employment density within Sui Generis use for which comparable employment density figures are available, which will generate the maximum employment figure for the Proposed Development. This has been informed by the HCA's Employment Density guide.
- **Maximum Employment Density – A3 Restaurants & Cafes ( Sui Generis use)** – an employment density of 15 sqm per employee has been applied to the commercial space (GIA) to be provided. This is the maximum employment density within Sui Generis use for which comparable employment density figures are available, which will generate the minimum employment figure for the Proposed Development. This has been informed by the HCA's Employment Density guide.

16.73 For the 2,155 sqm GIA of proposed residential and non-residential Clubhouse uses, corresponding to Use Classes E, F and SG, a relatively conservative equivalent employment density figure was used from the HCA Employment Density Guide, to factor for the relatively low employment densities associated with facilities which are often for residents only in non-luxury Proposed Developments. As such, a figure of 100 sqm GIA per employee associated with 'D2-Fitness Centres- Budget' uses was applied for both the private and public component of the clubhouse uses.

## Net Additional Employment

16.74 The methodology for Application 5 is as described above for Application 4. The following assumptions have been applied in terms of displacement, substitution, leakage and composite multiplier effects, which are also consistent with Application 4.

***Table 16.7**: Assumptions Used to Calculate Net Additional Permanent Employment*

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| Displacement | 25%<br><br>As the new employment space is not considered to have a notably adverse effect on the existing businesses within MCC, a low rate between 0% and the ready reckoner figure for 'low' displacement of 25% from the HCA Additionality Guide was adopted. | 25%<br><br>This level of displacement is adopted to account for any potential local adverse effects and for consistency with the district level of displacement. |
| Substitution | 0%<br><br>It is not considered likely that any firms that will be operating within the construction industry will be substituting employment activities for other activities. Therefore, this has been considered to be negligible. | 0%<br><br>It is not considered likely that any firms that will be operating within the construction industry will be substituting employment activities for other activities. Therefore, this has been considered to be negligible. |
| Leakage | 62.3%<br><br>A high level of leakage at the local area has been assumed based on 2011 Census data Travel to Work patterns, where 62.3% of people who worked in MCC lived outside of the local authority. | 5.8%<br><br>A low level of leakage at the regional area has been assumed been assumed based on 2011 Census data Travel to Work patterns, where 5.8% of people who worked in MCC lived outside of the North West region. |
| Composite Multiplier | 1.1<br><br>It is assumed that 'average' linkages will be evident in the supply chain. Based on this, the Additionality Guide recommends a composite multiplier of 1.1 at the district level (which covers both the indirect and induced multiplier effect). | 1.5<br><br>It is assumed that 'average' linkages will be evident in the supply chain. Based on this, the Additionality Guide recommends a composite multiplier of 1.5 at the regional level (which covers both the indirect and induced multiplier effect). |

## Gross Value Added from Net Additional Employment

16.75 The methodology for Application 5 is as described above for Application 4.

### Housing Delivery

16.76 The methodology for Application 5 is as described above for Application 4.

### Additional Household Expenditure

16.77 The methodology for Application 5 is as described above for Application 4.

### Additional Council Tax Receipts

16.78 The methodology for Application 5 is as described above for Application 4.

### Effects of the Additional Residential Population

16.79 The methodology for Application 5 is as described above for Application 4.

16.80 The breakdown of the proposals covered by Application 5 are indicative, given that the tenure split and the total number of units is not yet fixed, and will be confirmed in more detail through additional viability reviews. The indicative assumptions of the tenure and unit split is set out in **Table 16.8** below.

***Table 16.8**: Assumptions Used to Calculate Net Additional Permanent Residents*

| Property Size | Indicative Total Units |
|---|---|
| **1 Bedroom Property** | 642 |
| 2 Bedroom Property | 828 |
| 3 Bedroom Property | 81 |

### Education Facilities

16.81 To understand the effect on education facilities, the estimated child yield resulting from the Proposed Development is illustrated in **Appendix 16.1** and **Table 16.22**

16.82 The methodology and assumptions applied for Application 5 is as described above for Application 4.

### General Practitioner Services

16.83 Assessment of demand for GP services is covered in **Volume 2: Main Text, Chapter 17: Health and Wellbeing** and is not included in this Chapter.

### Identification of Sensitive Receptors

A number of sensitive receptors have been identified, following the baseline review, as set out in **Table 16.9.** Given the short to medium-term nature of the receptors sensitive to the demolition and construction phase, these have

been assumed to have a moderate sensitivity. All other receptors are considered to have a high sensitivity for the same reasons set out as for Application 4.

***Table 16.9**: Sensitivity of Receptors*

| Receptor | Description | Sensitivity |
|---|---|---|
| ***Demolition and Construction*** | | |
| District / Regional Population | Temporary Construction employment | Moderate |
| District / Regional Economy | Gross value added by temporary construction employment | Moderate |
| ***The Completed and Operational Development*** | | |
| **District / Regional Population** | Net Additional Employment | High |
| **District / Regional Economy** | Gross Value Added by Net Additional Employment | High |
| **District Population** | Housing Delivery | High |
| **District / Regional Economy** | Additional household expenditure | High |
| **District Economy** | Additional council tax receipts | High |
| **District Population** | Effect on demand for education facilities | High |
| **District Population** | Effect on demand for healthcare facilities | High |
| **District Population** | Effect on demand for open space | High |

## Assumptions / Limitations

16.84 Assumptions in relation to the individual socioeconomic metrics are set out in detail in the methodology section of this Chapter.

## Consultation

16.85 Consultation was undertaken in relation to arriving at an appropriate population yield approach, alongside Manchester City Council (MCC) and the client. Furter detail on this is provided in the methodology section of this Chapter.

## In-combination effects of Application 4 and Application 5 Methodology

16.86 To assess the combined effects of Applications 4 and 5, the outputs generated from the individual assessments using the methodologies set out above have been added together. In doing so, the results of the assessment for the Applications combined have then been re-assessed to determine potential effects if both Proposed Developments were to come forward.

16.87 All sensitive receptors have been assessed as being the same for both Applications 4 and 5. As such, this assessment will use consistent consideration of potential sensitive receptors.

## In-combination effects of Application 4 and Application 5 and the wider SRF Methodology

16.88 To understand the potential effects of Applications 4 and 5 with the wider Victoria North SRF, an additional assessment has been undertaken. This has taken the outputs from the in-combination assessment above and reviewed these with qualitative details of the SRF and the broad parameters of the proposals likely to come forward in the local area.

# Red Bank (Application 4)

## Baseline Conditions (Application 4)

16.89 The baseline conditions set out here should be read in conjunction with **Volume 2: Main Text, Chapter 17: Health and Wellbeing**, as well as **Appendices 16.1, 16.2, 16.3, 16.4** and **Appendix 17.1**, for which there is overlap with some of the assessment of health infrastructure set out in this chapter.

16.90 In summary, the baseline assessment included in **Appendix 17.1** has identified the following positive trends:

- **Population** – The proportion of residents who are of childhood age (15 or under) at the ward level is higher than at the local authority level. Despite this, the proportion of working age residents (16 to 64 years) is similar at both ward and local authority level. The population across MCC is also anticipated to grow at a rate of 9.2% between the years 2018 and 2043. This is a slower rate of growth than that anticipated across the national population;
- **Unemployment** – the unemployment rate for MCC has more than halved in the years 2011 to 2021.
- **Education** – The proportion of people in the Cheetham ward who have Level 4 and above qualifications is higher than the national average.
- **Self-assessment of health** – The proportion of Cheetham ward residents who perceived themselves to have 'good' or 'very good' health was higher than that at the local authority and national level.

16.91 However, despite this, the following adverse trends were also identified:

- **Economic Activity** – In general, economic activity levels are lower at the ward level when compared to all other impact areas, with the Cheetham ward having the highest rate of unemployment when compared against MCC and England and Wales according to the 2021 Census.
- **Employment Structure** - the proportion of people employed in higher skilled occupations in Cheetham ward was notably lower than both and MCC and comparative figures for England and Wales as a whole. This is reflected in the average wages earned across MCC, which are lower than that earned across the wider region and nationally.
- **Education** – At the ward level, the proportion of people with no qualifications was higher than the rates at the local authority level and across the country as a whole. Concurrently, the proportion of residents within Cheetham ward with higher level qualifications was lower than the MCC average, however remained above the England and Wales average.
- **Young person participation** – The proportion of 16 and 17-year-olds who were considered to be Not in Education, Employment or Training (NEET) within MCC was higher than the national average, however this remains below the regional rate across the North West.

- **Health** - The health of people in MCC and the Cheetham ward specifically is generally worse than the England average.
- **Deprivation –** The neighbourhood impact area (LSOA Manchester 056C) is ranked among the 17% most deprived areas in England. Overall, while the LSOA scores well across some domains (namely income and employment) this is offset by a poorer performance across others, with the neighbourhood found to be in the 2% most deprived communities for living environment in the country. Deprivation relevant to health, housing and crime were also evident.
- **Subnational Indicator Explorer** – MCC performed in-line or worse than the median local authority across the UK, with the exception of broadband connectivity and access to jobs.

16.92 Taken together, these factors suggest that the local area is relatively deprived, although benefits from its close proximity to the business activities in central Manchester for employment opportunities and transport connections. Data over the last decade shows that the populations in MCC are now less likely to be unemployed, however recent data on young person participation shows that there are persistent issues relating to economic participation. On the whole, as established in **Volume 2: Main Text, Chapter 17: Health and Wellbeing**, the health of residents in the Cheetham ward is worse than England overall and there are significant issues relating to living environment deprivation.

## Local Health Infrastructure Provision

16.93 Baseline conditions on local GP and pharmacist provision is set out in **Appendix 17.1** and **Volume 2: Main Text, Chapter 17: Health and Wellbeing** and are consequently not assessed in this chapter.

## Local Education Infrastructure Provision

### Primary School Provision

16.94 There are 11 state funded primary schools located within 1 mile of the centre of the Site (which would encompass areas captured in Application 4)[14]. The locations of these schools are identified in **Appendix 16.2**. Details regarding the 11 schools' respective capacities, pupil numbers on roll, and whether they have a surplus or deficit in school places are provided in **Table 16.10**.

***Table 16.10****: Primary Schools Within a 1-mile Radius of the centre of the Application 4 Area of the Site*

| Primary School | Approximate distance from Site (miles) | School Capacity | Number of Pupils on Roll | Surplus/ Deficit |
|---|---|---|---|---|
| **Abbott Community Primary School** | 0.3 | 240 | 233 | 7 |
| **St Patrick's RC Primary School** | 0.4 | 250 | 187 | 63 |

[14] Gov.uk (2023) Find and compare schools in England https://www.gov.uk/school-performance-tables [Online] [Accessed 27 February 2023].

| | | | | |
|---|---|---|---|---|
| **St Malachy's RC Primary School** | 0.5 | 242 | 214 | 28 |
| **St Chad's RC Primary School** | 0.6 | 240 | 220 | 20 |
| **Saviour CofE Primary School** | 0.6 | 210 | 180 | 30 |
| **Co-op Academy New Islington** | 0.7 | 420 | 353 | 67 |
| **Oasis Academy Temple** | 0.8 | 709 | 686 | 23 |
| **Cheetwood Primary School** | 0.8 | 210 | 223 | -13 |
| **Park View Community Primary** | 0.9 | 459 | 406 | 53 |
| **Unity Community Primary** | 0.9 | 420 | 306 | 114 |
| **St Augustine's CofE Primary School** | 1 | 240 | 223 | 17 |
| **Total** | | **3640** | **3231** | **409** |

16.95 Across the 11 state-funded primary schools within a 1-mile radius of the centre of the Application 4 Area of the Site, the most recent Department for Education (DfE) data on individual school capacities suggests that there is a combined capacity of 3,640 school places, with a surplus of 409 places.

16.96 At the individual school level, there is a surplus of places across all schools with the exception of Cheetwood Primary School.

## Secondary School Provision

16.97 There are 18 state funded secondary schools located within 3 miles of the centre of the Application 4 Area of the Site[15]. The locations of these schools are identified in **Appendix 16.3**. Details regarding the ten schools' respective capacities, pupil numbers on roll, and whether they have a surplus or deficit in school places are provided in **Table 16.11**.

[15] Gov.uk (2023) Get Information about Schools [Online] Available from: https://www.get-information-schools.service.gov.uk/ [Accessed 27 February 2023].

***Table 16.11**: Secondary Schools Within a 3-mile Radius of the Centre of the Application 4 Site*

| Secondary School | Approximate distance from Site (miles) | School Capacity | Number of Pupils on Roll | Surplus / Deficit |
|---|---|---|---|---|
| **Eden Boys' Leadership Academy, Manchester** | 0.4 | 800 | 624 | 176 |
| **Eden Girls' Leadership Academy, Manchester** | 0.5 | 800 | 619 | 181 |
| **Manchester Communication Academy** | 1 | 1200 | 1199 | 1 |
| **Abraham Moss Community School** | 1.3 | Cannot include these figures as this is an all-through school. Therefore, we cannot deduce what proportion of students are in secondary school and what their capacity is. | | |
| **Beis Yaakov High School** | 1.6 | 330 | 334 | -4 |
| **The King David High School** | 1.7 | 800 | 809 | -9 |
| **The Albion Academy** | 1.8 | 930 | 842 | 88 |
| **The East Manchester Academy** | 1.9 | 1000 | 1004 | -4 |
| **Trinity CofE High School** | 1.9 | 1500 | 1517 | -17 |
| **Co-op Academy Belle Vue** | 2-3 miles | 1200 | 98 | 1102 |
| **St Peter's RC High School** | 2-3 miles | 1000 | 1030 | -30 |
| **Manchester Academy** | 2-3 miles | 1170 | 1104 | 66 |
| **Oasis Academy MediaCityUK** | 2-3 miles | 1150 | 874 | 276 |
| **Co-op Academy Manchester** | 2-3 miles | 1650 | 1588 | 62 |
| **Dean Trust Ardwick** | 2-3 miles | 1200 | 1258 | -58 |
| **Co-op Academy North Manchester** | 2-3 miles | 1500 | 1083 | 417 |
| **Buile Hill Academy** | 2-3 miles | 900 | 804 | 96 |
| **AldridgeUTC@MediaCityUK** | 2-3 miles | 720 | 294 | 426 |
| **Total** | | **17,850** | **15,081** | **+2,769** |

16.98 Across the 18 state-funded secondary schools within a 3-mile radius of the centre of the Application 4 Area of the Site, the most recent Department for Education (DfE) data on individual school capacities suggests that there is a combined capacity of 17,850 school places, with a surplus of 2,769 places.

16.99 In addition to these places, the Abraham Moss Community School also provides state-funded secondary education, alongside catering to other age groups as an all-through school.

## Open Space

16.100 As set out in **Appendix 16.2**, there are 11 parks and green spaces within 1 mile of the centre of the Application 4 Area of the Site. This has been informed by an audit undertaken by WSP, using OS Greenspace data and supplementary information from MCC's website.

16.101 There are a range of facilities provided across these parks and green spaces, which are set out in **Table 16.12**, including a cricket square at Bignor Street Park and various Multi Use Games Areas (MUGAs). Six of these local parks and green spaces include dedicated play space for children of different ages, while Queens Park and Smedley Fields have dedicated football pitches.

***Table 16.12**: Open Space Within a 1-mile Radius of the Site*

| Park / Green Space | Local Authority | Type | Other Facilities |
|---|---|---|---|
| **Barney's Tip Playing Field (off Queen's Road)** | Manchester | Playing Field | - |
| **Bignor Street Park** | Manchester | Public Park or Garden | MUGA, Cricket Square |
| **Collyhurst Park** | Manchester | Public Park or Garden | - |
| **Cheetham Park** | Manchester | Public Park or Garden | Play Space |
| **Fairy Lane/Allesley Drive green space** | Manchester | Public Park or Garden | - |
| **Parsonage Gardens** | Manchester | Public Park or Garden | - |
| **Piccadilly Gardens** | Manchester | Public Park or Garden | - |
| **Queen's Park** | Manchester | Public Park or Garden | Play Space, Football Pitch |
| **Sand Hills** | Manchester | Public Park or Garden | - |
| **Smedley Fields** | Manchester | Playing Field | MUGA, Play Area, Football Pitches |
| **St Michael's Flags and Angel Meadows** | Manchester | Public Park or Garden | - |
| **The Glade of Light** | Manchester | Public Park or Garden | - |
| **Victoria Mill Park** | Manchester | Public Park or Garden | MUGA, Play Space |
| **Village Park** | Manchester | Public Park or Garden | Play Space |

16.102 In addition to the parks and open spaces identified above, the Victoria North SRF incorporates a new City River Park and the Vision is set out in the SRF. The City River Park will cover circa. 46 hectares and will become one of Manchester's largest City Centre green spaces. This is expected to be delivered over the next 15 to 20 years.

16.103 In addition to this, the Irk Valley Project will also provide additional space for new residents. The Irk Valley Project aims to rejuvenate the green space for the benefit of the community through a process of environmental

developments, community involvement and sensitive habitat management. The project spans from St Michaels and Angel Meadow, near Manchester Victoria Railway Station, to the M60 boundary at Heaton Park, in the North, and heading eastwards along the Moston Brook tributary.

16.104 MCC's Application 2 (133143/VO/2022) incorporated and proposes 3.03 hectares of this wider open space provision in the form of a new park at St Catherines Wood which is adjacent to the site boundary for Application 4 and forms part of the River City Park proposed in the SRF. As this application was approved in July 2022, this portion of open space will be completed by MCC by the time the Proposed Development is Complete and Operational, therefore this shall form part of the future baseline for open space in the local area.

16.105 Of the parks and green spaces listed in **Table 16.12**, five were identified as having facilities described as "play space". The quantity of this could not be established, but the format of the play space was identified as primarily children's playgrounds.

## Embedded Mitigation (Application 4)

### Demolition and Construction

16.106 No mitigation measures have been embedded into the Proposed Development as part of the Demolition and Construction phases.

### The Completed and Operational Development

16.107 The Completed and Operational Proposed Development as part of Outline Application 4 comprises a number of elements which will mitigate some of the adverse effects of the proposals. These are as follows:

#### Primary School Provision

16.108 As part of Application 4, the Applicant will seek approval for a 1FE primary school (Use Class F1 (a)) which will comprise up to 2.750 sqm in Gross Internal Area (GIA). If delivered, this would act as embedded mitigation for the effects of the additional child yield from the Proposed Development upon local education facilities. In the event that this school does not come forward (as it is currently proposed in Outline as a potential 'swing plot'), this would therefore remove this embedded mitigation.

16.109 The effect of this mitigation is set out in the "Assessment of Likely Significant Effects" section.

#### GP Provision

16.110 As part of Outline Application 4, the Applicant will seek approval for health centre uses (Use Class E) comprising up to 3,250 sqm in Gross Internal Area (GIA).

16.111 The effect of this mitigation is set out in **Volume 2: Main Text, Chapter 17: Health and Wellbeing,** where supply of GP practices within the surrounding area is considered in detail.

### Open Space

16.112 High-quality public realm will support the new neighbourhoods of Red Bank. The public spaces throughout the neighbourhood will provide a pleasant environment for socialising and relaxing. The nuance in landscape characters will offer lush green landscapes with grasses, bushes, trees, and ample space for recreational activities. Key public squares are active hubs of activity with restaurants, cafes, shops, and other services. Dantzic Street will be a bustling urban place with busy sidewalks for pedestrians and cyclists. Smaller green spaces and good neighbourhood streets will complete the public realm structure, to create a lively and inhabited urban centre near Manchester City Centre. The neighbourhood will offer a unique combination of character, quality, hierarchy, and accessibility, making it a desirable place to live and work.

16.113 The Proposed Development will include both hard and soft landscaping in the form of new public realm space which will feature focal squares, formal and informal play areas. The design and layout of the public realm and landscaping will be defined at the detailed application stage. However, this outline application seeks to establish the maximum plot extents and defines the key areas of public realm within the site and provides for the following:

16.114 Travis Island Wetlands at New Town is a terraced landscape north of plots RB16 and RB17 that allows local residents and visitors to experience a new urban wetland landscape typology in Manchester. The greenspace makes the most of its position by the River Irk and its natural assets. Its design encourages people to explore and engage with the environment and feel connected to nature. It also includes play trails, walking routes and a small public square adjacent to RB16.

16.115 Red Bank Viaduct is diverse in public open spaces. Upgraded existing streets will form a high quality public realm. Vehicle access on Roger Street, Chase Street, and Back Red Bank is for emergency servicing and some visitor/resident parking. Three key destinations will provide different experiences in the Red Bank Viaduct area. Union Waterfront and Red Bank Terraces were approved as part of the HIF permissions. Brewery Square is a further vibrant artisan public space prop framed by a legacy of railway infrastructure, topped by Viaduct Gardens, an elevated linear park. Filled with activity, Brewery Square will be a market place for making and exchanging during the day, and an intimate, edgy restaurant and bar destination during the night supporting the existing commercial uses already in the Red Bank arches. Steps lead up to the Viaduct Gardens above where people can stroll around its abundant nature all the way to Red Bank Square.

16.116 Red Bank Plateau will include two key areas of public realm in Red Bank Square and St Catherine's Square. Red Bank Square is the gateway into the Plateau. The public realm from Red Bank Square steps down into Red Bank Terraces. St Catherine's Square is a neighbourhood destination adjacent to St. Catherine's Wood. Fronted by a clubhouse with co-working spaces and a cafe, play facilities, and primary school.

## Assessment of Likely Significant Effects (Application 4)

## Demolition and Construction

16.117 Using the build cost estimate provided by the Applicant (approximately £770 million to £1.04 billion) and the average turnover per construction job in 2020 (£175,840) as outlined in the Assessment Methodology, it is estimated that the Application 4 Proposed Development would generate between 4,379 and 5,914 person years of temporary employment during the 72-month Works programme. This equates to on average 730 - 986 employees per annum over the Works programme.

### Net Additional Construction Employment

16.118 Based on the assumptions outlined in **Table 16.2**, the total number of net additional temporary jobs arising from the construction of the Application 4 Proposed Development are detailed in **Table 16.13** below. It should be noted that numbers may not quite add due to rounding at each calculation stage. For the purposes of this assessment, the lower range potential number of jobs (4,379) has been assessed as a worst-case scenario.

***Table 16.13**: Additionality on construction jobs (person years of employment)*

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| **Operational workers on-site (gross, direct)** | 4,379 | |
| **Leakage to workers from outside impact area** | -2,728 | -255 |
| **Displacement of other activities** | -413 | -1,031 |
| **Operational workers on-site (net, direct)** | 1,238 | 3093 |
| **Employment off-site induced by construction employment (net, indirect)** | 124 | 1,547 |
| **Total additional employment from construction of Proposed Development** | **1,362** | **4,640** |

16.119 As shown in **Table 16.13**, whilst there would be a minimum of 4,379 gross construction jobs supported, taking into account leakage, displacement and multiplier effects, this equates to approximately 1,362 net additional construction jobs for the district area being supported (1,238 jobs on-site and 124 in the supply chain).

16.120 More broadly at the regional scale, the construction activity required to build the Proposed Development would support 3,278 jobs across the North West (excluding residents of MCC). This would be for the entire Works Programme.

16.121 As set out in **Appendix 17.1: Baseline Assessment of Health and Wellbeing Conditions**, as of 2021, 2.6% of all jobs located in MCC were in the Construction Industry, representing approximately 11,000 jobs[16]. The creation of 1,362 construction jobs over six years would equate to around 227 jobs per year. This would represent a 2.1%

[16] ONS (2023) Labour Market Profile – Manchester [Online] Available from: https://www.nomisweb.co.uk/reports/lmp/la/1946157083/report.aspx [Accessed 27 February 2023]

uplift in construction employment across MCC. The ONS estimates that there are approximately 187,000 construction jobs across the North West of England[17], therefore the generation of 4,640 construction jobs (773 per year) equates to an 0.4% increase at the regional (North West) level. The magnitude of change would be considered to be **Medium** at the district level and **Small** at the regional level.

16.122 With the sensitivity of the receptor assessed as moderate, the generation of additional temporary construction employment has been assessed as a **direct, short to medium-term, beneficial effect of moderate-minor** significance at the district level and a **direct, short to medium-term, beneficial effect** of **minor** significance at the regional level.

### GVA added by direct employment generated from Demolition and Construction

16.123 Based on gross value added construction job in 2020 of £73,458, it is estimated that the 773 net additional construction jobs generated by the Application 4 Proposed Development on average per year would create GVA to the regional economy of around £56.8 million, of which £16.7 million would be within the district economy.

16.124 According to the ONS[18], the total construction GVA generated by the North West and Manchester in 2020 (the latest available data) was £10.1 billion and £808 million respectively. The generation of £56.8 million and £16.7 million would therefore represent a 0.6% and 2.1% uplift in GVA respectively across the North West and MCC. As a result, the magnitude of change is considered to be **small** at the district level and **negligible** at the regional level.

16.125 With the sensitivity of the receptor assessed as moderate (**Table 16.5** - given the temporary nature of the effect), the generation of GVA from the temporary construction employment has been assessed as a **direct, short to medium-term, minor beneficial effect** at the district level and a **negligible effect** at the regional level.

## The Completed and Operational Development

### Population Yield

16.126 Using the method outlined earlier in this chapter, and detailed in **Appendix 16.1**, the assumed maximum net additional population yield of the completed and operational Proposed Development would be 6,066 persons (based on the unit schedule and assumed tenure split detailed in **Table 16.8)**. As set out elsewhere in this chapter, this figure is based on a bespoke population yield calculator developed by MCC, which provides benchmark figures for residents per household based on number of bedrooms and tenure.

16.127 To estimate the population to be yielded from the Application 4 Proposed Development, a proxy tenure split has been assumed. This has been presumed as 80% private sale, 15% intermediate housing and 5% social rent housing. These are indicative figures at the time of writing and will be confirmed in any subsequent detailed applications. The population yield by specific age group is detailed in **Table 16.14**.

[17] ONS (2023) 2021 Construction Statistics Annual Tables [Online] [Accessed 16 February 2023].
[18] ONS (2020) Regional gross value added by industry: local authorities by ITL1 region [Online] [Accessed 16 February 2023].

***Table 16.14**: Estimated Population Yield Assumed for Proposed Development*

| Age Group | Total Population* |
|---|---|
| **0 to 4 years** | 190 |
| **5 to 11 years** | 322 |
| **12 to 15 years** | 254 |
| **16 to 64 years** | 5,035 |
| **65 years plus** | 265 |
| **Total** | **6,066** |

* Total population numbers may not wholly add up due to rounding.

16.128 The net additional population yield of the completed and operational Proposed Development, is estimated to be 6,066 persons.

## Gross, on-Site Employment

16.129 The Application 4 Proposed Development includes non-residential floorspace (comprising Use Classes E, F and Sui Generis) that would generate employment at the Site. Likewise, in addition to non-residential floorspace, Clubhouse uses, Healthcare Uses and Primary Education Uses are planned for the Site.

16.130 **Table 16.15** shows the estimated gross, on-Site employment generated from the non-residential elements of the completed and operational Proposed Development. As set out in the Assessment Methodology a maximum and minimum figure for job creation has been estimated.

***Table 16.15**: Gross, On-Site Employment Generation from the Completed and Operational Proposed Development*

| Floorspace Type | Employment – Lower value | | Employment – Upper value | |
|---|---|---|---|---|
| | Scenario 1 | Scenario 2 | Scenario 1 | Scenario 2 |
| **Non-Residential** | 230 | 255 | 456 | 509 |
| ***Class E*** | *187* | *241* | *375* | *482* |
| ***Class F*** | *3* | *1* | *27* | *9* |
| ***Class SG*** | *40* | *13* | *54* | *18* |
| **Clubhouse** | 32.5 | 32.5 | 32.5 | 32.5 |
| **Health Centre** | 59 | 59 | 59 | 59 |
| **Primary School** | 20 | 20 | 20 | 20 |
| **Total** | **341.5** | **366.5** | **567.5** | **620.5** |
| **Total (swing plot scenario)** | **321.5** | **346.5** | **547.5** | **600.5** |
| ***Lower value*** | ***321.5*** | | | |
| ***Upper Value*** | ***620.5*** | | | |

16.131 Based on the assumptions set out in the Assessment Methodology, it is calculated that the completed and operational Proposed Development would support between 321.5 and 620.5 gross FTE permanent jobs.

## Net Additional Employment

16.132 Based on the assumptions outlined in the Assessment Methodology (**Table 16.2**), the total number of net additional jobs arising from the Proposed Development is detailed in **Table 16.16** and **Table 16.17** below. It should be noted that the numbers may not quite add due to rounding at each calculation stage.

***Table 16.16**: Additionality on Permanent Employment – Minimum Scenario*

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| **Operational workers on-site (gross, direct)** | 322 | |
| **Leakage to workers from outside impact area** | -200 | -19 |
| **Displacement of other activities** | -30 | -76 |
| **Operational workers on-site (net, direct)** | 91 | 227 |
| **Employment off-site induced by operational employment (net, indirect)** | 9 | 114 |
| **Total additional employment from operation of Proposed Development** | **100** | **341** |

***Table 16.17**: Additionality on Permanent Employment- Maximum Scenario*

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| **Operational workers on-site (gross, direct)** | 621 | |
| **Leakage to workers from outside impact area** | -387 | -36 |
| **Displacement of other activities** | -58 | -146 |
| **Operational workers on-site (net, direct)** | 175 | 438 |
| **Employment off-site induced by operational employment (net, indirect)** | 18 | 219 |
| **Total additional employment from operation of Proposed Development** | **193** | **657** |

16.133 As shown in **Table 16.16**, under a minimum employment scenario whilst there would be 322 gross operational jobs supported, taking into account leakage, displacement and multiplier effects, this equates to approximately 100 net additional jobs supported across the District. More broadly at the regional level, the Proposed

Development would support 241 net additional jobs under a minimum employment scenario (taking the total net additional employment supported to 341).

16.134 As shown in **Table 16.17**, a maximum employment scenario, whilst there would be 621 gross operational jobs supported, taking into account leakage, displacement and multiplier effects, this equates to approximately 193 net additional jobs for the District area being supported. More broadly at the regional level, the Proposed Development would support an additional 464 jobs under a maximum employment scenario (taking the total net additional employment supported to 657).

16.135 In summary the Application 4 Proposed Development can expect to support between 100 and 193 net additional jobs at the district level, with an additional 241 to 464 jobs at the regional level. Taken together, the Proposed Development could support between 341 and 657 net additional FTE jobs.

16.136 As set out in **Appendix 17.1: Baseline Assessment of Health and Wellbeing Conditions,** MCC supported approximately 471,000 jobs in 2021. The creation of between 100 and 193 jobs in MCC would represent an uplift in employment of between 0.02% and 0.04% across the City (District area)- a change which is **small** in magnitude.

16.137 The ONS estimates that there are approximately 3.5 million jobs across the North West, therefore the generation of between 362 and 657 operational jobs equates to an increase of 0.01% and 0.02% at the regional (North West England) level- a change which is **small** in magnitude.

16.138 With the sensitivity of the receptor assessed as **high**, the generation of additional employment has been assessed as a **direct, long-term beneficial** effect of **moderate**-**minor** significance at the district level and regional level.

### GVA from Net Additional Employment

16.139 The net additional employment created by the Proposed Development would have wider economic effects by generating gross value added to the district and regional economy.

16.140 To estimate the annual GVA created by the complete and operational Proposed Development information from the ONS Sub-Regional Productivity tables was used.

16.141 Detailed information on GVA per filled job is provided by the ONS Regional Economic Analysis Sub-Regional Productivity Tables[19]. Table B3 reveals that GVA per filled job for MCC was £57,643 in 2020, the most recent year for which data is currently available. Table B3 also indicates that the GVA per filled job for the North West region was £52,007 in 2020.

16.142 Based on this evidence, it was estimated that the total jobs to be supported by the Proposed Development and the supply chain linkages could contribute approximate GVA to the North West economy of between £12.5 million

[19] ONS. Sub regional Productivity: Labour Productivity (GVA per Hour Worked and GVA per filled job) Indices. by UK NUTS2 and NUTS3 Subregions. 2021. [Accessed 16 February 2023].

and £24.2 million annually in perpetuity. Of this, between £5.8 million and £11.1 million would be generated within the district (MCC) economy (based on between 100 and 193 FTE net additional jobs identified in **Table 16.16** and **Table 16.17**).

16.143 According to the ONS, the total GVA generated in MCC and the North West of England in 2020 was £24.8 billion and £186.9 billion respectively[20]. The generation of the additional GVA by the employment supported by the Proposed Development therefore represents an uplift of between 0.02% and 0.04% at the district level, and between 0.007% and 0.012% at the regional level. As a result, the magnitude of change is considered to be **small** at both the district and regional level, under both scenarios.

16.144 With the sensitivity of the receptor assessed as **high** (**Table 16.5**), the generation of additional GVA has been assessed as a **direct, long-term, beneficial** effect of **moderate-minor** significance at the district and regional level.

### Additional Household Expenditure

16.145 The report on Family Spending, published by the ONS in July 2022, provides data for the financial year ending 2021 on household expenditure. The results reflect the data from the Living Cost and Food Survey completed across the United Kingdom, as described in the Assessment Methodology.

16.146 Family Spending reveals that the average weekly household expenditure in the North West for the period between the financial year ending 2019 and financial year ending 2021 was £507.80. The survey also shows that, on average, each household in the North West spends £73.20 per week on net housing (excluding mortgage interest payments and Council Tax), fuel and power costs. Since this spending typically goes to major national institutions with only modest impacts on the district economy, this spending has been deducted from average weekly household expenditure.

16.147 This means that for the period between the financial year ending 2019 and financial year ending 2021, (net) average weekly household expenditure in the North West was £435, which is equivalent to an annual figure of £22,620. Assuming that VAT of 20% had been paid on all of this spending, the average annual household expenditure (net of indirect taxation and housing, fuel and power costs) was £18,096 for the North West during the period April 2019 to March 2021.

16.148 Based on this analysis and the net addition of up to 3,250 net additional households to the district area as part of Application 4, it is estimated that the gross additional household expenditure generated by the new residential population at the Site would be around £58.8 million per annum. This assumes that the 3,250 net additional households demonstrate spending patterns typical of the North West as a whole.

[20] ONS (2020) GDP Datasets [Online] Available from: https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/regionalgrossdomesticproductallnutslevelregions

16.149 This additional household expenditure of £58.8 million per annum is a gross effect. Some of this spending would clearly leak out of the area. It has been assumed that 25% of the additional household expenditure generated by the new residential population would be spent outside the district impact area.

16.150 This means that the net additional household expenditure generated by the new residential population at the Proposed Development would be approximately £44.1 million per annum to the MCC local economy. The effect of the net additional household expenditure would be felt on completion and occupation of all of the new residential dwellings at the Proposed Development.

16.151 The magnitude of change is considered to be **medium** at the district level and **small** at the regional level. The assessment of magnitude reflects the fact that the Proposed Development would result in an injection into the economy in the form of increased consumer expenditure. This would be generated per annum and would be of benefit to the District primarily, with some regional benefits due to leakage effects.

16.152 With the sensitivity of the receptor assessed as **high (Table 16.5)**, the generation of £44.1 million per annum in household expenditure has been assessed as a **direct, long-term beneficial effect** of **major-moderate** significance at the district level, and of **minor-moderate** significance at the regional level.

### Additional Council Tax Receipts

16.153 The proposed residential units would have a beneficial effect on the annual Council Tax receipts received by MCC. Council Tax, for a Band D property in MCC would amount to £1,872.59 per annum based on 2022/23 figures. The Council Tax receivable to MCC from a Band D property with a single person discount (25% discount) would therefore be £1,404.38[21].

16.154 Based on the assumptions outlined in the Assessment Methodology, it is estimated that the 3,250 net additional households at the Site would generate additional Council Tax receipts for MCC of £5,714,677 per annum at 2022/23 prices, factoring for all one-bedroom units being single occupancy and therefore eligible for the single person discount.

16.155 The effect of the increased Council Tax receipts would be felt on completion and occupation of all of the new residential dwellings at the Proposed Development.

16.156 In 2022/23 MCC received a total of £217.2 million in Council Tax revenues[22]. The generation of £5,714,677 equates to approximately 2.63% of this budget. As a result, the magnitude of change is considered to be **medium** at the district level.

[21] Manchester City Council Tax Bands [Online] Available from: https://www.manchester.gov.uk/info/500336/how_its_worked_out/6306/council_tax_bands_and_charges [Accessed 16 February 2023].

[22] DLUHC, Council Tax receipts live table, England, Q3 2022 to 2023- Total receipts of Council Taxes collected during the Financial Year 2022/2023 [Online]. Available from: https://www.gov.uk/government/statistical-data-sets/live-tables-on-local-government-finance [Accessed 16 February 2023]

16.157 With the sensitivity of the receptor assessed as **high,** the generation of £5.7 million per annum in Council Tax revenue was assessed as a direct, long-term, **beneficial** effect of **major-moderate** significance at the district level.

## Housing Delivery

16.158 The Proposed Development would provide up to 3,250 units, with an indicative tenure split shown in the table below.

***Table 16.18**: Residential Unit Numbers within the Complete and Operational Proposed Development*

| Tenure | 1-bed* | 2-bed* | 3-bed* | Total* |
|---|---|---|---|---|
| **Privately owned** | 637 | 1,646 | 315 | 2,598 |
| **Rented (presumed social rent for purposes of assessment)** | 160 | 412 | 79 | 651 |
| **% share** | 24.5% | 63.3% | 12.1% | - |
| **Total** | **797** | **2,058** | **394** | **3,250** |

* Numbers may not wholly add up due to rounding

16.159 As outlined in the Baseline Conditions section of this Chapter, the Site is currently vacant. The Proposed Development would therefore result in the provision of up to 3,250 net additional dwellings.

16.160 The provision of up to 3,250 net additional units is equivalent to 90% of MCC's annual delivery target of 3,600 units per year (2022 – 2032)) in the Manchester Housing Strategy 2022-2032. As a result, the magnitude of change is considered to be **large**.

16.161 With the sensitivity of the receptor assessed as **high**, the delivery of 3,250 net additional residential units on Site would be considered to be a direct, long-term effect **of major beneficial** significance at the district level.

## Housing Delivery - Swing Plot Scenario

16.162 It is proposed that Plot RB05 could be either a primary school or a residential use. The inclusion of this 'swing plot' for Plot RB05 is to provide flexibility for the client and does not preclude the delivery of equivalent education infrastructure as part of the wider SRF. As such, the maximum possible amount of housing would be delivered in a scenario where a primary school is not delivered on the swing plot – this eventuality is factored for in the worst case scenario of 'up to 3,250 dwellings'. As such, the above section on Housing Delivery already factors for a scenario where housing is delivered on the swing plot and the scale of the effect and overall significance would be the same. In a scenario where a school were provided on Plot RB05, the overall quantum of housing delivered as part of Application 4 would fall below the 3,250 dwellings included in this assessment.

## Education Provision

### Primary School Provision

16.163 Based on the estimated population yield, the Proposed Development is estimated to yield a requirement for an additional 400 primary school places once complete and operational (see **Appendix 16.1**).

16.164 As set out earlier in this Chapter, there are 11 state funded primary schools within 1-mile of the Site. Across the 11 schools there are a total of 409 surplus pupil places.

16.165 In view of the above, there is likely to be sufficient capacity across the primary schools surrounding the Site to accommodate the additional 400 pupils generated by the Proposed Development. The magnitude of change is therefore considered to be **Small**.

16.166 With the sensitivity of the receptor assessed as **high** (**Table 16.5**), the likely effect of the new resident population of the Proposed Development on the supply of primary school places is considered to be a **negligible** effect at the district level.

16.167 As part of the application, up to 2,750 sqm of primary school uses are proposed for the Application 4 site, which is anticipated to comprise a one form-entry (1FE) primary school of around 210 places.

16.168 When factoring for this, it is considered that the effects of the new residential population would be reduced, providing a primary school on-site which would assist in meeting sustainability objectives in promoting active transport to and from school. As a result, the likely effect of the new resident population of the Application 4 Proposed Development on the supply of primary school places, following the provision of an on-site primary school is considered to be a **direct, long term**, **beneficial** effect of **moderate-minor** significance at the district level.

### Primary School Provision - Swing Plot Scenario

16.169 As above, if the swing plot currently included within the Proposed Development were to be used for residential purposes, rather than for a 1FE primary school, the effect upon local primary school provision would remain **negligible** at the district level. This assessment already accounts for the fact that there would be an associated higher child yield in a scenario where the swing plot were to be used for residential purposes, given that the additional housing units are already included in the total of 3,250 additional units being assessed (the worst case scenario from a child yield standpoint).

### Secondary School Provision

16.170 Based on the estimated population yield, the Application 4 Proposed Development is estimated to yield a requirement for an additional 300 secondary school places once complete and operational (see **Appendix 16.1**).

16.171 As set out earlier in this chapter, there are 18 state funded secondary schools within 3 miles of the Site. Across the 18 schools there are a total of 2,769 surplus pupil places.

16.172 In view of the above, there is likely to be sufficient capacity across the secondary schools surrounding the Site to accommodate the additional 300 pupils generated by the Application 4 Proposed Development. The magnitude of change is therefore considered to be **negligible**.

16.173 With the sensitivity of the receptor assessed as **high** (**Table 16.5**), the likely effect of the new resident population of the Application 4 Proposed Development on the supply of secondary school places is considered to be a **negligible** effect at the district level.

#### GP Provision

16.174 The effect of the Application 4 Proposed Development on GP provision is not set out in this section and is instead covered in **Volume 2: Main Text, Chapter 17: Health and Wellbeing.**

### Effect on Open Space Provision

16.175 Detail of open space provision has been set out in **Paragraphs 16.112** to **16.116**.

16.176 This has been assessed as having a **Minor Beneficial** long-term permanent impact upon future residents of and workers at the Outline Application 4 Development which is **Not Significant**.

## Additional Mitigation / Enhancement Measures (Application 4)

### Demolition and Construction

16.177 No further mitigation has been identified as being required for the effects of the Demolition and Construction phase of the project.

### The Completed and Operational Development

16.178 No further mitigation has been identified as being required for the effects of the Completed and Operational phase of the project.

## Likely Residual Effects of the Development and their Significance (Application 4)

### Demolition and Construction

#### Direct Employment Generated from Demolition and Construction and Associated Gross Value Added by Direct Employment

16.179 The Demolition and Construction programme would give rise to additional employment and additional GVA to the district and regional economy. All such effects were judged to be beneficial. Accordingly, no additional mitigation would be required, and the likely residual effects of the Works would be the same as the likely effects of the Works. That is:

- **Direct employment generated from Demolition and Construction**: Direct, short to medium-term, **beneficial** effect of **moderate-minor** significance the district level and a **beneficial** effect of **minor** significance at the regional level.
- **GVA added by direct employment generated from Demolition and Construction**: Direct, short to medium-term, **beneficial** effect of **moderate** significance at the district level and a **beneficial** effect of **minor** significance at the regional level.

## The Completed and Operational Development

### Net Additional Employment Opportunities, Gross Value Added to the Economy and Local Expenditure from the Completed and Operational Proposed Development's Residents

16.180 The completed and operational Proposed Development would give rise to additional employment opportunities, additional GVA to the district economy and additional expenditure from the introduced residential population. All such effects were judged to be beneficial at the district level. Accordingly, no mitigation would be required and the likely residual effect of the completed and operational Proposed Development would be the same as the likely effects of the completed and operational Proposed Development. That is:

- Net Additional Employment Opportunities: Direct, long term, **beneficial** effect of **moderate-minor** significance at the District and Regional level.
- Gross Value Added to the Economy: Direct, long term, **beneficial** effect of **moderate-minor** significance at the District and Regional level.
- Expenditure from Residents of the Completed and Operational Proposed Development: Direct, long term, **beneficial** effect of **major-moderate** significance at the District level and **moderate-minor** significance at the Regional level.

### Additional Council Tax Receipts and Contribution to Housing Delivery

16.181 The completed and operational Proposed Development would give rise to an increased population within the local areas, resulting in total increased amount of Council Tax receipts. Additionally, the Proposed Development itself would directly contribute to the housing delivery targets of the district area. These effects were judged to be beneficial at the district level. Accordingly, no mitigation would be required, and the likely residual effect of the completed and operational Proposed Development would be the same as the likely effects of the completed and operational Proposed Development. That is:

- Additional Council Tax Receipts: Direct, long term, **beneficial** effect of **major**-**moderate** significance at the District level.
- Contribution to Housing delivery: Direct, long term, **beneficial** effect of **major** significance at the District level.

### Effect on Education and Healthcare Capacity

16.182 The completed and operational Proposed Development would give rise to an increased population within the district area and as such would result in an increased demand on the existing education (primary and secondary schools) and healthcare (GPs) facilities. The assessment of healthcare facilities is included in **Volume 2: Main Text, Chapter 17: Health and Wellbeing**.

16.183 As quantified in the baseline and within the assessment, it is considered that there is sufficient capacity within existing primary and secondary education facilities to provide for the additional demand for services that the new population on the Site would create. However, some of the potential negative effects of this will be partly offset in the form of education floorspace for a primary school as part of the provisions in Application 4, however this forms part of a 'swing plot' which could be used as either a primary school or additional residential units. In considering this, the likely residual effect of the completed and operational Proposed Development would be:

- **Effect on Primary School Provision if no primary school is provided within swing plot:** Negligible effect.
- **Effect on Primary School Provision if primary school is provided within swing plot:** Direct, long term, **beneficial** effect of **minor** significance at the District level.
- **Effect on Secondary School Provision:** Negligible effect.

### Effect on Open Space Provision

16.184 The completed and operational Proposed Development would give rise to an increased population within the district area which would require access to open space facilities and play space for children. However, a open space is being brought forward which is anticipated to more than mitigate any negative effects.

16.185 The following effects are estimated for open space and play space provision:

- **Effect on Open Space Provision:** moderate-minor beneficial effect at the District level, which is therefore insignificant.

16.186 A summary of all relevant effects have been summarised in **Table 16.20**.

***Table 16.20**: Residual Effects Summary*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| **Direct employment generated from Demolition and Construction** | Direct, short to medium-term, beneficial effect of moderate -minor significance at the | None required | Direct, short to medium-term, **beneficial** effect of **moderate - minor** significance at the district level and **minor** significance at the regional level. |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| | district level and minor significance at the regional level. | | |
| **GVA added by direct employment generated from Demolition and Construction** | Direct, short to medium-term, beneficial effect of minor significance at the district level and negligible significance at the regional level. | None required | Direct, short to medium-term beneficial effect of **minor** significance at the district level and **negligible** significance at the regional level. |
| ***The Completed and Operational Development*** | | | |
| **Net Additional Employment Opportunities** | Direct, long-term beneficial effect of moderate-minor significance at the district level and regional level. | None required | Direct, long-term **beneficial** effect of **moderate-minor** significance at the district level and regional level. |
| **Gross Value Added to the Economy** | Direct, long-term beneficial effect of moderate-minor significance at the district and regional level. | None required | Direct, long-term **beneficial** effect of **moderate-minor** significance at the district and regional level. |
| **Expenditure from Residents of the Completed and Operational Proposed Development** | Direct, long-term, beneficial effect of major-moderate significance at the district level, and a moderate-minor beneficial effect at the regional level. | None required | Direct, long-term, **beneficial** effect of **major-moderate** significance at the district level, and a **moderate-minor beneficial** effect at the regional level. |
| **Additional Council Tax Receipts** | Direct, long-term beneficial effect of major-moderate significance at the district level. | None required | Direct, long-term **beneficial** effect of **major-moderate** significance at the district level. |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| **Contribution to Housing delivery** | Direct, long-term beneficial effect of major significance at the district level. | None required | Direct, long-term **beneficial** effect of **major** significance at the district level. |
| **Contribution to Housing Delivery- Swing Plot Scenario** | Direct, long-term beneficial effect of major significance at the district level. | None required | Direct, long-term **beneficial** effect of **major** significance at the district level. |
| **Effect on Primary School Provision – with a primary school included within swing plot** | Direct, long-term beneficial moderate-minor at the district level, which is insignificant. | None required. | Direct, long-term **beneficial moderate-minor** at the district level, which is insignificant. |
| **Effect on Primary School Provision – without a primary school included within swing plot** | Negligible effect at the district level. | None required. | **Negligible** effect at the district level. |
| **Effect on Secondary School Provision** | Negligible effect at the district level. | None required. | **Negligible** effect at the district level. |
| **Effect on Open Space Provision** | Moderate-minor long-term impact at district level, which is insignificant. | None required | **Moderate-minor** long-term impact at district level, which is **insignificant**. |

## Conclusions (Application 4)

16.187 An assessment of the likely socio-economic effects associated with demolition and construction and the completed and operational Proposed Development was undertaken, using a range of methods. The demolition and construction phase would generate around 4,640 net additional temporary construction jobs over the construction period, of which 1,362 could be taken up by residents of MCC. These temporary construction jobs would generate £56.8 million in GVA to the regional economy (of which £16.7 million would be generated in the MCC District economy).

16.188 It is estimated that the Proposed Development would result in a maximum additional population of 6,066 residents. The Proposed Development would also expect to support up to 657 net additional jobs regionally, of which 193 would be located in MCC. This would generate up to £24.2 million GVA at the regional level (of which £11.1 million would be generated in the MCC district economy).

16.189 Residents of the Proposed Development would be anticipated to generate annual expenditure of £44.1 million per annum within the district economy and £5.7 million per annum in additional Council Tax receipts for MCC. The Proposed Development would contribute to the overall housing delivery targets for the MCC and wider area with the provision of up to 3,250 dwellings (90% of MCC's annual target).

16.190 It is estimated that the Proposed Development would have an additional maximum resident population of 6,066 of which 322 would be of primary school age and 254 would be of secondary school age.

16.191 In terms of open space and play space, the Proposed Development will deliver open space and public realm as described at paragraphs 16.116 – 16.120.

16.192 Considering the impact of the Proposed Development in conjunction with the identified Cumulative Schemes, it is expected that there would be beneficial effects in terms of employment generation and associated GVA, household expenditure impacts, Council Tax receipts and housing delivery. It has been assumed that population related impacts (e.g. the impact of the Proposed Developments on social infrastructure services such as schools and open space) would be adverse effects.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 4)

### Approach

16.193 **Table 2.5** of **Volume 2: Main Text, Chapter 2: Approach** provides a list of the committed Proposed Developments which have been identified as 'Cumulative Schemes' for the purpose of the Cumulative Effects Assessment (CEA). Of the 26 Cumulative Schemes identified, none were scoped-out of the CEA with regards to this Socioeconomics assessment.

16.194 To undertake the cumulative assessment, each of the Proposed Developments listed above were reviewed to ascertain the potential number of residential units and quantum of commercial space how this might impact existing residents during the construction of the Proposed Developments and how population growth in the area may impact upon issues which can affect socio-economic outcomes in the local area.

16.195 The construction phases of the cumulative schemes will also enable a range of employment opportunities to be supported locally. Importantly, as there are numerous large-scale Proposed Developments proposed – it is likely that a strong pipeline of construction work will be supported, therefore providing local job security.

16.196 Across the 26 Cumulative Schemes identified in Chapter 2, 20 include residential units and 21 include commercial floorspace. For those that include residential units (and therefore 'scoped in' to the cumulative assessment of operational effects), the upper range quantum of the residential units allowed for within the planning applications were reviewed to deduce the worst-case scenario for the local area. As some of the schemes within the cumulative assessment are in outline, these numbers may change. Furthermore, through subsequent reserved matters applications – there may be additional changes to the quantum of residential units. In any event, an approximate number has been arrived at which estimates that all 20 residential Proposed Developments will include a net uplift of around 7,561 residential units.

16.197 Population yields are usually based on a range of factors including tenure type, number of bedrooms and type of residential unit. In the absence of this level of information across all of the 20 Cumulative Schemes, the projected number of persons per household for the Greater Manchester region has been used as a proxy instead. This estimates 2.27 people per household from 2024[23]. By applying this figure to the estimate 7,561 residential units, it is assumed that the Proposed Developments together will yield a population in the region of 17,163 persons.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

Net Additional Construction Employment

16.198 The Application 4 Proposed Development and all 26 Cumulative Schemes would generate short to medium-term employment associated with the Demolition and Construction programmes of each Project, the extent of which would be dependent on the build cost for each of the schemes.

16.199 Information on the build cost estimate (and hence the temporary construction employment to be created) was not readily available for all but a small number of Cumulative Schemes. Based on the scale of the 26 Cumulative Schemes in terms of number of new residential units and the scale of new commercial space and using professional judgement, it is estimated that the construction employment generated will be significant.

[23] ONS (2022) Live Tables on Household Projections – Table 427 [Online] Available from: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections#history

16.200 The sensitivity of the receptor is assessed as being moderate and the magnitude of change is considered to be large at the district level and medium at the regional level. Therefore, likely residual cumulative effect from employment generated during all Works programmes considered together would be a **direct, short to medium-term, major-moderate beneficial effect** at the district level, and a **direct, short to medium-term, moderate-minor beneficial effect** at the regional level.

GVA from Net Additional Construction Employment

16.201 It is estimated that the temporary employment associated with the Demolition and Construction of the Proposed Development and the 26 Cumulative Schemes would generate a combined positive GVA to the district and regional economy.

16.202 The sensitivity of the receptor is assessed as being moderate and the magnitude of change is considered to be large at the district level and medium at the regional level. The addition of the combined GVA to the district economy as a result of the Proposed Development, together with the 26 Cumulative Schemes, directly attributable to the Demolition and Construction programme of the proposals, are considered likely to result in a **direct, short to medium-term, major-moderate beneficial** effect at the district level, and a **moderate** effect at the regional level.

## The Completed and Operational Development

Net Additional Employment

16.203 The Proposed Development, together with 21 of the 26 Cumulative Schemes would result in the delivery of employment-generating floorspace across several use classes (Use Class E which includes the former B1/A1/A2/A3/A4/A5/D2 use classes).

16.204 Where anticipated employment figures are not explicitly quantified within a schemes' planning documents available in the public domain, WSP has utilised the HCA's Employment Density Guide to estimate the likely employment generation based on the use classes proposed and the ranges suggested within the Employment Density Guide.

16.205 It is estimated that the 21 Cumulative Schemes which include employment generating floorspace would support between 3,000 and 6,500 jobs across Manchester and Salford, of which between 3,000 and 6,000 would be generated by Proposed Developments within the boundaries of Manchester City Council and up to 500 would be generated by Proposed Developments within the boundary of Salford City Council. Combined with the estimated 106 - 193 net additional jobs generated at the Proposed Development (at the district level) gives an estimated total of approximately 3,106 – 6,693 jobs.

16.206 The sensitivity of the receptor is assessed as being high and the magnitude of change is considered to be large at the district level and medium at the regional level. As a result, the likely residual cumulative effects from net

additional employment would be considered to be **direct, long-term, major beneficial** effect at the district level, and a **direct, long-term, major-moderate beneficial** effect at the regional level.

GVA from Net Additional Employment

16.207 The net additional employment created by the Proposed Development, and the 21 out of 26 Cumulative Schemes which include employment generating floorspace would have wider economic effects by generating a combined GVA to the district economy.

16.208 Based on the same methodology outlined earlier in the Chapter and using the regional average GVA of £52,007, it is estimated that the employment to be supported by the 26 Cumulative Schemes would generate a minimum GVA to the district economy of approximately £160 million annually. When combined with the Proposed Development, this will generate a minimum GVA to the district economy of approximately £166 million annually.

16.209 The sensitivity of the receptor is assessed as being high and the magnitude of change is considered to be high at the district level and medium at the regional level. As a result, the likely residual cumulative effects from net additional GVA would be considered to be **direct, long-term, major beneficial** effect at the district level, and a **direct, long-term, moderate beneficial** effect at the regional level.

Contribution to Housing Delivery

16.210 20 of the 26 Cumulative Schemes, together with the Proposed Development, include the provision of residential units and are located within MCC's boundaries and, as such, would contribute to MCC's housing targets.

16.211 The cumulative effect would result in the delivery of up to 5,039 new residential units. Along with the up to 3,250 units at the Proposed Development, this would result in a total of 8,289 units. The Manchester Housing Strategy outlines a target housing trajectory (2022-2032) of 3,600 additional dwellings per annum.

16.212 Assuming the identified cumulative schemes and the Proposed Development come forward in this time period, this equates to up to 230% of MCC's annual target.

16.213 The sensitivity of the receptor is assessed as being high and the magnitude of change is considered to be large. The likely residual cumulative effect on housing provision was therefore assessed as a **direct, long-term, major beneficial** effect at the district level.

Additional Household Expenditure

16.214 20 of the 26 Cumulative Schemes, together with the Proposed Development, include the provision of residential units and are located within MCC's boundaries and, as such, would contribute to MCC's housing targets. A total of £68 million per annum is expected to be generated by residents across these selected Cumulative schemes.

16.215 Based on the same methodology outlined earlier in this chapter, the net additional household expenditure generated by the new residential population of the 20 Cumulative Schemes (which have a residential component and are located within MCC's boundaries) would be around £68 million per annum, with a further £44.1 million per annum generated by the Proposed Development.

16.216 The sensitivity of the receptor is assessed as being high and the magnitude of change is considered to be large at the district level and medium at the regional level. As such, the likely residual cumulative effect of the local expenditure on the part of new residents of the Proposed Development together with the Cumulative Schemes would be considered **direct, long-term**, **major beneficial** effect at the district level and a **direct, long-term**, **moderate beneficial** effect at the regional level.

Additional Council Tax Receipts

16.217 The Proposed Development together with 20 of the 26 Cumulative Schemes would provide approximately 8,289 new residential units within MCC. The proposed residential units would have a beneficial effect on the annual Council Tax receipts received by MCC.

16.218 Where information was not available on the estimated Council Tax receipts in the public domain, the same methodology outlined earlier in this Chapter was used to estimate Council Tax receipts. It is estimated that the 8,289 residential units would generate Council Tax receipts to MCC of approximately £15.2 million annually.

16.219 The sensitivity of the receptor is assessed as being high and the magnitude of change is considered to be high. The likely residual cumulative effects of the additional Council Tax revenue generated by new residents of the Proposed Development and the Cumulative Schemes were therefore considered to be a **direct, long-term**, **major beneficial effect** at the district level.

Effect on Education Facilities

16.220 20 of the 26 Cumulative Schemes would increase the residential population in MCC and would therefore have the potential to increase the pressure on local education services (primary and secondary schools) to varying degrees. It is estimated that the new population yield of the Cumulative Schemes with a residential component would be approximately 17,163 people. At the time of the 2021 Census, primary aged children made up 7.9% of the MCC population and 7.4% of the SCC population.

16.221 Applying these proportions, it is estimated that the Cumulative Schemes would generate around 1,327 primary aged students and 1,064 secondary aged students. Combined with the Proposed Development, it is therefore estimated that the new population yield with the Cumulative Schemes with a residential component would be approximately 1,727 primary school aged pupils and 1,364 secondary aged pupils.

16.222 As identified within the baseline assessment, primary and secondary schools specifically within 1and 3 miles, respectively, of the centre of the site are unlikely to be able to accommodate this level of pupil growth. Even with

the potential provision of a 1FE primary school within the swing plot as part of Application 4, this will not be able to provide adequate mitigation across all Proposed Developments.

16.223 However, the above assessment does not factor for any mitigation delivered as part of the Identified Committed Schemes, given that this information is largely not publicly available and, in some cases, is yet to be fully agreed. As such, it is expected that these issues would necessarily need to or would have been considered by MCC in the determination of the planning application in the case of each Identified Committed Scheme. It is therefore assumed that any required mitigation to minimise adverse effects on education provision would be considered on a case-by-case basis with specific education-related mitigation provided to counteract any negative effects from each of the individual Identified Committed Schemes. As such, it should be concluded that the Application in combination with the Identified Committed Schemes would not have an effect on education capacity beyond the specific effects of Application 4 on its own.

16.224 The sensitivity of the receptor is assessed as being **high** and the magnitude of change is considered to be **negligible**. Taking this into account, it was considered that the likely residual cumulative effects on education services would be **negligible** at the district level.

Effect on Healthcare Capacity

16.225 The effect of the Proposed Development in combination with the Cumulative Schemes is assessed as part of **Volume 2: Main Text, Chapter 17: Health and Wellbeing** and is not considered here.

Effect on Open Space Provision

16.226 Open space and play space for the 20 Cumulative Schemes with a residential component across Manchester and Salford City areas typically comprises a balance between landscaped areas, courtyards, balconies, and dedicated play space with play equipment. Where public and play space is provided, this would be a resource for the community as well as future occupiers of the Schemes.

16.227 It would be assumed that issues relating to demand for open space and play space would have been adequately considered at the time when the Cumulative Schemes were consented.

16.228 The sensitivity of the receptor is assessed as being high and the magnitude of change is considered to be negligible. Therefore, the likely residual cumulative effect on open space and play space provided by the Proposed Development and the Cumulative Schemes would be considered to be **negligible** at the district level.

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 4)

16.229 In February 2019, the MCC Executive endorsed the Northern Gateway SRF as a material consideration in the determination of all future planning applications relevant to the area. Now referred to as Victoria North, the SRF

includes seven neighbourhoods which seeks to create 15,000 new homes across 155 hectares. Application 4 forms part of an 'Initial Proposed Development Area' of Victoria North. As the SRF is a material consideration in determining all future planning applications, a qualitative review of the Proposed Development and effects arising from the wider SRF has been considered.

16.230 Given Application 4 seeks permission for up to 3,250 dwellings, the remainder of the SRF would be expected to yield approximately 11,750 units. In addition to this, it is anticipated that a significant quantum of commercial space will also come forward, along with leisure and community uses. Considered in addition to the Cumulative Schemes, there will therefore be around 19,311 new residential units.

16.231 In considering Application 4 along with Identified Committed Schemes and the SRF, there will likely be a number of beneficial socio-economic effects. Whilst effects cannot currently be quantified, it is expected that there will be beneficial effects arising from the support for new local temporary and permanent employment, increased gross value added and beneficial contribution towards housing delivery targets, Council Tax and enhanced residential expenditure effects. Given the vast number of residential units, there may however be adverse effects upon the delivery of social services such as education. Whilst Application 4 includes the potential provision of a primary school within the Proposed Development, this school is unlikely to be able to accommodate the children yielded across the whole SRF – in conjunction with children also yielded from Proposed Developments identified as Cumulative Schemes. Furthermore, given the school remains within the swing plot – this could place further constraints upon the delivery of primary education in the local area.

16.232 However, the above assessment does not factor for any mitigation delivered as part of the Identified Committed Schemes. As such, these issues would necessarily need to have been considered by MCC in the determination of the planning application in the case of each Identified Committed Scheme. It is therefore assumed that any required mitigation to minimise adverse effects to education provision would be considered on a case-by-case basis and the Application in combination with the Identified Committed Schemes would not have an effect on education capacity beyond that of Application 4 on its own. Likewise, it can be expected that further Proposed Development of the SRF will be required to assess its own effects on school capacity and primary health care to make provision as necessary in agreement with MCC. On this assumption, it is anticipated that significant cumulative effects with the SRF are unlikely.

# NT02-NT04 (Application 5)

## Baseline Conditions (Application 5)

16.233 The baseline conditions set out here should be read in conjunction with **Volume 2: Main Text, Chapter 17: Health and Wellbeing**, as well as **Appendices 16.1, 16,2, 16,3, 16,4** and **17.1**, the Health and Wellbeing Assessment, for which there is overlap with some of the assessment of health infrastructure set out in this chapter.

16.234 The baseline assessment included in **Appendix 17.1** is also set out in relation to Application 4 (**Baseline Conditions (Application 4)**), with the same contextual analysis also applying to Application 5.

16.235 Taken together, the socioeconomic analysis set out in **Baseline Conditions (Application 4)** suggests that the local area is relatively deprived, although benefits from its close proximity to the business activities in central Manchester for employment opportunities and transport connections. Data over the last decade shows that the populations in MCC are now less likely to be unemployed, however recent data on young person participation shows that there are persistent issues relating to economic participation. On the whole, as established in **Volume 2: Main Text, Chapter 17: Health and Wellbeing**, the health of residents in the Cheetham ward is worse than England overall and there are significant issues relating to living environment deprivation.

### Local Health Infrastructure Provision

16.236 Baseline conditions on local GP and pharmacist provision is set out in **Appendix 17.1** and **Volume 2: Main Text, Chapter 17: Health and Wellbeing** and are consequently not assessed in this chapter.

### Local Education Infrastructure Provision

#### Primary School Provision

16.237 There are 11 state funded primary schools located within 1 mile of an agreed centre of the Application 4 boundary [24]. The locations of these schools are identified in **Appendix 16.2** and are set out in detail in relation to Appendix 4 (for which the search radius is the same as here), in **Table 16.10**. As set out in Table 16.10, across the 11 state-funded primary schools within a 1-mile radius of the Site, the most recent Department for Education (DfE) data on individual school capacities suggests that there is a combined capacity of 3,640 school places, with a surplus of 409 places.

16.238 At the individual school level, there is a surplus of places across all schools with the exception of Cheetwood Primary School.

[24] Gov.uk -Find and compare schools in England https://www.gov.uk/school-performance-tables [Online] [Accessed 27 February 2023].

### Secondary School Provision

16.239 There are 18 state funded secondary schools located within 3 miles of an agreed centre of the Application 4 boundary[25]. The locations of these schools are identified in **Appendix 16.3**. Details regarding the 18 schools' respective capacities, pupil numbers on roll, and whether they have a surplus or deficit in school places are provided in **Table 16.11** relating to Application 4 (where the search radius and criteria are the same as here).

16.240 Across the 18 state-funded secondary schools within a 3-mile radius of the Site, the most recent Department for Education (DfE) data on individual school capacities suggests that there is a combined capacity of 17,850 school places, with a surplus of 2,769 places.

16.241 In addition to these places, the Abraham Moss Community School also provides state-funded secondary education, alongside catering to other age groups as an all-through school.

### Open Space

16.242 As set out in **Appendix 16.2**, there are 11 parks and green spaces within 1 mile of the centre of the Site (as applied to Application 4). This has been informed by an audit undertaken by WSP, using OS Greenspace data and supplementary information from MCC's website.

16.243 There are a range of facilities provided across these parks and green spaces, which are set out in **Table 16.12** in relation to Application 4, for which the search criteria are the same. These parks and green spaces include a cricket square at Bignor Street Park and various Multi Use Games Areas (MUGAs). Six of these local parks and green spaces include dedicated play space for children of different ages, while Queens Park and Smedley Fields have dedicated football pitches.

16.244 In addition to the parks and open spaces identified above, the Victoria North SRF incorporates a new City River Park and the Vision is set out in the SRF. The City River Park will cover circa. 46 hectares and will become one of Manchester's largest City Centre green spaces.

16.245 In addition to this, the Irk Valley Project will also provide additional space for new residents. The Irk Valley Project aims to rejuvenate the green space for the benefit of the community through a process of environmental developments, community involvement and sensitive habitat management. The project spans from St Michaels and Angel Meadow, near Manchester Victoria Railway Station, to the M60 boundary at Heaton Park, in the North, and heading eastwards along the Moston Brook tributary.

16.246 MCC's Application 2 (133143/VO/2022) incorporated and proposes 3.03 hectares of this wider open space provision in the form of a new park at St Catherines Wood which is adjacent to the site boundary for Application 4 and forms part of the River City Park proposed in the SRF. As this application was approved in July 2022, this portion of open

[25] Gov.uk (2023) Get Information about Schools [Online] Available from: https://www.get-information-schools.service.gov.uk/ [Accessed 27 February 2023].

space will be completed by MCC by the time the Proposed Development is Complete and Operational, therefore this shall form part of the future baseline for open space in the local area.

16.247 Of the parks and green spaces listed in **Table 16.12**, five were identified as having facilities described as "play space". The quantity of this could not be established, but the format of the play space was identified as primarily children's playgrounds.

## Embedded Mitigation (Application 5)

### Demolition and Construction

16.248 No mitigation measures have been embedded into the Proposed Development as part of the Demolition and Construction phases.

### The Completed and Operational Development

16.249 The Completed and Operational Proposed Development as part of Application 5 comprises a number of elements which will mitigate some of the adverse effects of the proposals. [WE NEED TO SET THEM OUT HERE]The effect of any mitigation [AGREED – WE NEED TO BE V CLEAR]is set out in the "Assessment of Likely Significant Effects" section.

## Assessment of Likely Significant Effects (Application 5)

### Demolition and Construction

16.250 Using the build cost estimate provided by the Applicant (approximately £330 million to £380 million) and the average turnover per construction job in 2020 (£175,840) as outlined in the Assessment Methodology, it is estimated that the Demolition and Construction works as part of Application 5 would generate between 1,877 and 2,161 person years of temporary employment during the 96-month (eight year) Works programme. This equates to on average 235 to 270 employees per annum over the Works programme.

#### Net Additional Construction Employment

16.251 Based on the assumptions outlined in **Table 16.3**, the total number of net additional temporary jobs arising from the construction of the Proposed Development are detailed in **Table 16.21** below. It should be noted that numbers may not quite add due to rounding at each calculation stage. For the purposes of this assessment, the lower range potential number of jobs (1,877) has been assessed as a worst-case scenario.

***Table 16.21*** *Additionality on construction jobs (person years of employment)*

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| **Operational workers on-site (gross, direct)** | 1,877 | |
| **Leakage to workers from outside impact area** | -1,169 | -109 |

| | | |
|---|---|---|
| **Displacement of other activities** | -177 | -442 |
| **Operational workers on-site (net, direct)** | 531 | 1,326 |
| **Employment off-site induced by construction employment (net, indirect)** | 53 | 663 |
| **Total additional employment from construction of Proposed Development** | **584** | **1,988** |

16.252 As shown in **Table 16.21** whilst there would be a minimum of 1,877 gross construction jobs supported, taking into account leakage, displacement and multiplier effects, this equates to approximately 584 net additional construction jobs for the district area being supported (531 jobs on-site and 53 in the supply chain).

16.253 More broadly at the regional scale, the construction activity required to build the Proposed Development would support 1,404 jobs across the North West (excluding residents of MCC). This would be for the entire Works Programme.

16.254 As set out in **Appendix 17.1: Baseline Assessment of Health and Wellbeing Conditions**, as of 2021, 2.6% of all jobs located in MCC are in the Construction Industry, representing approximately 11,000 jobs[26]. The creation of 584 construction jobs over eight years would equate to around 73 jobs per year. This would represent a 0.7% uplift in construction employment across MCC. The ONS estimates that there are approximately 187,000 construction jobs across the North West of England[27], therefore the generation of 1,988 construction jobs (249 per year) equates to an 0.1% increase at the regional (North West) level. The magnitude of change would be considered to be **medium** at the district level and **small** at the regional level.

16.255 With the sensitivity of the receptor assessed as moderate, the generation of additional temporary construction employment has been assessed as a **direct, short to medium-term, minor beneficial effect** at the district level and **direct, short to medium-term, minor beneficial effect** at the regional level.

### GVA added by direct employment generated from Demolition and Construction

16.256 Based on gross value added construction job in 2020 of £73,458, it is estimated that the 249 net additional construction jobs generated by the Proposed Development on average per year would create GVA to the regional economy of around £18.3 million, of which £5.4 million would be within the district economy.

16.257 According to the ONS[28], the total construction GVA generated by the North West and Manchester in 2020 (the latest available data) was £10.1 billion and £808 million respectively. The generation of £18.3 million and £5.4 million

[26] ONS (2023) Labour Market Profile – Manchester [Online] Available from: https://www.nomisweb.co.uk/reports/lmp/la/1946157083/report.aspx [Accessed 27 February 2023]
[27] ONS (2023) 2021 Construction Statistics Annual Tables [Online] [Accessed 16 February 2023].
[28] ONS. Regional gross value added by industry: local authorities by ITL1 region. 2020. [Online] [Accessed 16 February 2023].

would therefore represent a 0.2% and 0.7% uplift in GVA respectively across the North West and MCC. As a result, the magnitude of change is considered to be **small** at the district level and regional level.

16.258 With the sensitivity of the receptor assessed as moderate (**Table 16.5** - given the temporary nature of the effect), the generation of GVA from the temporary construction employment has been assessed as a **direct, short to medium-term, minor beneficial effect** at the district level and **direct, short to medium-term, beneficial effect** of **minor** significance at the regional level.

## The Completed and Operational Development

### Population Yield

16.259 Using the method outlined earlier in this Chapter, and detailed in **Appendix 16.1**, the assumed net additional population yield of the completed and operational Application 5 Proposed Development would be 2,593 persons (based on the unit schedule and assumed tenure split detailed in **Table 16.14** As set out elsewhere in this chapter, this figure is based on a bespoke population yield calculator developed by MCC, which provides benchmark figures for residents per household based on number of bedrooms and tenure.

16.260 As specified elsewhere in this chapter, this population yield figure has been based off one possible tenure split scenario, which could change subject to further viability discussion. The population yield by specific age group is detailed in **Table 16.22**

***Table 16.22**: Estimated Population Yield Assumed for Proposed Development*

| Age Group | Total Population* |
|---|---|
| **0 to 4 years** | 97 |
| **5 to 11 years** | 108 |
| **12 to 15 years** | 62 |
| **16 to 64 years** | 2,255 |
| **65 years plus** | 73 |
| **Total** | **2,596** |

* Numbers may not wholly add up due to rounding

16.261 The net additional population yield of the completed and operational Proposed Development, is estimated to be 2,593 persons.

### Gross, on-Site Employment

16.262 The Application 5 Proposed Development includes non-residential floorspace (comprising Use Classes E, F and Sui Generis) that would generate employment at the Site as part of the Clubhouse provision included within the Proposed Development.

16.263 **Table 16.23** shows the estimated gross, on-Site employment generated from the non-residential elements of the completed and operational Proposed Development. As set out in the Assessment Methodology an assumption has been made that due to the nature of the Clubhouses, an employment density of 100 sqm GIA per FTE job has been used.

***Table 16.23*** *Gross, On-Site Employment Generation from the Complete and Operational Proposed Development*

| Floorspace Type | Employment – Lower Value | | Employment – Upper Value | |
|---|---|---|---|---|
| | Scenario 1 | Scenario 2 | Scenario 1 | Scenario 2 |
| **Non-Residential** | 90 | 93 | 177 | 187 |
| **Clubhouse** | 21.5 | 21.5 | 21.5 | 21.5 |
| **Total** | **111.5** | **114.5** | **198.5** | **208.5** |
| **Lower value** | **111.5** | | | |
| **Upper Value** | **208.5** | | | |

16.264 Based on the assumptions set out in the Assessment Methodology, it is calculated that the completed and operational Proposed Development would support between 108 and 198 FTE permanent jobs.

## Net Additional Employment

16.265 Based on the assumptions outlined in the Assessment Methodology (**Table 16.3**), the total number of net additional jobs arising from the Proposed Development is detailed in **Table 16.24** and **Table 16.25** below. It should be noted that the numbers may not quite add due to rounding at each calculation stage.

***Table 16.24****: Additionality on Permanent Employment- Minimum Scenario*

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| **Operational workers on-site (gross, direct)** | 111 | |
| **Leakage to workers from outside impact area** | -69 | -6 |
| **Displacement of other activities** | -10 | -26 |
| **Operational workers on-site (net, direct)** | 31 | 78 |
| **Employment off-site induced by operational employment (net, indirect)** | 3 | 39 |
| **Total additional employment from operation of Proposed Development** | **35** | **118** |

***Table 16.25*** *Additionality on Permanent Employment- Maximum Scenario*

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| **Operational workers on-site (gross, direct)** | 208 | |

| | | |
|---|---|---|
| **Leakage to workers from outside impact area** | -130 | -12 |
| **Displacement of other activities** | -20 | -49 |
| **Operational workers on-site (net, direct)** | 59 | 147 |
| **Employment off-site induced by operational employment (net, indirect)** | 6 | 73 |
| **Total additional employment from operation of Proposed Development** | **65** | **220** |

16.266 As shown in **Table 16.24** under a minimum employment scenario whilst there would be 118 gross operational jobs supported, taking into account leakage, displacement and multiplier effects, this equates to approximately 35 net additional jobs supported across the District. More broadly at the regional level, the Proposed Development would support 83 net additional jobs under a minimum employment scenario (taking the total net additional employment supported to 118).

16.267 As shown in **Table 16.25** a maximum employment scenario, whilst there would be 220 gross operational jobs supported, taking into account leakage, displacement and multiplier effects, this equates to approximately 65 net additional jobs for the District area being supported. More broadly at the regional level, the Proposed Development would support an additional 155 jobs under a maximum employment scenario (taking the total net additional employment supported to 220).

16.268 In summary the Application 5 Proposed Development can expect to support between 35 and 65 net additional jobs at the district level, with an additional 83 to 155 jobs at the regional level. Taken together, the Proposed Development could support between 118 and 220 net additional FTE jobs.

16.269 As set out in **Appendix 17.1: Baseline Assessment of Health and Wellbeing Conditions,** MCC supported approximately 471,000 jobs in 2021. The creation of between 35 and 65 jobs in MCC would represent an uplift in employment of between 0.01% and 0.007% across the City (District area).

16.270 The ONS estimates that there are approximately 3.5 million jobs across the North West, therefore the generation of between 118 and 220 operational jobs equates to an increase of 0.003% and 0.006% at the regional (North West England) level, corresponding to a change of a **small** magnitude.

16.271 With the sensitivity of the receptor assessed as **high** and the magnitude assessed as **small**, the generation of additional employment has been assessed as a **direct, long-term**, **beneficial** effect of **minor** significance at the district level and regional level.

### GVA from Net Additional Employment

16.272 The net additional employment created by the Proposed Development would have wider economic effects by generating gross value added to the district and regional economy.

16.273 To estimate the annual GVA created by the complete and operational Proposed Development information from the ONS Sub-Regional Productivity tables was used.

16.274 Detailed information on GVA per filled job is provided by the ONS Regional Economic Analysis Sub-Regional Productivity Tables[29]. Table B3 reveals that GVA per filled job for MCC was £57,643 in 2020, the most recent year for which data is currently available. Table B3 also indicates that the GVA per filled job for the North West region was £52,007 in 2020.

16.275 Based on this evidence, it was estimated that the total jobs to be supported by the Proposed Development and the supply chain linkages could contribute approximate GVA to the North West economy of between £4.3 million and £8.1 million annually in perpetuity. Of this, between £2.0 million and £3.7 million would be generated within the district (MCC) economy (based on between 35 and 65 FTE net additional jobs identified in **Table 16.24** and **Table 16.25**.

16.276 According to the ONS, the total GVA generated in MCC and the North West of England in 2020 was £24.8 billion and £186.9 billion respectively[30]. The generation of the additional GVA by the employment supported by the Proposed Development therefore represents an uplift of between 0.008% and 0.02% at the district level, and between 0.002% and 0.004% at the regional level. As a result, the magnitude of change is considered to be **small** at both the district and regional level, under both scenarios.

16.277 With the sensitivity of the receptor assessed as **high** (**Table 16.5**), the generation of additional GVA has been assessed as a **direct, long-term, beneficial** effect of **minor** significance at the district and regional level.

### Additional Household Expenditure

16.278 The report on Family Spending, published by the ONS in July 2022, provides data for the financial year ending 2021 on household expenditure. The results reflect the data from the Living Cost and Food Survey completed across the United Kingdom, as described in the Assessment Methodology.

16.279 Family Spending reveals that the average weekly household expenditure in the North West for the period between the financial year ending 2019 and financial year ending 2021 was £507.80. The survey also shows that, on average, each household in the North West spends £73.20 per week on net housing (excluding mortgage interest payments and Council Tax), fuel and power costs. Since this spending typically goes to major national institutions with only modest impacts on the district economy, this spending has been deducted from average weekly household expenditure.

[29] ONS. Sub regional Productivity: Labour Productivity (GVA per Hour Worked and GVA per filled job) Indices. by UK NUTS2 and NUTS3 Subregions. 2021. [Accessed 16 February 2023].
[30] ONS (2020) GDP Datasets [Online] Available from: https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/regionalgrossdomesticproductallnutslevelregions

16.280 This means that for the period between the financial year ending 2019 and financial year ending 2021, (net) average weekly household expenditure in the North West was £435, which is equivalent to an annual figure of £22,620. Assuming that VAT of 20% had been paid on all of this spending, the average annual household expenditure (net of indirect taxation and housing, fuel and power costs) was £18,096 for the North West during the period April 2019 to March 2021.

16.281 Based on this analysis and the net addition of up to 1,550 net additional households to the district area as part of Application 5, it is estimated that the gross additional household expenditure generated by the new residential population at the Site would be around £28 million per annum. This assumes that the 1,550 net additional households demonstrate spending patterns typical of the North West as a whole.

16.282 This additional household expenditure of £28 million per annum is a gross effect. Some of this spending would clearly leak out of the area. It has been assumed that 25% of the additional household expenditure generated by the new residential population would be spent outside the district impact area.

16.283 This means that the net additional household expenditure generated by the new residential population at the Proposed Development would be approximately £21 million per annum to the MCC local economy. The effect of the net additional household expenditure would be felt on completion and occupation of all of the new residential dwellings at the Proposed Development.

16.284 The magnitude of change is considered to be **medium** at the district level and **small** at the regional level. The assessment of magnitude reflects the fact that the Proposed Development would result in an injection into the economy in the form of increased consumer expenditure. This would be generated per annum and would be of benefit to the District primarily, with some regional benefits due to leakage effects.

16.285 With the sensitivity of the receptor assessed as **high (Table 16.5)**, the generation of £21 million per annum in household expenditure has been assessed as a direct, long-term **beneficial effect** of **moderate-minor** significance at the district level, and a direct, long-term **minor beneficial effect** at the regional level.

### Additional Council Tax Receipts

16.286 The proposed residential units would have a beneficial effect on the annual Council Tax receipts received by MCC. Council Tax, for a Band D property in MCC would amount to £1,872.59 per annum based on 2022/23 figures. The council tax receivable to MCC from a Band D property with a single person discount (25% discount) would therefore be £1,404.38[31].

16.287 Based on the assumptions outlined in the Assessment Methodology, it is estimated that the 1,550 net additional households at the Site would generate additional Council Tax receipts for MCC of £2,902,515 per annum at 2022/23

[31] Manchester City Council Tax Bands [Online] Available from: https://www.manchester.gov.uk/info/500336/how_its_worked_out/6306/council_tax_bands_and_charges [Accessed 16 February 2023].

prices, factoring for all one-bedroom units being single occupancy and therefore eligible for the single person discount.

16.288 The effect of the increased Council Tax receipts would be felt on completion and occupation of all of the new residential dwellings at the Proposed Development.

16.289 In 2022/23 MCC received a total of £217.2 million in Council Tax revenues[32]. The generation of £2,902,515 equates to approximately 1.3% of this budget. As a result, the magnitude of change is considered to be **Medium**.

16.290 With the sensitivity of the receptor assessed as **high,** the generation of £2.9 million per annum in Council Tax revenue was assessed as a **direct, long-term**, **beneficial** effect of **moderate-minor** significance at the district level.

### Housing Delivery

16.291 The Proposed Development would provide up to 1,550 units, with an indicative split shown below for the purposes of calculating the overall population yield.

***Table 16.26**: Residential Unit Numbers within the Complete and Operational Proposed Development*

| Tenure | 1-bed* | 2-bed* | 3-bed* | Total* |
|---|---|---|---|---|
| **Intermediate** | 32 | 41 | 4 | 77 |
| **Private rent** | 255 | 332 | 32 | 619 |
| **Private sale** | 351 | 456 | 45 | 852 |
| **%** | 41% | 54% | 5% | 100% |
| **Total** | **639** | **829** | **81** | **1,549** |

- Numbers may not wholly add up due to rounding

16.292 As outlined in the Baseline Conditions section of this Chapter, the Site is currently vacant. The Proposed Development would therefore result in the provision of up to 1,550 net additional dwellings.

16.293 The provision of up to 1,550 net additional units is equivalent to 43% of MCC's annual delivery target of 3,600 units per year (2022 – 2032)) in the Manchester Housing Strategy 2022-2032. As a result, the magnitude of change is considered to be **Medium**.

16.294 With the sensitivity of the receptor assessed as **high**, the delivery of up to 1,550 net additional residential units on Site would be considered to be a direct, long-term **beneficial** effect of **major-moderate significance** at the district level**.**

[32] DLUHC, Council Tax receipts live table, England, Q3 2022 to 2023- Total receipts of Council Taxes collected during the Financial Year 2022/2023 [Online]. Available from: https://www.gov.uk/government/statistical-data-sets/live-tables-on-local-government-finance [Accessed 16 February 2023]

## Education Provision

Primary School Provision

16.295 Based on the estimated population yield, the Proposed Development is estimated to yield a requirement for an additional 108 primary school places once complete and operational (see **Appendix 16.1**).

16.296 As set out earlier in this Chapter, there are 11 state funded primary schools within 1 mile of the Site. Across the 11 schools there are a total of 409 surplus pupil places.

16.297 In view of the above, there is likely to be sufficient capacity across the primary schools surrounding the Site to accommodate the additional 108 pupils generated by the Proposed Development. There would remain a surplus of 301 places. The magnitude of change is therefore considered to be **negligible**.

16.298 With the sensitivity of the receptor assessed as **high** (**Table 16.5**, the likely effect of the new resident population of the Proposed Development on the supply of primary school places is considered to be **negligible** at the district level.

Secondary School Provision

16.299 Based on the estimated population yield, the Application 5 Proposed Development is estimated to yield a requirement for an additional 62 secondary school places once complete and operational (see **Appendix 16.1**).

16.300 As set out earlier in this chapter, there are 18 state funded secondary schools within 3 miles of the Site. Across the 10 schools there is a total of 2,769 surplus pupil places.

16.301 In view of the above, there is likely to be sufficient capacity across the secondary schools surrounding the Site to accommodate the additional 62 pupils generated by the Application 5 Proposed Development. There would still be a surplus of 2,707 places. The magnitude of change is therefore considered to be **negligible**.

16.302 With the sensitivity of the receptor assessed as **high** (**Table 16.5**, the likely effect of the new resident population of the Proposed Development on the supply of secondary school places is considered to be **negligible**.

## GP Provision

16.303 The effect of the Proposed Development on GP provision is not set out in this section and is instead covered in **Volume 2: Main Text, Chapter 17: Health and Wellbeing**.

## Effect on Open Space Provision

16.304 The Full Application 5 Development will provide a series of new public and private open spaces, with a selection of squares, gardens and attractive pedestrian routes. The focus is using 'Wild Urbanism' and Biophilic design to connect green spaces. The Illustrative Masterplan sets out the concept of Wild Urbanism: a vision of merging nature

and city life, bringing the Irk Valley into the city and bringing urban elements to the valley. This approach will highlight the Site's ecological qualities and diverse mix of uses and capitalise on the unique topography, to create a memorable place to live, work, and visit.

16.305 The design of the streetscape and courtyard for the NT02-04 development plots embraces this vision through the application of biophilic design principles, reinforcing connections between communities, the built environment and urban nature. The masterplan ambition is to maximise green connections through both public realm and architectural interventions. New Town is a key connection between the River Irk valley and Angel Meadow Park. The streets and courtyards will act as green stepping stones, connecting St. Catherine's Wood to Victoria North and Angel Meadow Park beyond. The natural forms and structure of the woodland will be expressed through the landscape and planting design. Furthermore, Travis Square provides an opportunity to create lush green environment, running north- south between Dantzic Street and Dulwich Street, comprised of woodland and woodland edge planting typologies.

16.306 The courtyards of the NT02, NT03 and NT04 plots will offer the tranquillity and enclosure of woodland glades. Breaks in the building form will create framed views out to the surrounding streetscape, river valley and St Catherine's Wood and provide intriguing glimpses of nature and courtyard life as people pass along the surrounding streets.

16.307 The scheme will also see the introduction of Launch Pads within NT02, NT03 and NT04. Launch Pads are a new street typology that secure active space within the public realm. By reducing the number of on street car parking spaces, there exists more space for public life. Launch Pads are approximately 25sqm, similar to that of two car parking spaces. They are activated through either commercial, recreational or ecological uses.

16.308 These will be split between Dulwich West and South; Dulwich West hosts commercial orientated Launch Pads that will serve as a public facing spill out zone for the adjacent commercial tenants and provide space for pop up events and markets. Dulwich Street South is populated with residential orientated Launch Pads which relate better to the residential architecture.

16.309 Future residents will also benefit from the proximity to the open space coming forward as part of Application 2. This will ensure that new residents and workers of the complete and operational Full Application 5 Development will be able to easily access open space for recreation purposes. This has been assessed as having a **Minor Beneficial** long-term permanent impact upon future residents and workers of the Full Application 5 Development which is **Not Significant**.

## Additional Mitigation / Enhancement Measures (Application 5)

### Demolition and Construction

16.310 No further mitigation has been identified as being required for the effects of the Demolition and Construction phase of the project.

### The Completed and Operational Development

#### Primary School Provision

16.311 No further mitigation has been identified as being required to factor for the potential effects of the new population on local primary school provision. This will be subject to ongoing discussions with MCC as the Proposed Development progresses.

#### Secondary School Provision

16.312 No further mitigation has been identified as being required to factor for the potential effects of the new population on local secondary school provision. This will be subject to ongoing discussions with MCC as the Proposed Development progresses.

## Likely Residual Effects of the Proposed Development and their Significance (Application 5)

### Demolition and Construction

#### Direct Employment Generated from Demolition and Construction and Associated Gross Value Added by Direct Employment

16.313 The Demolition and Construction programme would give rise to additional employment and additional GVA to the district and regional economy. All such effects were judged to be beneficial. Accordingly, no additional mitigation would be required, and the likely residual effects of the Works would be the same as the likely effects of the Works. That is:

- **Direct employment generated from Demolition and Construction**: Direct, short to medium-term, **beneficial** effect of **minor** significance at the district level and a **beneficial** effect of **minor** significance at the regional level.
- **GVA added by direct employment generated from Demolition and Construction**: Direct, short to medium-term, **beneficial** effect of **moderate** significance at the district level and a **beneficial** effect of **minor** significance at the regional level.

### The Completed and Operational Development

#### Net Additional Employment Opportunities, Gross Value Added to the Economy and Local Expenditure from the Completed and Operational Proposed Development's Residents

16.314 The completed and operational Proposed Development would give rise to additional employment opportunities, additional GVA to the district economy and additional expenditure from the introduced residential population. All such effects were judged to be beneficial at the district level. Accordingly, no mitigation would be required, and the

likely residual effect of the completed and operational Proposed Development would be the same as the likely effects of the completed and operational Proposed Development. That is:

- Net Additional Employment Opportunities: Direct, long term, **beneficial** effect of **minor** significance at the District level, **beneficial** effect of **minor** significance at the Regional level.
- Gross Value Added to the Economy: Direct, long term, **beneficial** effect of **minor** significance at the District level, **beneficial** effect of **minor** significance at the Regional level.
- Expenditure from Residents of the Completed and Operational Proposed Development: Direct, long term, **beneficial** effect of **moderate-minor** significance at the District level, **beneficial** effect of **minor** significance at the Regional level.

### Additional Council Tax Receipts and Contribution to Housing Delivery

16.315 The completed and operational Proposed Development would give rise to an increased population within the local areas, resulting in total increased amount of council tax receipts. Additionally, the Proposed Development itself would directly contribute to the housing delivery targets of the district area. These effects were judged to be beneficial at the district level. Accordingly, no mitigation would be required, and the likely residual effect of the completed and operational Proposed Development would be the same as the likely effects of the completed and operational Proposed Development. That is:

- Additional Council Tax Receipts: Direct, long term, **beneficial** effect of **moderate-minor** significance at the district level.
- Contribution to Housing delivery: Direct, long term, **beneficial** effect of **moderate-minor** significance at the district level.

### Effect on Education and Healthcare Capacity

16.316 The completed and operational Proposed Development would give rise to an increased population within the District area and as such would result in an increased demand on the existing education (primary and secondary schools) and healthcare (GPs) facilities.

16.317 As quantified in the baseline and within the assessment, it is considered that there is sufficient capacity within existing primary school and secondary school education facilities to provide for the additional demand for services that the new population on the Site would create. In considering this, the likely residual effect of the completed and operational Proposed Development would be:

- **Effect on Primary School Provision:** Negligible effect of negligible significance.
- **Effect on Secondary School Provision:** Negligible effect of negligible significance.

### Effect on Open Space Provision

16.318 The completed and operational Proposed Development would give rise to an increased population within the District area which would require access to open space facilities and play space for children.

16.319 The following effects are estimated for open space and play space provision:

- Effect on Open Space Provision: Minor Beneficial long-term permanent impact upon future residents and workers of the Full Application 5 Development which is insignificant.

16.320 A summary of all relevant effects have been summarised in **Table 16.27.**

***Table 16.27**: Residual Effects Summary*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| *Construction and Demolition* | | | |
| **Direct employment generated from Demolition and Construction** | Direct, short to medium-term, minor beneficial effect at the district level and minor beneficial effect at the regional level. | None required | Direct, short to medium-term, **minor beneficial** effect at the district level and **minor beneficial** effect at the regional level. |
| **GVA added by direct employment generated from Demolition and Construction** | Direct, short to medium-term, minor beneficial effect at the district level and minor beneficial effect at the regional level. | None required | Direct, short to medium-term, **minor beneficial** effect at the district level and **minor beneficial** effect at the regional level. |
| ***The Completed and Operational Development*** | | | |
| **Net Additional Employment Opportunities** | Direct, long-term minor beneficial effect at the district level and regional level. | None required | Direct, long-term **minor beneficial** effect at the district level and regional level. |
| **Gross Value Added to the Economy** | Direct, long-term minor beneficial effect at the district level and regional level. | None required | Direct, long-term **minor beneficial** effect at the district level and regional level. |
| **Expenditure from Residents of the Completed and Operational Proposed Development** | Direct, long-term, moderate-minor beneficial effect at the district level, and a minor | None required | Direct, long-term, **moderate-minor beneficial** effect at the district level, and a **minor beneficial** effect at the regional level. |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| | beneficial effect at the regional level. | | |
| **Additional Council Tax Receipts** | Direct, long-term, moderate-minor beneficial effect at the district level. | None required | Direct, long-term, **moderate-minor beneficial** effect at the district level. |
| **Contribution to Housing delivery** | Direct, long-term, moderate-minor beneficial effect at the district level. | None required | Direct, long-term, **moderate-minor beneficial** effect at the district level. |
| **Effect on Primary School Provision** | Negligible | None required | **Negligible** |
| **Effect on Secondary School Provision** | Negligible | None required | **Negligible** |
| **Effect on Open Space Provision** | Direct, long-term minor beneficial, which is not significant. | None provided | **Direct**, long-term **minor beneficial**, which is **not significant**. |

## Conclusions (Application 5)

16.321 An assessment of the likely socio-economic effects associated with demolition and construction and the completed and operational Proposed Development was undertaken, using a range of methods. The demolition and construction phase would generate up to 1,988 net additional temporary construction jobs over the construction period, of which approximately 584 would likely be taken up by MCC residents. These temporary construction jobs would generate around 18.3 million in GVA per year of the Works to the regional economy (of which £5.4 million could be generated in the MCC District economy).

16.322 It is estimated that the Proposed Development would result in an additional population of 2,593 residents. The Proposed Development would also expect to support up to 210 net additional jobs regionally, of which up to 62 could be likely taken up by MCC residents. This would generate up to £7.7 million in GVA per year at the regional level (of which £3.6 million could be generated in the MCC district economy).

16.323 Residents of the Proposed Development would be anticipated to generate annual expenditure of £21 million per annum within the district economy and £2.9 million per annum in additional Council Tax receipts for MCC. The Proposed Development would contribute to the overall housing delivery targets for the MCC and wider area with the provision of up to 1,550 dwellings (43% of MCC's annual target).

16.324 It is estimated that the Proposed Development would have an additional maximum resident population of 2,593 of which 108 would be of primary school age and 62 would be of secondary school age.

16.325 In terms of open space and play space, the Proposed Development will deliver open space as described at paragraphs 16.310 – 16.315 above.

16.326 Considering the impact of the Proposed Development in conjunction with the identified Cumulative Schemes, it is expected that there would be beneficial effects in terms of employment generation and associated GVA, household expenditure impacts, Council Tax receipts and housing delivery. It has been assumed that population related impacts (e.g. the impact of the Proposed Developments on social infrastructure services such as schools and open space) would be adverse effects.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 5)

### Approach

16.327 **Table 2.5** of **Volume 2: Main Text, Chapter 2: Approach** provides a list of the committed Proposed Developments which have been identified as 'Cumulative Schemes' for the purpose of the Cumulative Effects Assessment (CEA). Of the 26 Cumulative Schemes identified, none were scoped-out of the CEA with regards to this Socioeconomics Assessment.

16.328 The approach to calculating cumulative population, floorspace and employment associated with floorspace across the Cumulative Schemes is exactly in line with the approach taken for calculating the Assessment of Cumulative Effects for Application 4 and the methodology is set out in detail in the corresponding section of this Chapter- **Assessment of Cumulative Effects with Identified Committed Schemes (Application 4)**.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

Net Additional Construction Employment

16.329 The Proposed Development and all 26 Cumulative Schemes would generate short to medium-term employment associated with the Demolition and Construction programmes of each Project, the extent of which would be dependent on the build cost for each of the schemes.

16.330 Information on the build cost estimate (and hence the temporary construction employment to be created) was not readily available for all but a small number of Cumulative Schemes. Based on the scale of the 26 Cumulative Schemes in terms of number of new residential units and the scale of new commercial space and using professional judgement, it is estimated that the construction employment generated will be significant.

16.331 Given the high sensitivity of the receptor and the large magnitude of the effect at the district level and medium effect at the region level, the likely residual cumulative effect from employment generated during all Works programmes considered together would be a **direct, short to medium-term, major beneficial** effect at the district level and a **direct, short to medium-term, moderate beneficial** effect at the regional level.

GVA from Net Additional Construction Employment

16.332 It is estimated that the temporary employment associated with the Demolition and Construction of the Proposed Development and the 26 Cumulative Schemes would generate a combined positive GVA to the district and regional economy. The receptor has been identified as having high sensitivity and the magnitude of the effect of the combined Cumulative Schemes on construction employment is considered to be large.

16.333 As such, the addition of the combined GVA to the district economy as a result of the Proposed Development, together with the 26 Cumulative Schemes, directly attributable to the Demolition and Construction programme of the proposals, are considered likely to result in a **direct, short to medium-term, major beneficial** effect at the district level and a **direct, short to medium-term, moderate beneficial** effect at the regional level.

## The Completed and Operational Development

Net Additional Employment

16.334 As set out above in the Application 4 assessment of cumulative effects with identified committed schemes, it is estimated that the 21 Cumulative Schemes which include employment generating floorspace would support between 3,000 and 6,500 jobs across Manchester and Salford, of which between 3,000 and 6,000 would be generated by Proposed Developments within the boundaries of Manchester City Council and up to 500 would be generated by Proposed Developments within the boundary of Salford City Council. Combined with the estimated 35 to 68 net additional jobs generated at the Proposed Development (at the district level) gives an estimated total of approximately 3,035 and 6,568 jobs.

16.335 The sensitivity of the receptor is considered to be high and the scale of employment relative to MCC's total employment (listed in the equivalent section for **Application 4**) represents a change of large magnitude. As a result, the likely residual cumulative effects from net additional employment would be considered to result in a **direct, long-term major beneficial** effect at the district level, and a **direct, long-term moderate beneficial** effect at the regional level.

GVA from Net Additional Employment

16.336 The net additional employment created by the Proposed Development, and the 21 out of 26 Cumulative Schemes which include employment generating floorspace would have wider economic effects by generating a combined GVA to the district economy.

16.337 Based on the same methodology outlined earlier in the Chapter and using the regional average GVA of £52,007, it is estimated that the employment to be supported by the 26 Cumulative Schemes would generate a minimum GVA to the district economy of approximately £160 million annually. When combined with the Proposed Development, this will generate a minimum GVA to the district economy of approximately £162 million to £164 million annually.

16.338 The sensitivity of the receptor is considered to be high and the scale of GVA generated relative to MCC's total annual GVA generation (listed in the equivalent section for **Application 4**) represents a change of large magnitude at the district level and of medium magnitude at the regional level. As such, the cumulative addition of the GVA to the economy was therefore considered likely to result in a **direct, long-term beneficial** effect of **major** significance at the district level and **major-moderate** significance at the regional level.

Contribution to Housing Delivery

16.339 20 of the 26 Cumulative Schemes, together with the Proposed Development, include the provision of residential units and are located within MCC's boundaries and, as such, would contribute to MCC's housing targets.

16.340 The cumulative effect would result in the delivery of up to 5,039 new residential units. Along with the up to 1,550 units at the Proposed Development, this would result in a total of 6,589 units. The Manchester Housing Strategy outlines a target housing trajectory (2022-2032) of 3,600 additional dwellings per annum.

16.341 Assuming the identified cumulative schemes and the Proposed Development come forward in this time period, this equates to up to 183% of MCC's annual target.

16.342 The sensitivity of the receptor is considered to be high and the scale of housing delivered as part of the Cumulative Schemes relative to MCC's total annual target (listed in the equivalent section for **Application 4**) represents a change of large magnitude at the district level. As such, the likely residual cumulative effect on housing provision was assessed as a **direct, long-term, major beneficial** effect at the district level.

Additional Household Expenditure

16.343 20 of the 26 Cumulative Schemes, together with the Proposed Development, include the provision of residential units and are located within MCC's boundaries and, as such, would contribute to MCC's housing targets. A total of £68 million per annum is expected to be generated by residents across these selected Cumulative schemes.

16.344 Based on the same methodology outlined earlier in this Chapter, the net additional household expenditure generated by the new residential population at the Proposed Development and 20 Cumulative Schemes (which have a residential component and are located within MCC's boundaries) would be around £89.3 million per annum.

16.345 The sensitivity of the receptor is considered to be high and the scale of housing delivered as part of the Cumulative Schemes relative to MCC's total annual target (listed in the equivalent section for **Application 4**) and the scale of local spending associated with it represents a change of large magnitude at the district level. As such, the likely

residual cumulative effect of the local expenditure on the part of new residents of the Proposed Development together with the Cumulative Schemes would be considered to be a **direct, long-term, major beneficial** effect at the district level and a **direct, long-term, moderate beneficial** effect at the regional level.

Additional Council Tax Receipts

16.346 The Proposed Development together with 20 of the 26 Cumulative Schemes would provide approximately 5,039 new residential units within MCC. The proposed residential units would have a beneficial effect on the annual Council Tax receipts received by MCC.

16.347 The same methodology outlined earlier in this Chapter was used to estimate Council Tax receipts. It is estimated that the 6,589 residential units would generate Council Tax receipts to MCC of approximately £12.3 million annually. As such, the receptor is identified as having a high sensitivity and the magnitude of effect is considered to be medium.

16.348 The likely residual cumulative effects of the additional Council Tax revenue generated by new residents of the Proposed Development and the Cumulative Schemes were therefore considered to be **direct, long-term** of **major-moderate** beneficial significance at the district level.

Effect on Education Facilities

16.349 20 of the 26 Cumulative Schemes would increase the residential population in MCC and would therefore have the potential to increase the pressure on local education services (primary and secondary schools) to varying degrees. It is estimated that the new population yield of the Cumulative Schemes with a residential component would be approximately 17,163 people. At the time of the 2021 Census, primary aged children made up 7.9% of the MCC population and 7.4% of the SCC population.

16.350 Applying these proportions, it is estimated that the Cumulative Schemes would generate around 1,327 primary aged students. Combined with the Proposed Development, it is therefore estimated that the new population yield with the Cumulative Schemes with a residential component would be approximately 1,435 primary school aged pupils.

16.351 At the time of the 2021 Census, secondary aged pupils made up 6.4% of the MCC population and 5.8% of the SCC population. Applying these proportions to the population estimated at the Cumulative Schemes, it is estimated that these Proposed Developments together would yield 1,064 secondary school aged pupils. Combined with the Proposed Development, it is therefore estimated that the new population yield of the Proposed Development with the Cumulative Schemes with a residential component would be approximately 1,172 secondary school aged pupils.

16.352 As identified within the baseline assessment, primary and secondary schools in the local area (as defined by the 1 and 3 mile radiuses, respectively) are currently unlikely to accommodate this level of pupil growth.

16.353 However, the above assessment does not factor for any mitigation delivered as part of the Identified Committed Schemes, given that this information is largely not publicly available and, in some cases, is yet to be fully agreed. As such, it is expected that these issues would necessarily need to or would have been considered by MCC in the determination of the planning application in the case of each Identified Committed Scheme. It is therefore assumed that any required mitigation to minimise adverse effects on education provision would be considered on a case-by-case basis with specific education-related mitigation provided to counteract any negative effects from each of the individual Identified Committed Schemes. As such, it should be concluded that the Application in combination with the Identified Committed Schemes would not have an effect on education capacity beyond the specific effects of Application 4 on its own.

16.354 Taking the above measures into account, it was considered that the likely residual cumulative effects on education services would be **negligible** at the district level.

Effect on Healthcare Capacity

16.355 The effect of the Proposed Development in combination with the Cumulative Schemes is assessed as part of **Volume 2: Main Text, Chapter 17: Health and Wellbeing** and is not considered here.

Effect on Open Space Provision

16.356 Open space and play space for the 20 Cumulative Schemes with a residential component across Manchester and Salford City areas typically comprises a balance between landscaped areas, courtyards, balconies, and dedicated play space with play equipment. Where public and play space is provided, this would be a resource for the community as well as future occupiers of the Schemes.

16.357 It would be assumed that open space would have been adequately considered at the time when the Cumulative Schemes were consented.

16.358 Therefore, the likely residual cumulative effect on open space and play space provided by the Proposed Development and the Cumulative Schemes would be considered to be **negligible** at the district level.

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Application 5)

16.359 In February 2019, the MCC Executive endorsed the Northern Gateway SRF as a material consideration in the determination of all future planning applications relevant to the area. Now referred to as Victoria North, the SRF includes seven neighbourhoods which seeks to create 15,000 new homes across 155 hectares. Application 5 forms part of an 'Initial Proposed Development Area' of Victoria North. As the SRF is a material consideration in determining all future planning applications, a qualitative review of the Proposed Development and effects arising from the wider SRF has been considered.

16.360 Given Application 5 seeks permission for up to 1,550 dwellings, the remainder of the SRF would be expected to yield approximately 13,450 units. In addition to this, it is anticipated that a significant quantum of commercial space will also come forward, along with leisure and community uses.

16.361 In considering Application 5 along with the SRF and the Cumulative Schemes, there will likely be a number of beneficial socio-economic effects. Whilst effects cannot currently be quantified, it is expected that there will be beneficial effects arising from the support for new local temporary and permanent employment, increased gross value added and beneficial contribution towards housing delivery targets, Council Tax and enhanced residential expenditure effects.

16.362 Given the vast number of residential units, there may however be adverse effects upon the delivery of social services such as in education.

16.363 It can be expected that further Proposed Development of the SRF will be required to assess its own effects on school capacity to make provision as necessary in agreement with MCC. On this assumption, it is anticipated that significant cumulative effects with the SRF are unlikely.

# In Combination Effects of Applications 4 and 5

## Baseline Conditions (Applications 4 and 5)

16.364 Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 in combination has been set out previously in the individual chapters of each separate Application.

### Local Health Infrastructure Provision

16.365 Baseline conditions on local GP and pharmacist provision is set out in **Appendix 17.1** and **Volume 2: Main Text, Chapter 17: Health and Wellbeing** and are consequently not assessed in this chapter.

### Local Education Infrastructure Provision

#### Primary School Provision

16.366 There are 11 state funded primary schools located within 1 mile of the Site (as defined as Application 4)[33]. The locations of these schools are identified in **Appendix 16.2**. Details regarding the nine schools' respective capacities, pupil numbers on roll, and whether they have a surplus or deficit in school places are provided in **Table 16.10** within the section of this Chapter pertaining to **Application 4**.

16.367 Across the 11 state-funded primary schools within a 1-mile radius of the Site, the most recent Department for Education (DfE) data on individual school capacities suggests that there is a combined capacity of 3,640 school places, with a surplus of 409 places.

16.368 At the individual school level, there is a surplus of places across all schools with the exception of Cheetwood Primary School.

#### Secondary School Provision

16.369 There are 18 state funded secondary schools located within 3 miles of the Site[34]. The locations of these schools are identified in **Appendix 16.3**. Details regarding the 18 schools' respective capacities, pupil numbers on roll, and whether they have a surplus or deficit in school places are provided in **Table 16.11** in relation to **Application 4** but applicable here.

[33] Gov.uk -Find and compare schools in England https://www.gov.uk/school-performance-tables [Online] [Accessed 27 February 2023].
[34] Gov.uk (2023) Get Information about Schools [Online] Available from: https://www.get-information-schools.service.gov.uk/ [Accessed 27 February 2023].

16.370 Across the 18 state-funded secondary schools within a 3-mile radius of the Site, the most recent Department for Education (DfE) data on individual school capacities suggests that there is a combined capacity of 17,850 school places, with a surplus of 2,769 places.

16.371 In addition to these places, the Abraham Moss Community School also provides state-funded secondary education, alongside catering to other age groups as an all-through school.

### Open Space

16.372 As set out in **Appendix 16.2**, there are 11 parks and green spaces within 1 mile of the Site. This has been informed by an audit undertaken by WSP, using OS Greenspace data and supplementary information from MCC's website.

16.373 There are a range of facilities provided across these parks and green spaces, which are set out in **Table 16.12** (in relation to Application 4 but with the same search range and criteria), including a cricket square at Bignor Street Park and various Multi Use Games Areas (MUGAs). Six of these local parks and green spaces include dedicated play space for children of different ages, while Queens Park and Smedley Fields have dedicated football pitches.

16.374 In addition to the parks and open spaces identified above, the Victoria North SRF incorporates a new City River Park and the Vision is set out in the SRF. The City River Park will cover circa. 46 hectares and will become one of Manchester's largest City Centre green spaces.

16.375 In addition to this, the Irk Valley Project will also provide additional space for new residents. The Irk Valley Project aims to rejuvenate the green space for the benefit of the community through a process of environmental developments, community involvement and sensitive habitat management. The project spans from St Michaels and Angel Meadow, near Manchester Victoria Railway Station, to the M60 boundary at Heaton Park, in the North, and heading eastwards along the Moston Brook tributary.

16.376 MCC's Application 2 (133143/VO/2022) incorporated and proposes 3.03 hectares of this wider open space provision in the form of a new park at St Catherines Wood which is adjacent to the site boundary for Application 4 and forms part of the River City Park proposed in the SRF. As this application was approved in July 2022, this portion of open space will be completed by MCC by the time the Proposed Development is Complete and Operational, therefore this shall form part of the future baseline for open space in the local area.

16.377 Of the parks and green spaces listed in **Table 16.31**, five were identified as having facilities described as "play space". The quantity of this could not be established, but the format of the play space was identified as primarily children's playgrounds.

## Embedded Mitigation (Applications 4 and 5)

### Demolition and Construction

16.378 No mitigation measures have been embedded into the Proposed Development as part of the Demolition and Construction phases.

### The Completed and Operational Development

16.379 The Completed and Operational Proposed Development as part of Applications 4 and 5 comprises a number of elements which will mitigate some of the adverse effects of the proposals. These are as follows:

#### Primary School Provision

16.380 As part of Application 4, the Proposed Development seeks approval for a 1FE primary school (Use Class F1 (a)) which will comprise up to 2,750 sqm in Gross Internal Area (GIA). This would act as embedded mitigation for the effects of the additional child yield from the Proposed Development upon local education facilities. In the event that this school does not come forward (as it is currently proposed in Outline as a potential 'swing plot'), this would therefore remove this embedded mitigation.

16.381 The effect of this mitigation is set out in the "Assessment of Likely Significant Effects" section.

#### GP Provision

16.382 As part of Application 4, the Applicant will seek approval for health centre uses (Use Class E), in the form of a new facility comprising up to 3,250 sqm in Gross Internal Area (GIA).

16.383 The effect of this mitigation is set out in **Volume 2: Main Text, Chapter 17: Health and Wellbeing,** where supply of GP practices within the surrounding area is considered in detail.

## Assessment of Likely Significant Effects (Applications 4 and 5)

### Demolition and Construction

16.384 Using the build cost estimate provided by the Applicant (approximately £1.1 billion to £1.4 billion) and the average turnover per construction job in 2020 (£175,840) as outlined in the Assessment Methodology, it is estimated that the Proposed Development of Application 4 and Application 5 would generate between 6,256 and 7,962 person years of temporary employment during the 96-month (eight year) Works programme. This equates to on average 782 to 995 employees per annum over the Works programme.

#### Net Additional Construction Employment

16.385 Based on the assumptions outlined in **Table 16.3**, the total number of net additional temporary jobs arising from the construction of the Application 4 and Application 5 Proposed Development are detailed in **Table 16.28** below. It should be noted that numbers may not quite add due to rounding at each calculation stage. For the purposes of this assessment, the lower range potential number of jobs (6,256) has been assessed as a worst-case scenario.

***Table 16.28**: Additionality on construction jobs (person years of employment)*

| Step involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| **Operational workers on-site (gross, direct)** | 6,256 | |
| **Leakage to workers from outside impact area** | -3,897 | -364 |
| **Displacement of other activities** | -590 | -1,473 |
| **Operational workers on-site (net, direct)** | 1,769 | 4,419 |
| **Employment off-site induced by construction employment (net, indirect)** | 177 | 2,209 |
| **Total additional employment from construction of Proposed Development** | 1,946 | 6,628 |

16.386 As shown in **Table 16.28** whilst there would be a minimum of 6,256 gross construction jobs supported, taking into account leakage, displacement and multiplier effects, this equates to approximately 1,984 net additional construction jobs for the district area being supported (1,769 jobs on-site and 177 in the supply chain).

16.387 More broadly at the regional scale, the construction activity required to build the Proposed Development would support 4,682 jobs across the North West (excluding residents of MCC). This would be for the entire Works Programme.

16.388 As set out in **Appendix 17.1: Baseline Assessment of Health and Wellbeing Conditions**, as of 2021, 2.6% of all jobs located in MCC were in the Construction Industry, representing approximately 11,000 jobs[35]. The creation of 1,984 construction jobs over eight years would equate to around 284 jobs per year. This would represent a 2.6% uplift in construction employment across MCC. The ONS estimates that there are approximately 187,000 construction jobs across the North West of England[36], therefore the generation of 6,628 construction jobs (829 per year) equates to an 0.4% increase at the regional (North West) level. The magnitude of change would be considered to be **small** at the district level and **small** at the regional level.

16.389 With the sensitivity of the receptor assessed as moderate, the generation of additional temporary construction employment has been assessed as a **direct, short to medium-term, minor beneficial effect** at the district and regional level.

[35] ONS (2023) Labour Market Profile – Manchester [Online] Available from: https://www.nomisweb.co.uk/reports/lmp/la/1946157083/report.aspx [Accessed 27 February 2023]

[36] ONS (2023) 2021 Construction Statistics Annual Tables [Online] [Accessed 16 February 2023].

### GVA added by direct employment generated from Demolition and Construction

16.390 Based on gross value added construction job in 2020 of £73,458, it is estimated that the 829 net additional construction jobs generated by the Application 4 and Application 5 Proposed Development on average per year would create GVA to the regional economy of around £60.9 million, of which £17.9 million would be within the district economy.

16.391 According to the ONS[37], the total construction GVA generated by the North West and Manchester in 2020 (the latest available data) was £10.1 billion and £808 million respectively. The generation of £60.9 million and £17.9 million would therefore represent a 0.2% and 2.2% uplift in GVA respectively across the North West and MCC. As a result, the magnitude of change is considered to be **small** at the district level and **small** at the regional level.

16.392 With the sensitivity of the receptor assessed as **moderate** (**Table 16.5** - given the temporary nature of the effect), the generation of GVA from the temporary construction employment has been assessed as a **direct, short to medium-term, minor beneficial effect** at the district and regional levels.

## The Completed and Operational Development

### Population Yield

16.393 Using the method outlined earlier in this Chapter, and detailed in **Appendix 16.1**, the assumed maximum net additional population yield of the completed and operational Proposed Developments would be 8,662 persons (based on the unit schedule and assumed tenure splits detailed in **Table 16.26**. As set out elsewhere in this chapter, this figure is based on a bespoke population yield calculator developed by MCC, which provides benchmark figures for residents per household based on number of bedrooms and tenure.

16.394 The population yield by specific age group is detailed in **Table 16.29**

***Table 16.29**: Population Yields Assumed for Proposed Developments*

| Age Group | Total Population* |
|---|---|
| **0 to 4 years** | 287 |
| **5 to 11 years** | 430 |
| **12 to 15 years** | 317 |
| **16 to 64 years** | 7,290 |
| **65 years plus** | 338 |
| **Total** | 8,662 |

* Numbers may not wholly add up due to rounding

[37] ONS (2020) Regional gross value added by industry: local authorities by ITL1 region [Online] [Accessed 16 February 2023].

16.395 The net additional population yield of the completed and operational Proposed Developments, is estimated to be 8,662 persons.

### Gross, on-Site Employment

16.396 The Application 4 and Application 5 Proposed Development includes non-residential floorspace (comprising Use Classes E, F and Sui Generis) that would generate employment at the Site, along with the provision of Clubhouses as part of both Application 4 and 5. As set out elsewhere within this Chapter, Application 4 is expected to support between 322 and 621 on-site FTE employees, whilst Application 5 is expected to support between 108 and 198 on-site FTE employees. Together, the Proposed Developments can support between 430 and 819 gross, FTE on-site jobs.

### Net Additional Employment

16.397 Based on the assumptions outlined in the Assessment Methodology (**Table 16.3**), the total number of net additional jobs arising from the Proposed Development is detailed in **Table 16.30** and **Table 16.31** below. It should be noted that the numbers may not quite add due to rounding at each calculation stage.

***Table 16.30*** *Additionality on Permanent Employment- Minimum Scenario*

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| **Operational workers on-site (gross, direct)** | 433 | |
| **Leakage to workers from outside impact area** | -270 | -25 |
| **Displacement of other activities** | -41 | -102 |
| **Operational workers on-site (net, direct)** | 122 | 306 |
| **Employment off-site induced by operational employment (net, indirect)** | 12 | 153 |
| **Total additional employment from operation of Proposed Development** | **135** | **459** |

***Table 16.31*** *Additionality on Permanent Employment- Maximum Scenario*

| Step Involved | Manchester City Council (District) | North West (Regional) |
|---|---|---|
| **Operational workers on-site (gross, direct)** | 829 | |
| **Leakage to workers from outside impact area** | -516 | -48 |
| **Displacement of other activities** | -78 | -195 |
| **Operational workers on-site (net, direct)** | *234* | *586* |
| **Employment off-site induced by operational employment (net, indirect)** | *23* | *293* |
| **Total additional employment from operation of Proposed Development** | **258** | **878** |

16.398 As shown in **Table 16.30** under a minimum employment scenario whilst there would be 433 gross operational jobs supported, taking into account leakage, displacement and multiplier effects, this equates to approximately 135 net additional jobs supported across the District. More broadly at the regional level, the Proposed Development would support 324 net additional jobs under a minimum employment scenario (taking the total net additional employment supported to 459).

16.399 As shown in **Table 16.31** a maximum employment scenario, whilst there would be 829 gross operational jobs supported, taking into account leakage, displacement and multiplier effects, this equates to approximately 258 net additional jobs for the District area being supported. More broadly at the regional level, the Proposed Development would support an additional 620 jobs under a maximum employment scenario (taking the total net additional employment supported to 878).

16.400 In summary the Application 4 and Application 5 Proposed Development can expect to support between 135 and 258 net additional jobs at the district level, with an additional 324 to 620 jobs at the regional level. Taken together, the Proposed Development could support between 459 and 878 net additional FTE jobs.

16.401 As set out in **Appendix 17.1: Baseline Assessment of Health and Wellbeing Conditions,** MCC supported approximately 471,000 jobs in 2021. The creation of between 135 and 258 jobs in MCC would represent an uplift in employment of between 0.03% and 0.05% across the City (District area)- or a change of a **small** magnitude.

16.402 The ONS estimates that there are approximately 3.5 million jobs across the North West, therefore the generation of between 459 and 878 operational jobs equates to an increase of 0.01% and 0.02% at the regional (North West England) level.

16.403 With the sensitivity of the receptor assessed as **high**, the generation of additional employment has been assessed as a **direct, long-term moderate-minor beneficial** effect at the district level and regional level.

### GVA from Net Additional Employment

16.404 The net additional employment created by the Proposed Development would have wider economic effects by generating gross value added to the district and regional economy.

16.405 To estimate the annual GVA created by the complete and operational Proposed Development information from the ONS Sub-Regional Productivity tables was used.

16.406 Detailed information on GVA per filled job is provided by the ONS Regional Economic Analysis Sub-Regional Productivity Tables[38]. Table B3 reveals that GVA per filled job for MCC was £57,643 in 2020, the most recent year for which data is currently available. Table B3 also indicates that the GVA per filled job for the North West region was £52,007 in 2020.

16.407 Based on this evidence, it was estimated that the total jobs to be supported by the Proposed Development and the supply chain linkages could contribute approximate GVA to the North West economy of between £16.9 million and £32.3 million annually in perpetuity. Of this, between £7.8 million and £14.9 million would be generated within the district (MCC) economy (based on between 135 and 258 FTE net additional jobs identified in **Table 16.30** and **Table 16.31**).

16.408 According to the ONS, the total GVA generated in MCC and the North West of England in 2020 was £24.8 billion and £186.9 billion respectively[39]. The generation of the additional GVA by the employment supported by the Proposed Development therefore represents an uplift of between 0.03% and 0.06% at the district level, and

[38] ONS. Sub regional Productivity: Labour Productivity (GVA per Hour Worked and GVA per filled job) Indices. by UK NUTS2 and NUTS3 Subregions. 2021. [Accessed 16 February 2023].

[39] ONS (2020) GDP Datasets [Online] Available from: https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/regionalgrossdomesticproductallnutslevelregions

between 0.01% and 0.02% at the regional level. As a result, the magnitude of change is considered to be **small** at both the district and regional level, under both scenarios.

16.409 With the sensitivity of the receptor assessed as **high** (**Table 16.5**, the generation of additional GVA has been assessed as a **direct, long-term, moderate**-**minor beneficial** effect at the district and regional level.

### Additional Household Expenditure

16.410 The report on Family Spending, published by the ONS in July 2022**Error! Bookmark not defined.**, provides data for the financial year ending 2021 on household expenditure. The results reflect the data from the Living Cost and Food Survey completed across the United Kingdom, as described in the Assessment Methodology.

16.411 Family Spending reveals that the average weekly household expenditure in the North West for the period between the financial year ending 2019 and financial year ending 2021 was £507.80. The survey also shows that, on average, each household in the North West spends £73.20 per week on net housing (excluding mortgage interest payments and Council Tax), fuel and power costs. Since this spending typically goes to major national institutions with only modest impacts on the district economy, this spending has been deducted from average weekly household expenditure.

16.412 This means that for the period between the financial year ending 2019 and financial year ending 2021, (net) average weekly household expenditure in the North West was £435, which is equivalent to an annual figure of £22,620. Assuming that VAT of 20% had been paid on all of this spending, the average annual household expenditure (net of indirect taxation and housing, fuel and power costs) was £18,096 for the North West during the period April 2019 to March 2021.

16.413 Based on this analysis and the net addition of up to 4,801 net additional households to the district area as part of Application 5, it is estimated that the gross additional household expenditure generated by the new residential population at the Site would be around £86.8 million per annum. This assumes that the 4,801 net additional households demonstrate spending patterns typical of the North West as a whole.

16.414 This additional household expenditure of £86.8 million per annum is a gross effect. Some of this spending would clearly leak out of the area. It has been assumed that 25% of the additional household expenditure generated by the new residential population would be spent outside the district impact area.

16.415 This means that the net additional household expenditure generated by the new residential population at the Proposed Development would be approximately £65 million per annum to the MCC local economy. The effect of the net additional household expenditure would be felt on completion and occupation of all of the new residential dwellings at the Proposed Development.

16.416 The magnitude of change is considered to be **moderate** at the district level and **small** at the regional level. The assessment of magnitude reflects the fact that the Proposed Development would result in an injection into the

economy in the form of increased consumer expenditure. This would be generated per annum and would be of benefit to the District primarily, with some regional benefits due to leakage effects.

16.417 With the sensitivity of the receptor assessed as **high (Table 16.5**, the generation of £65 million per annum in household expenditure has been assessed as a **direct, long-term major-moderate beneficial effect** at the district level, and a **direct, long-term moderate-minor beneficial effect** at the regional level.

### Additional Council Tax Receipts

16.418 The proposed residential units would have a beneficial effect on the annual Council Tax receipts received by MCC. Council Tax, for a Band D property in MCC would amount to £1,872.59 per annum based on 2022/23 figures. The council tax receivable to MCC from a Band D property with a single person discount (25% discount) would therefore be £1,404.38[40].

16.419 Based on the assumptions outlined in the Assessment Methodology, it is estimated that the 4,801 net additional households at the Site would generate additional Council Tax receipts for MCC of £9 million per annum at 2022/23 prices, factoring for all one-bedroom units being single occupancy and therefore eligible for the single person discount.

16.420 The effect of the increased Council Tax receipts would be felt on completion and occupation of all of the new residential dwellings at the Proposed Development.

16.421 In 2022/23 MCC received a total of £217.2 million in Council Tax revenues[41]. The generation of £9 million equates to approximately 4.1% of this budget. As a result, the magnitude of change is considered to be **medium**.

16.422 With the sensitivity of the receptor assessed as **high,** the generation of £9 million per annum in Council Tax revenue was assessed as a **direct, long-term**, **major-moderate beneficial** effect at the district level.

### Housing Delivery

16.423 The Application 4 and Application 5 Proposed Development would provide up to 4,801 units. An exclusively indicative tenure split is shown below, which sets out the inputs into the population yield model. The exact quantum of affordable housing is not finalised and, as such, **Table 16.32** cannot be regarded as indicative of the eventual tenure mix.

***Table 16.32**: Residential Unit Numbers within the Complete and Operational Proposed Developments*

| Tenure | 1-bed* | 2-bed* | 3-bed* | Total* |
|---|---|---|---|---|

[40] Manchester City Council Tax Bands [Online] Available from: https://www.manchester.gov.uk/info/500336/how_its_worked_out/6306/council_tax_bands_and_charges [Accessed 16 February 2023].

[41] DLUHC, Council Tax receipts live table, England, Q3 2022 to 2023- Total receipts of Council Taxes collected during the Financial Year 2022/2023 [Online]. Available from: https://www.gov.uk/government/statistical-data-sets/live-tables-on-local-government-finance [Accessed 16 February 2023]

| | | | | |
|---|---|---|---|---|
| **Social rented** | 40 | 103 | 20 | 162 |
| **Privately rented** | 257 | 331 | 32 | 620 |
| **Privately owned and intermediate units** | 1,143 | 2,452 | 423 | 4,018 |
| **%** | 30% | 60% | 10% | 100% |
| **Total** | **1,439** | **2,886** | **475** | **4,801** |

* Numbers may not wholly add up due to rounding

16.424 As outlined in the Baseline Conditions section of this Chapter, the Site is currently vacant. The Proposed Development would therefore result in the provision of up to 4,801 net additional dwellings.

16.425 The provision of up to 4,801 net additional units is equivalent to 133% of MCC's annual delivery target of 3,600 units per year (2022 – 2032)) in the Manchester Housing Strategy 2022-2032. As a result, the magnitude of change is considered to be **large**.

16.426 With the sensitivity of the receptor assessed as **high**, the delivery of 4,801 net additional residential units on Site would be considered to be a **direct, long-term major beneficial** effect at the district level. Factoring for a scenario where the swing plot is developed as educational infrastructure instead of housing and the total number of units associated with Application 4 is marginally less than the maximum of 3,250, it is anticipated that the magnitude of change and sensitivity of the receptor would stay the same.

## Education Provision

Primary School Provision

16.427 Based on the population yield calculations, the Application 4 and Application 5 Proposed Developments are estimated to yield a requirement for an additional 508 primary school places once complete and operational (see **Appendix 16.1**).

16.428 As set out earlier in this Chapter, there are 11 state funded primary schools within 1 mile of the Site. Across the 11 schools there are a total of 409 surplus pupil places.

16.429 In view of the above, there is not likely to be sufficient capacity across the primary schools surrounding the Site to accommodate the additional 508 pupils generated by the Proposed Development. There would be a deficit of 99 places. The magnitude of change is therefore considered to be **medium**.

16.430 With the sensitivity of the receptor assessed as **high** (**Table 16.5**), the likely effect of the new resident population of the Proposed Development on the supply of primary school places is considered to be a **direct, long term**, **minor adverse** effect at the district level, which is considered to be insignificant.

16.431 As part of Application 4, up to 2,750 sqm of primary school uses are proposed for the site, which is anticipated to comprise a one form-entry (1FE) primary school of around 210 places.

16.432 When factoring for this, it is considered that the adverse effects of the new residential population would be reduced. Taking the current surplus in primary school capacities within 1 mile of the Site, along with the additional 210 places as part of the proposed 1FE primary school, this would result in a surplus of 111 primary school places in the local area. As a result, the effect of the new residential population and associated primary aged pupil yield if a 1FE primary school is provided within Application 4 would have a **direct, long term**, **minor beneficial** effect at the district level.

Primary School Provision – Swing Plot Scenario

16.433 If the 1FE primary school was not to come forward as part of the swing plot proposals, as assessed above, there would be a deficit of 21 places when considering current capacities at local schools.

16.434 As such, the likely effect of the new resident population of the Proposed Development on the supply of primary school places is considered to be a **direct, long term**, **minor adverse** effect at the district level, which is considered to be insignificant.

Secondary School Provision

16.435 Based on the population yield, the Proposed Developments together are estimated to yield a requirement for an additional 362 secondary school places once complete and operational (see **Appendix 16.1**).

16.436 As set out earlier in this Chapter, there are 18 state funded secondary schools within 3 miles of the Site. Across the 18 schools there is a total of 2,769 surplus pupil places.

16.437 In view of the above, there is likely to be sufficient capacity across the secondary schools surrounding the Site to accommodate the additional 362 pupils generated by the Proposed Developments. There would still be a surplus of 2,407 places. The magnitude of change is therefore considered to be **negligible**.

16.438 With the sensitivity of the receptor assessed as high (**Table 16.5**), the likely effect of the new resident population of the Proposed Developments on the supply of secondary school places is considered to be **negligible** at the district level.

## GP Provision

16.439 The effect of the Proposed Development on GP provision is not set out in this section and is instead covered in **Volume 2: Main Text, Chapter 17: Health and Wellbeing**.

### Effect on Open Space Provision

16.440 As set out within previous sections of this chapter for Outline Application 4 and Full Application 5, the Proposed Development will provide a range of new and enhanced open spaces which will be accessed by both future residents of the Proposed Development and existing neighbourhoods. As a result, it is likely that the provision of open space and access to nature will have a direct, long-term, permanent **Minor Beneficial** effect at the district level which is **Not Significant.**

## Phasing Effects

16.441 Mitigation against the effects identified above include the provision of the primary school within Application 4. There will not be any adverse impact upon existing primary school capacity in relation to the phasing of the Application 5 Development if complete and operational prior to the provision of the primary school within Application 4. As detailed within this report, the pupil yield generated by Application 5 will have a negligible effect upon existing primary school capacity, with the pupil yield generated absorbed by existing surplus spaces."Additional Mitigation / Enhancement Measures (Applications 4 and 5)

## Demolition and Construction

16.442 No further mitigation has been identified as being required for the effects of the Demolition and Construction phase of the project.

## The Completed and Operational Development

### Primary School Provision

16.443 Mitigation would be required to factor for any potential negative effects of the new population on local primary school provision if the capacities at existing schools in the local area were to change over time. This will be subject to ongoing discussions with MCC as the Proposed Development progresses and as any demographic changes in the local area (i.e. reduced numbers of children at existing schools) take effect.

# Likely Residual Effects of the Proposed Development and their Significance (Applications 4 and 5)

## Demolition and Construction

### Direct Employment Generated from Demolition and Construction and Associated Gross Value Added by Direct Employment

16.444 The Demolition and Construction programme would give rise to additional employment and additional GVA to the district and regional economy. All such effects were judged to be beneficial. Accordingly, no additional mitigation would be required, and the likely residual effects of the Works would be the same as the likely effects of the Works. That is:

- **Direct employment generated from Demolition and Construction**: Direct, short to medium-term, **minor beneficial** effect at the district and regional level.
- **GVA added by direct employment generated from Demolition and Construction**: Direct, short to medium-term, **minor beneficial** effect at the district and regional level.

### The Completed and Operational Proposed Development

#### Net Additional Employment Opportunities, Gross Value Added to the Economy and Local Expenditure from the Completed and Operational Proposed Development's Residents

16.445 The completed and operational Proposed Development would give rise to additional employment opportunities, additional GVA to the district economy and additional expenditure from the introduced residential population. All such effects were judged to be beneficial at the district level. Accordingly, no mitigation would be required and the likely residual effect of the completed and operational Proposed Development would be the same as the likely effects of the completed and operational Proposed Development. That is:

- Net Additional Employment Opportunities: Direct, long term, **minor beneficial** effect at the District level, **minor beneficial** effect at the Regional level.
- Gross Value Added to the Economy: Direct, long term, **minor beneficial** effect at the District level, **minor beneficial** effect at the Regional level.
- Expenditure from Residents of the Completed and Operational Proposed Development: Direct, long term, **major-moderate beneficial** effect at the District level, **moderate-minor beneficial** effect at the Regional level.

#### Additional Council Tax Receipts and Contribution to Housing Delivery

16.446 The completed and operational Proposed Development would give rise to an increased population within the local areas, resulting in total increased amount of council tax receipts. Additionally, the Proposed Development itself would directly contribute to the housing delivery targets of the district area. These effects were judged to be beneficial at the district level. Accordingly, no mitigation would be required and the likely residual effect of the completed and operational Proposed Development would be the same as the likely effects of the completed and operational Proposed Development. That is:

- Additional Council Tax Receipts: Direct, long term, **major beneficial** effect at the district level.
- Contribution to Housing delivery: Direct, long term, **major beneficial** effect at the district level.

#### Effect on Education and Healthcare Capacity

16.447 The completed and operational Proposed Development would give rise to an increased population within the district area and as such would result in an increased demand on the existing education (primary and secondary

schools) and healthcare (GPs) facilities. Healthcare facilities have been assessed within **Volume 2: Main Text, Chapter 17: Health and Wellbeing**.

16.448 As quantified in the baseline and within the assessment, it is not considered that there is sufficient capacity within existing primary schools to accommodate the additional demand from both Application 4 and 5. If Application 4 provides a primary school within the swing plot however, this demand would be able to be accommodated across both the new school and the other existing schools across the local area.

16.449 For secondary school places, it was assessed that there would be sufficient capacity across existing schools to accommodate the new secondary aged child yield. In considering this, the likely residual effect of the completed and operational Proposed Development would be:

- **Effect on Primary School Provision if primary school is provided within swing plot:** Direct, long term, **minor beneficial** effect at the district level.
- **Effect on Primary School Provision if no primary school is provided within swing plot:** Direct, long term, **minor adverse** effect at the district level, which is considered to be insignificant.
- **Effect on Secondary School Provision:** Negligible effect.

### Effect on Open Space Provision

16.450 The completed and operational Proposed Development would give rise to an increased population within the district area which would require access to open space facilities and play space for children. However, open space is being brought forward which is anticipated to more than mitigate any negative effects.

16.451 As such, the following effects are estimated for open space and play space provision:

- **Effect on Open Space Provision: minor beneficial** effect at the District level, which is insignificant.

16.452 A summary of all relevant effects have been summarised in **Table 16.33.**

***Table 16.33**: Residual Effects Summary*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| *Construction and Demolition* | | | |
| **Direct employment generated from Demolition and Construction** | Direct, short to medium-term, minor beneficial effect at the district level and regional level. | None required | Direct, short to medium-term, **minor beneficial** effect at the district level and regional level. |
| **GVA added by direct employment generated** | Direct, short to medium-term, minor beneficial | None required | Direct, short to medium-term, **minor beneficial** |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| **from Demolition and Construction** | effect at the district level and regional level. | | effect at the district level and regional level. |
| ***The Completed and Operational Proposed Development*** | | | |
| **Net Additional Employment Opportunities** | Direct, long-term minor beneficial effect at the district level and regional level, which is insignificant. | None required | Direct, long-term **minor beneficial** effect at the district level and regional level, which is **insignificant**. |
| **Gross Value Added to the Economy** | Direct, long-term minor beneficial effect at the district level and regional level, which is insignificant. | None required | Direct, long-term **minor beneficial** effect at the district level and regional level, which is **insignificant**. |
| **Expenditure from Residents of the Completed and Operational Proposed Development** | Direct, long-term, major-moderate beneficial effect at the district level, and a moderate-minor beneficial effect at the regional level. | None required | Direct, long-term, **major-moderate beneficial** effect at the district level, and a **moderate- minor beneficial** effect at the regional level. |
| **Additional Council Tax Receipts** | Direct, long-term, major beneficial effect at the district level. | None required | Direct, long-term, **major beneficial** effect at the district level. |
| **Contribution to Housing delivery** | Direct, long-term, major beneficial effect at the district level. | None required | Direct, long-term, **major beneficial** effect at the district level. |
| **Effect on Primary School Provision – with a primary school included within swing plot** | Direct, long-term, minor beneficial effect at the district level, which is insignificant. | None required | Direct, long-term, **minor beneficial** effect at the district level, which is **insignificant**. |
| **Effect on Primary School Provision – without a primary school included within swing plot** | Direct, long-term, minor adverse effect at the district level, which is considered to be insigificant. | To be established via further discussions on school place planning with MCC. | **Negligible** effect at the district level. |
| **Effect on Secondary School Provision** | Negligible effect at the district level. | None required | **Negligible** effect at the district level. |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| **Effect on Open Space Provision** | Direct, long-term, minor beneficial effect at the district level, which is insignificant. | None required | Direct, long-term, **minor beneficial** effect at the district level, which is **insignificant**. |

## Conclusions (Applications 4 and 5)

16.453 An assessment of the likely socio-economic effects associated with demolition and construction and the completed and operational Proposed Developments was undertaken, using a range of methods. The demolition and construction phase would generate around 6,628 net additional temporary construction jobs over the construction period, of which 1,946 could be likely taken up by MCC residents. These temporary construction jobs could generate around £60.9 million in GVA to the regional economy (of which £17.9 million would be generated in the MCC district economy).

16.454 It is estimated that the Proposed Developments would result in an estimated additional population of 8,662 residents. The Proposed Developments would also expect to support up to 868 net additional FTE jobs regionally, of which up to 225 would likely be taken up by MCC residents. This could generate up to £31.9 million in GVA at the regional level (of which up to £14.7 million could be generated in the MCC district economy).

16.455 Residents of the Proposed Developments would be anticipated to generate annual expenditure of £65 million per annum within the district economy and £9 million per annum in additional Council Tax receipts for MCC. The Proposed Developments would contribute to the overall housing delivery targets for the MCC and wider area with the provision of up to 4,800 dwellings (43% of MCC's annual target).

16.456 It is estimated that the Proposed Development would have an additional estimated resident population of 8,659 of which 430 would be of primary school age and 317 would be of secondary school age.

## Assessment of Cumulative Effects with Identified Committed Schemes (Applications 4 and 5)

### Approach

16.457 **Table 2.5** of **Volume 2: Main Text, Chapter 2: Approach** provides a list of the committed Proposed Developments which have been identified as 'Cumulative Schemes' for the purpose of the Cumulative Effects Assessment (CEA). Of the 26 Cumulative Schemes identified, none were scoped-out of the CEA with regards to this Health and Wellbeing assessment. The approach to assessing the cumulative effects of the combined Applications 4 and 5 is the same as that for Application 4 and is set out in detail in the previous section, **Assessment of Cumulative Effects with Identified Committed Schemes (Application 4)**.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

Net Additional Construction Employment

16.458 The Proposed Development and all 26 Cumulative Schemes would generate short to medium-term employment associated with the Demolition and Construction programmes of each Project, the extent of which would be dependent on the build cost for each of the schemes.

16.459 Information on the build cost estimate (and hence the temporary construction employment to be created) was not readily available for all but a small number of Cumulative Schemes. Based on the scale of the 26 Cumulative Schemes in terms of number of new residential units and the scale of new commercial space and using professional judgement, it is estimated that the construction employment generated will be significant. The likely residual cumulative effect from employment generated during all Works programmes considered together would be a **direct, short to medium-term beneficial effect** of **major** significance at the district level, and a **direct, short to medium-term, beneficial effect** of **moderate** significance at the regional level.

GVA from Net Additional Construction Employment

16.460 It is estimated that the temporary employment associated with the Demolition and Construction of the Proposed Development and the 26 Cumulative Schemes would generate a combined positive GVA to the district and regional economy.

16.461 The addition of the combined GVA to the district economy as a result of the Proposed Development, together with the 26 Cumulative Schemes, directly attributable to the Demolition and Construction programme of the proposals, are considered to be of a **large** magnitude and **medium** magnitude at the respective district and regional levels. As such, with the receptor identified as having a **high** sensitivity, this would result in a **direct, short to medium-term, major beneficial effect** at the district level, and a **direct, short to medium-term, moderate beneficial effect** at the regional level.

### The Completed and Operational Proposed Development

Net Additional Employment

16.462 The Proposed Development, together with 21 of the 26 Cumulative Schemes would result in the delivery of employment-generating floorspace across several use classes (Use Class E which includes the former B1/A1/A2/A3/A4/A5/D2 use classes).

16.463 Where anticipated employment figures are not explicitly quantified within a schemes' planning documents available in the public domain, WSP has utilised the HCA's Employment Density Guide to estimate the likely

employment generation based on the use classes proposed and the ranges suggested within the Employment Density Guide.

16.464 It is estimated that the 21 Cumulative Schemes which include employment generating floorspace would support between 3,000 and 6,500 jobs across Manchester and Salford, of which between 3,000 and 6,000 would be generated by Proposed Developments within the boundaries of Manchester City Council and up to 500 would be generated by Proposed Developments within the boundary of Salford City Council. Combined with the estimated 140 and 255 net additional jobs generated at the Proposed Development (at the district level) gives an estimated total of approximately 3,140 and 6,755 jobs.

16.465 The receptor is identified has having a **high** sensitivity and, given the number of jobs generated relative to the total number across MCC's borders (set out in support of Application 4), the magnitude of the change is considered to be **large** at the district level and **medium** at the regional level. As a result, the likely residual cumulative effects from net additional employment would be considered to be **direct, long term, major beneficial effect** at the district level, and a **direct, long term, moderate beneficial effect** at the regional level.

GVA from Net Additional Employment

16.466 The net additional employment created by the Proposed Development, and the 21 out of 26 Cumulative Schemes which include employment generating floorspace would have wider economic effects by generating a combined GVA to the district economy.

16.467 Based on the same methodology outlined earlier in the Chapter and using the regional average GVA of £52,007, it is estimated that the employment to be supported by the 26 Cumulative Schemes would generate a minimum GVA to the district economy of approximately £160 million annually. When combined with the Proposed Development, this will generate a minimum GVA to the district economy of approximately £168.1 million to £174.7 million annually. This is therefore considered a change of a **large** magnitude at the district level and **medium** magnitude at the regional level. .

16.468 With the sensitivity of the receptor considered to be high, the cumulative addition of the GVA to the economy was therefore considered likely to result in a **direct, long term beneficial effect** of **major** significance at the district level and of **major-moderate** significance at the regional level**.**

Contribution to Housing Delivery

16.469 20 of the 26 Cumulative Schemes, together with the Proposed Development, include the provision of residential units and are located within MCC's boundaries and, as such, would contribute to MCC's housing targets.

16.470 The cumulative effect would result in the delivery of up to 5,039 new residential units. Along with the up to 4,800 units at the Proposed Developments as part of Applications 4 and 5, this would result in a total of 9,839 units. The

Manchester Housing Strategy outlines a target housing trajectory (2022-2032) of 3,600 additional dwellings per annum.

16.471 Assuming the identified cumulative schemes and the Proposed Development come forward in this time period, this equates to up to 273% of MCC's annual target. Together, the schemes (if delivered prior to 2032) would equate to 27% of MCC's overall target, representing a change of **large** magnitude at the district level.

16.472 With the sensitivity of the receptor identified as **high**, the likely residual cumulative effect on housing provision was assessed as having a **direct, long term, major beneficial effect** at the district level**.**

Additional Household Expenditure

16.473 20 of the 26 Cumulative Schemes, together with the Proposed Development, include the provision of residential units and are located within MCC's boundaries and, as such, would contribute to MCC's housing targets. A total of £68 million per annum is expected to be generated by residents across these selected Cumulative schemes.

16.474 Based on the same methodology outlined earlier in this Chapter, the net additional household expenditure generated by the new residential population at the Proposed Development and 20 Cumulative Schemes (which have a residential component and are located within MCC's boundaries) would be around £133 million per annum- a change of a **large** magnitude.

16.475 With the sensitivity of the receptor identified as **high**, the likely residual cumulative effect of the local expenditure on the part of new residents of the Proposed Development together with the Cumulative Schemes would be considered a **direct, long-term**, **major beneficial** effect at the district level and a **direct, long-term**, **moderate beneficial** effect at the regional level.

Additional Council Tax Receipts

16.476 The Proposed Development together with 20 of the 26 Cumulative Schemes would provide approximately 5,039 new residential units within MCC. The proposed residential units would have a beneficial effect on the annual Council Tax receipts received by MCC.

16.477 The same methodology outlined earlier in this Chapter was used to estimate Council Tax receipts. It is estimated that the 9,839 residential units (including those within Applications 4 and 5) would generate Council Tax receipts to MCC of approximately £18.4 million annually- a change of a **large** magnitude.

16.478 As such, with the sensitivity of the receptor identified as **high**, the likely residual cumulative effects of the additional Council Tax revenue generated by new residents of the Proposed Development and the Cumulative Schemes were considered to have a **direct, long-term**, **major beneficial** effect at the district level.

Effect on Education Facilities

16.479 20 of the 26 Cumulative Schemes would increase the residential population in MCC and would therefore have the potential to increase the pressure on local education services (primary and secondary schools) to varying degrees. It is estimated that the new population yield of the Cumulative Schemes with a residential component would be approximately 17,163 people. At the time of the 2021 Census, primary aged children made up 7.9% of the MCC population and 7.4% of the SCC population. Applying these proportions, it is estimated that the Cumulative Schemes would generate around 1,327 primary aged students. Combined with the Cumulative Schemes, it is therefore estimated that the new population yield with the Cumulative Schemes with a residential component would be approximately 1,757 primary school aged pupils.

16.480 At the time of the 2021 Census, secondary aged pupils made up 6.4% of the MCC population and 5.8% of the SCC population. Applying these proportions to the population estimated at the Cumulative Schemes, it is estimated that these Proposed Developments together would yield 1,064 secondary school aged pupils. Combined with the Proposed Development, it is therefore estimated that the new population yield of the Proposed Development with the Cumulative Schemes with a residential component would be approximately 1,381 secondary school aged pupils.

16.481 As identified within the baseline assessment, primary and secondary schools in the local area would be unable to accommodate this level of pupil growth. Even with the potential provision of a primary school as part of Application 4, this will not be able to provide adequate mitigation across all Proposed Developments.

16.482 However, the above assessment does not factor for any mitigation delivered as part of the Identified Committed Schemes, given that this information is largely not publicly available and, in some cases, is yet to be fully agreed. As such, it is expected that these issues would necessarily need to or would have been considered by MCC in the determination of the planning application in the case of each Identified Committed Scheme. It is therefore assumed that any required mitigation to minimise adverse effects on education provision would be considered on a case-by-case basis with specific education-related mitigation provided to counteract any negative effects from each of the individual Identified Committed Schemes. As such, it should be concluded that the Application in combination with the Identified Committed Schemes would not have an effect on education capacity beyond the specific effects of Application 4 on its own.

16.483 Taking the above measures into account, it was considered that the scale of change is a **negligible** magnitude and therefore the likely residual cumulative effects on education services would be **negligible** at the district level. [

Effect on Healthcare Capacity

16.484 The effect of the Proposed Development in combination with the Cumulative Schemes is assessed as part of **Volume 2: Main Text, Chapter 17: Health and Wellbeing** and is not considered here.

Effect on Open Space Provision

16.485 Open space and play space for the 20 Cumulative Schemes with a residential component across Manchester and Salford City areas typically comprises a balance between landscaped areas, courtyards, balconies, and dedicated play space with play equipment. Where public and play space is provided, this would be a resource for the community as well as future occupiers of the Schemes.

16.486 It would be assumed that, issues relating to demand for open space and plat space would have been adequately considered at the time when the Cumulative Schemes were consented.

16.487 Therefore, the likely residual cumulative effect on open space and play space provided by the Proposed Development and the Cumulative Schemes would be considered to be **negligible** at the district level.

# In Combination Effects of Applications 4 and 5 and SRF

16.488 Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 has been set out previously in this Chapter.

## Assessment of Likely Significant Effects (Applications 4 and 5 and SRF)

### Demolition and Construction

16.489 As outlined in the Assessment Methodology, build cost estimates are used to estimate the number of construction jobs to be generated by the Proposed Development. As previously assessed in this Chapter, Applications 4 and 5 combined would generate between 6,256 and 7,962 person years of temporary employment during the 96-month (eight year) Works programme. This equates to on average 782 to 995 employees per annum over the Works programme. As the build costs for the remainder of the SRF is not known, it is not possible to estimate construction jobs.

#### Net Additional Construction Employment

16.490 Based on the assessment carried out elsewhere in this Chapter, Applications 4 and 5 are expected to support up to 6,628 net additional construction jobs over the entire construction phase. Based on Applications 4 and 5 comprising approximately one third of the total residential units proposed within the SRF – it is therefore estimated that over 18,000 construction jobs could be supported across the SRF entire Works programme- a change of a **large** magnitude at the district level and **medium** magnitude at the regional level.

16.491 The generation of additional temporary construction employment has been assessed as a **direct, short to medium-term beneficial effect** of **major** significance at the district level and **major-moderate** significance at the regional level.

#### GVA added by direct employment generated from Demolition and Construction

16.492 Based on gross value added construction job in 2020 of £73,458, it is estimated that the 18,000 net additional construction jobs generated by the Proposed Development on average per year (presuming a 15-year period) would create GVA to the regional economy of around £88.1 million, of which £25.9 million would be within the district economy.

16.493 According to the ONS[42], the total construction GVA generated by the North West and Manchester in 2020 (the latest available data) was £10.1 billion and £808 million respectively. The generation of £88.1 million and £25.9 million would therefore represent a 0.9% and 3.2% uplift in GVA respectively across the North West and MCC. As a result, the magnitude of change is considered to be **medium** at the district level and **small** at the regional level.

[42] ONS (2020) Regional gross value added by industry: local authorities by ITL1 region [Online] [Accessed 16 February 2023].

16.494 With the sensitivity of the receptor assessed as **moderate** (**Table 16.5** - given the temporary nature of the effect), the generation of GVA from the temporary construction employment has been assessed as a **direct, short to medium-term, major-moderate beneficial effect** at the district level and **direct, short to medium-term, moderate-minor beneficial effect** at the regional level.

## The Completed and Operational Proposed Development

### Population Yield

16.495 Using the method outlined earlier in this Chapter, and detailed in **Appendix 16.1**, the assumed maximum net additional population yield of the completed and operational Proposed Developments would be 8,659 persons (based on the unit schedule and assumed tenure splits detailed in **Table 16.8** and **Table 16.18**). As set out elsewhere in this Chapter, this figure is based on a bespoke population yield calculator developed by MCC, which provides benchmark figures for residents per household based on number of bedrooms and tenure.

16.496 It is not yet known what the tenure split will be for the Proposed Developments as part of the SRF, nor is it known what type of units the remainder of the SRF will support. In absence of this information, the average number of persons per unit based on Application 4 and 5 have been applied to the estimated 15,000 units of the SRF. This is detailed in **Table 16.34** below.

***Table 16.34*** *Population Yields Assumed for Proposed Developments*

| Age Group | Total Population of Applications 4 and 5* | Population proportion of Applications 4 and 5* | Estimated population yield of SRF (based on 15,000 residential units)* |
|---|---|---|---|
| **0 to 4 years** | 287 | 3.31% | 897 |
| **5 to 11 years** | 430 | 4.97% | 1,344 |
| **12 to 15 years** | 317 | 3.66% | 991 |
| **16 to 64 years** | 7,287 | 84.16% | 22,772 |
| **65 years plus** | 338 | 3.90% | 1,056 |
| **Total** | 8,659 | 100% | 27,059 |
| **Average persons per unit** | 1.8 | - | 1.8 |

* Numbers may not wholly add up due to rounding

16.497 The net additional population yield of the completed and operational Proposed Developments, is estimated to be around 27,000 persons.

### Gross, on-Site Employment

16.498 The Proposed Developments include non-residential floorspace (comprising Use Classes E, F and Sui Generis) that would generate employment at the Site, along with the provision of Clubhouses as part of both Application 4 and

5. As set out elsewhere within this Chapter, Application 4 is expected to support between 342 and 621 on-site FTE employees, whilst Application 5 is expected to support between 108 and 198 on-site FTE employees. Together, the Proposed Developments can support between 450 and 819 FTE jobs. It is not yet known what the quantum of commercial floorspaces will be for the remainder of the SRF.

### Net Additional Employment

16.499 As assessed elsewhere in this Chapter, the net additional uplift in employment for Applications 4 and 5 represent between 135 and 258 net additional jobs at the district level, with an additional 324 to 620 jobs at the regional level. Taken together, the Proposed Development could support between 459 and 878 net additional FTE jobs. Presuming Applications 4 and 5 make up roughly one third of the wider SRF, it could therefore be presumed that between 1,400 to 2,600 jobs could be supported on-site once the SRF is complete and operational, with around 420 to 765 of these at the district level.

16.500 As set out in **Appendix 17.1: Baseline Assessment of Health and Wellbeing Conditions,** MCC supported approximately 471,000 jobs in 2021. The creation of between 420 and 765 jobs in MCC would represent an uplift in employment of between 0.1% and 0.2% across the City (district area).

16.501 The ONS estimates that there are approximately 3.5 million jobs across the North West, therefore the generation of between 477 and 868 operational jobs equates to an increase of 0.04% and 0.07% at the regional (North West England) level, corresponding to a change of **small** magnitude at both levels.

16.502 With the sensitivity of the receptor assessed as **high**, the generation of additional employment has been assessed as a **direct, long-term beneficial** effect of **moderate-minor** significance the district level and regional level.

### GVA from Net Additional Employment

16.503 The net additional employment created by the Proposed Development would have wider economic effects by generating gross value added to the district and regional economy.

16.504 To estimate the annual GVA created by the complete and operational Proposed Development information from the ONS Sub-Regional Productivity tables was used.

16.505 Detailed information on GVA per filled job is provided by the ONS Regional Economic Analysis Sub-Regional Productivity Tables[43]. Table B3 reveals that GVA per filled job for MCC was £57,643 in 2020, the most recent year for which data is currently available. Table B3 also indicates that the GVA per filled job for the North West region was £52,007 in 2020.

16.506 Based on this evidence, it was estimated that the total jobs to be supported by the Proposed Development and the supply chain linkages could contribute approximate GVA to the North West economy of between £74.4 million

[43] ONS. Sub regional Productivity: Labour Productivity (GVA per Hour Worked and GVA per filled job) Indices. by UK NUTS2 and NUTS3 Subregions. 2021. [Accessed 16 February 2023].

and £135.4 million annually in perpetuity. Of this, between £24.2 million and £44.1 million would be generated within the district (MCC) economy (based on between 420 and 765 FTE net additional jobs).

16.507 According to the ONS, the total GVA generated in MCC and the North West of England in 2020 was £24.8 billion and £186.9 billion respectively[44]. The generation of the additional GVA by the employment supported by the Proposed Development therefore represents an uplift of between 0.1% and 0.18% at the district level, and between 0.04% and 0.07% at the regional level. As a result, the magnitude of change is considered to be **medium** at both the district and regional level.

16.508 With the sensitivity of the receptor assessed as **high** (**Table 16.5**, the generation of additional GVA has been assessed as a **direct, long-term, major-moderate beneficial** effect at the district and regional level.

### Additional Household Expenditure

16.509 The report on Family Spending, published by the ONS in July 2022**Error! Bookmark not defined.**, provides data for the financial year ending 2021 on household expenditure. The results reflect the data from the Living Cost and Food Survey completed across the United Kingdom, as described in the Assessment Methodology.

16.510 Family Spending reveals that the average weekly household expenditure in the North West for the period between the financial year ending 2019 and financial year ending 2021 was £507.80. The survey also shows that, on average, each household in the North West spends £73.20 per week on net housing (excluding mortgage interest payments and Council Tax), fuel and power costs. Since this spending typically goes to major national institutions with only modest impacts on the district economy, this spending has been deducted from average weekly household expenditure.

16.511 This means that for the period between the financial year ending 2019 and financial year ending 2021, (net) average weekly household expenditure in the North West was £435, which is equivalent to an annual figure of £22,620. Assuming that VAT of 20% had been paid on all of this spending, the average annual household expenditure (net of indirect taxation and housing, fuel and power costs) was £18,096 for the North West during the period April 2019 to March 2021.

16.512 Based on this analysis and the net addition of up to 15,000 net additional households to the district area as part of the SRF, it is estimated that the gross additional household expenditure generated by the new residential population at the Site would be around £271.2 million per annum. This assumes that the 15,000 net additional households demonstrate spending patterns typical of the North West as a whole.

[44] ONS (2020) GDP Datasets [Online] Available from: https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/regionalgrossdomesticproductallnutslevelregions

16.513 This additional household expenditure of £271.2 million per annum is a gross effect. Some of this spending would clearly leak out of the area. It has been assumed that 25% of the additional household expenditure generated by the new residential population would be spent outside the district impact area.

16.514 This means that the net additional household expenditure generated by the new residential population at the Proposed Development would be approximately £203.4 million per annum to the MCC local economy. The effect of the net additional household expenditure would be felt on completion and occupation of all of the new residential dwellings at the Proposed Development.

16.515 The magnitude of change is considered to be **large** at the district level and **small** at the regional level. The assessment of magnitude reflects the fact that the Proposed Development would result in an injection into the economy in the form of increased consumer expenditure. This would be generated per annum and would be of benefit to the District primarily, with some regional benefits due to leakage effects.

16.516 With the sensitivity of the receptor assessed as **high (Table 16.5**, the generation of £203.4 million per annum in household expenditure has been assessed as a **direct, long-term major beneficial effect** at the district level, and a **direct, long-term moderate-minor beneficial effect** at the regional level.

### Additional Council Tax Receipts

16.517 The proposed residential units would have a beneficial effect on the annual Council Tax receipts received by MCC. Council Tax, for a Band D property in MCC would amount to £1,872.59 per annum based on 2022/23 figures. The council tax receivable to MCC from a Band D property with a single person discount (25% discount) would therefore be £1,404.38[45].

16.518 Based on the assumptions outlined in the Assessment Methodology, it is estimated that the 15,000 net additional households at the Site would generate additional Council Tax receipts for MCC of £28.1 million per annum at 2022/23 prices, factoring for all one-bedroom units being single occupancy and therefore eligible for the single person discount.

16.519 The effect of the increased Council Tax receipts would be felt on completion and occupation of all of the new residential dwellings at the Proposed Development.

16.520 In 2022/23 MCC received a total of £217.2 million in Council Tax revenues[46]. The generation of £28.1 million equates to approximately 13% of this budget. As a result, the magnitude of change is considered to be **large**.

[45] Manchester City Council Tax Bands [Online] Available from: https://www.manchester.gov.uk/info/500336/how_its_worked_out/6306/council_tax_bands_and_charges [Accessed 16 February 2023].

[46] DLUHC, Council Tax receipts live table, England, Q3 2022 to 2023- Total receipts of Council Taxes collected during the Financial Year 2022/2023 [Online]. Available from: https://www.gov.uk/government/statistical-data-sets/live-tables-on-local-government-finance [Accessed 16 February 2023]

16.521 With the sensitivity of the receptor assessed as **high,** the generation of £28.1 million per annum in Council Tax revenue was assessed as a **direct, long-term**, **major beneficial** effect of at the district level.

## Housing Delivery

16.522 As outlined in the Baseline Conditions section of this Chapter), the Site is currently vacant. The Proposed Development would therefore result in the provision of up to 15,000 net additional dwellings.

16.523 The provision of up to 15,000 net additional units is equivalent to 42% of MCC's ten-year delivery target of 36,000 units from 2022 – 2032, as set out in the Manchester Housing Strategy 2022-2032. As a result, the magnitude of change is considered to be **large**.

16.524 With the sensitivity of the receptor assessed as **high**, the delivery of 15,000 net additional residential units on Site would be considered to be a **direct, long-term major beneficial** effect at the district level.

## Education Provision

Primary School Provision

16.525 Based on the population yield, the Proposed Developments with the SRF are estimated to yield a requirement for an additional 1,344 primary school places once complete and operational (see **Table 16.34** – see age range 5-11).

16.526 As set out within the baseline, there are 11 state funded primary schools within 1-mile of the Site. Across the 11 schools there are a total of 409 surplus pupil places. As such, 1,344 new potential students would represent a change of **medium** magnitude.

16.527 In view of the above, there is likely to be insufficient capacity across the primary schools surrounding the Site to accommodate the additional 1,344 pupils generated by the Proposed Developments which would result in a deficit of 935 pupil places. With the sensitivity of the receptor assessed as **high** (**Table 16.5**) and the change of **medium** magnitude, the likely effect of the new resident population of the Proposed Development on the supply of primary school places is considered to be a **direct, long term**, **major-moderate adverse** effect at the district level.

16.528 If a primary school is provided within Application 4 however, this would enhance the number of primary school places on offer in the local area. Presuming a 1FE primary school (with a capacity of 210 places), this would therefore mean that additional capacity would result in a deficit of 725 pupil places. Whilst this is reduced from the swing plot scenario which presumes that no school is provided on site, this would still be considered to have a **direct, long-term, permanent moderate adverse** effect at the district level.

Secondary School Provision

16.529 Based on the estimated population yield, the Proposed Developments with the SRF are estimated to yield a requirement for an additional 991 secondary school places once complete and operational (see **Appendix 16.1**).

As set out in the baseline, there are 18 state funded secondary schools within 3 miles of the Site. Across the 18 schools there is a total of 2,769 surplus pupil places.

16.530 In view of the above, there is likely to be sufficient capacity across the secondary schools surrounding the Site to accommodate the additional 991 pupils generated by the Proposed Developments. The likely effect of the new resident population of the Proposed Developments on the supply of secondary school places is therefore considered to be **negligible** at the district level.

#### GP Provision

16.531 The effect of the Proposed Development on GP provision is not set out in this section and is instead covered in **Volume 2: Main Text, Chapter 17: Health and Wellbeing**.

#### Effect on Open Space Provision

16.532 Future residents of both Outline Application 4 and Full Application 5 would benefit from the open space that they propose plus the extensive open spaces and connections to nature proposed as part of the wider SRF. This will ensure that new residents and workers of the complete and operational Developments will be able to easily access open space for recreation purposes. This has been assessed as having a **Minor Beneficial** long-term permanent impact upon future residents and workers of the Proposed Development which is **Not Significant**.

### Phasing Effects

16.533 Mitigation against the effects identified above include the provision of the primary school within Application 4. There will be not be any adverse impact upon existing primary school capacity in relation to the phasing of the Application 5 Development if complete and operational prior to the provision of the primary school within Application 4. Within the context of the SRF an even larger number of primary school students could be generated and therefore future phasing at an SRF level should consider any changes in school place planning across existing schools in the local area.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5 and SRF)

### Demolition and Construction

16.534 No further mitigation has been identified as being required for the effects of the Demolition and Construction phase of the project.

### The Completed and Operational Proposed Development

#### Primary School Provision

16.535 Mitigation would be required to factor for any potential negative effects of the new population on local primary school provision irrespective of any marginal change in local school capacities. This will be subject to ongoing

discussions with MCC as the Proposed Development progresses and as any demographic changes in the local area (i.e. reduced numbers of children at existing schools) take effect.

## Likely Residual Effects of the Proposed Development and their Significance (Applications 4 and 5 and SRF)

### Demolition and Construction

#### Direct Employment Generated from Demolition and Construction and Associated Gross Value Added by Direct Employment

16.536 The Demolition and Construction programme would give rise to additional employment and additional GVA to the district and regional economy. All such effects were judged to be beneficial. Accordingly, no additional mitigation would be required, and the likely residual effects of the Works would be the same as the likely effects of the Works. That is:

- **Direct employment generated from Demolition and Construction**: Direct, short to medium-term, **major beneficial** effect at the district level and a **major-moderate beneficial** effect at the regional level.
- **GVA added by direct employment generated from Demolition and Construction**: Direct, short to medium-term, **major-moderate beneficial** effect at the district level and a **moderate-minor beneficial** effect at the regional level.

### The Completed and Operational Proposed Development

#### Net Additional Employment Opportunities, Gross Value Added to the Economy and Local Expenditure from the Completed and Operational Proposed Development's Residents

16.537 The completed and operational Proposed Development would give rise to additional employment opportunities, additional GVA to the district economy and additional expenditure from the introduced residential population. All such effects were judged to be beneficial at the district level. Accordingly, no mitigation would be required and the likely residual effect of the completed and operational Proposed Development would be the same as the likely effects of the completed and operational Proposed Development. That is:

- Net Additional Employment Opportunities: Direct, long term, **moderate-minor beneficial** effect at the Regional and district level.
- Gross Value Added to the Economy: Direct, long term, **major-moderate beneficial** effect at the Regional and the district level.
- Expenditure from Residents of the Completed and Operational Proposed Development: Direct, long term, **major beneficial** effect at the Regional level, **moderate-minor beneficial** effect at the district level.

### Additional Council Tax Receipts and Contribution to Housing Delivery

16.538 The completed and operational Proposed Development would give rise to an increased population within the local areas, resulting in total increased amount of council tax receipts. Additionally, the Proposed Development itself would directly contribute to the housing delivery targets of the district area. These effects were judged to be beneficial at the district level. Accordingly, no mitigation would be required and the likely residual effect of the completed and operational Proposed Development would be the same as the likely effects of the completed and operational Proposed Development. That is:

- Additional Council Tax Receipts: Direct, long term, **major beneficial** effect at the district level.
- Contribution to Housing delivery: Direct, long term, **major beneficial** effect at the district level.

### Effect on Education and Healthcare Capacity

16.539 The completed and operational Proposed Development would give rise to an increased population within the district area and as such would result in an increased demand on the existing education (primary and secondary schools) and healthcare (GPs) facilities. Healthcare facilities have been assessed within **Volume 2: Main Text, Chapter 17: Health and Wellbeing**.

16.540 As quantified in the baseline and within the assessment, it is not considered that there is sufficient capacity within existing primary schools to accommodate the additional demand from both Application 4 and 5 and the SRF. This effect would remain the same even if the potential school proposed as part of Application 4 comes forward within the swing plot. Factoring in further discussions with MCC as the SRF progresses and more is known on pupil place planning, it is considered that these effects will be minimised.

16.541 For secondary school places, it was assessed that there would be sufficient capacity across existing schools to accommodate the new secondary aged child yield. In considering this, the likely residual effect of the completed and operational Proposed Development would be:

- **Effect on Primary School Provision if primary school is provided within swing plot:** Direct, long term, **negligible** effect at the district level.
- **Effect on Primary School Provision if no primary school is provided within swing plot:** Direct, long term, **negligible** effect at the district level.
- **Effect on Secondary School Provision:** Direct, long term, **negligible** effect at the district level.

### Effect on Open Space Provision

16.542 The completed and operational Proposed Development would give rise to an increased population within the district area which would require access to open space facilities and play space for children. However, a open space is being brought forward which is anticipated to more than mitigate any negative effects.

16.543 The following effects are estimated for open space and play space provision:

- **Effect on Open Space Provision:** minor beneficial effect at the District level.

16.544 A summary of all relevant effects have been summarised in **Table 16.35**

***Table 16.35*** *Residual Effects Summary*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| *Construction and Demolition* | | | |
| **Direct employment generated from Demolition and Construction** | Direct, short to medium-term, major beneficial effect at the district level and major-moderate beneficial effect at the regional level. | None required | Direct, short to medium-term, **major beneficial** effect at the district level and **major-moderate beneficial** effect at the regional level. |
| **GVA added by direct employment generated from Demolition and Construction** | Direct, short to medium-term, major-moderate beneficial effect at the district level and moderate-minor beneficial effect at the regional level. | None required | Direct, short to medium-term, **major-moderate beneficial** effect at the district level and **moderate-minor beneficial** effect at the regional level. |
| ***The Completed and Operational Proposed Development*** | | | |
| **Net Additional Employment Opportunities** | Direct, long-term moderate-minor beneficial effect at the district level and regional level, which is insignificant. | None required | Direct, long-term **moderate-minor beneficial** effect at the district level and regional level, which is insignificant. |
| **Gross Value Added to the Economy** | Direct, long-term major-moderate beneficial effect at the district level and regional level. | None required | Direct, long-term **major-moderate beneficial** effect at the district level and regional level. |
| **Expenditure from Residents of the Completed and Operational Proposed Development** | Direct, long-term, major beneficial effect at the district level, and a moderate-minor beneficial effect at the regional level, which is insignificant. | None required | Direct, long-term, **major beneficial** effect at the district level, and a **moderate-minor beneficial** effect at the regional level, which is insignificant. |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| **Additional Council Tax Receipts** | Direct, long-term, major beneficial effect at the district level. | None required | Direct, long-term, **major beneficial** effect at the district level. |
| **Contribution to Housing delivery** | Direct, long-term, major beneficial effect at the district level. | None required | Direct, long-term, **major beneficial** effect at the district level. |
| **Effect on Primary School Provision – with a primary school included within swing plot** | Direct, long-term, moderate adverse effect at the district level. | Proposed Developments as part of the SRF to engage with MCC to review pupil place planning objectives | **Negligible** |
| **Effect on Primary School Provision – without a primary school included within swing plot** | Direct, long-term, moderate adverse effect at the district level. | Proposed Developments as part of the SRF to engage with MCC to review pupil place planning objectives | **Negligible** |
| **Effect on Secondary School Provision** | Negligible | None required | **Negligible** |
| **Effect on Open Space Provision** | Direct, long-term, minor beneficial effect at the district level, which is insignificant. | None required | Direct, long-term, **minor beneficial** effect at the district level, which is insignificant. |

## Conclusions (Applications 4 and 5 and SRF)

16.545 Applications 4 and 5 in conjunction with the SRF will likely generate significant construction employment across both the district and wider region which in turn will generate GVA.

16.546 It is estimated that the wider SRF including Applications 4 and 5 will yield around 27,000 residents. It is estimated that of these residents, 1,344 would be primary aged and 991 would be secondary age. It is presumed that all secondary aged students could be accommodated within existing schools, however it is unlikely that existing capacities could accommodate the new primary school aged students. This will need to be considered through subsequent applications for Proposed Developments within the SRF and further discussions with MCC.

16.547 1,400 to 2,600 jobs could be supported on-site once the SRF is complete and operational, with around 420 to 765 of these at the district level. This could generate GVA to the North West economy of between £74.4 million and

£135.4 million annually in perpetuity. Of this, between £24.2 million and £44.1 million would be generated within the district (MCC) economy

16.548 Residents of the Proposed Developments would be anticipated to generate annual expenditure of £203.4 million per annum within the district economy and £28.1 million per annum in additional Council Tax receipts for MCC. The Proposed Developments would contribute to the overall housing delivery targets for the MCC and wider area with the provision of up to 15,000 dwellings.

# 17. Health and Wellbeing

## Introduction

17.1 This chapter assesses the effects of the Proposed Development on Health and Wellbeing considerations. In particular, it considers the potential effect on biomedical (i.e., physical health) and biopsychological health (i.e., physical health, psychological health and health behaviour) as a result of the Proposed Development.

17.2 The chapter describes the methods used to assess the likely significant effects; the baseline conditions currently existing at the Site and surroundings; the potential direct and indirect effects of the Proposed Development arising in terms of Health and Wellbeing considerations; the mitigation measures required to prevent, reduce, or offset the identified significant effects; and the residual effects. It has been written by WSP.

17.3 This chapter is supported by the following appendices which are located in **Volume 3: Appendices** of this ES:

- **Appendix 17.1:** Baseline Assessment of Health and Wellbeing Conditions; and
- **Appendix 17.2**: Assessment of Health and Wellbeing Impacts.

## Assessment Methodology and Significance Criteria

17.4 In order to provide a robust assessment of the Proposed Development across Outline Application 4 and Full Application 5, the Cumulative Schemes and the SRF, this Chapter has assessed the Proposed Development across several Assessment Scenarios (as detailed within **Volume 2: Main Text, Chapter 2: Approach**).

17.5 The scope of this assessment has been established through an ongoing scoping process. Further information can be found in **Volume 2: Main Text, Chapter 2: Approach**.

17.6 This Health and Wellbeing assessment does not solely focus on human health, but the wider factors that can influence the health of a population. These are called 'health determinants', and include an individual's lifestyle, their living and working environments, other societal considerations and the way these factors interact with each other. The World Health Organisation also emphasises the importance of recognising health inequalities; the "*differences in health status or in the distribution of health determinants between different population groups*"[1]. This Health and Wellbeing assessment has taken account of these factors and has considered how the Proposed Development may influence the physical and mental health and wellbeing of existing local residents and inhabitants of the Proposed Development. The methodology set out for use within this Chapter will follow the same approach for each assessment scenario.

[1] 100 Commission on Social Determinants of Health; World Health Organisation, (2008); Closing the gap in a generation: health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health

17.7 The London Healthy Urban Development Unit (HUDU) 'Planning for Health Rapid HIA Tool', Fourth Edition (October 2019)[2] provides a useful checklist that was developed for London but is also applicable to residential led development elsewhere in the UK. The checklist aims to promote healthy urban planning by ensuring that the health and wellbeing implications of major planning applications are consistently taken into account, through providing a set of themes and planning issues that can be used to assess development proposals. The checklist and criteria were used to inform the proposed scope of the Health and Wellbeing Chapter of this Environmental Statement and then provided the basis for the assessment stage, where the proposals (including embedded mitigation) were compared to each of the relevant themes in turn to identify the receptors that would be affected and whether any vulnerable groups were likely to be affected.

## Elements Scoped into The Assessment

17.8 The scope of this Health and Wellbeing assessment has been established by identifying the likely health determinants and receptors (an affected individual or community), and consideration of opportunities to enhance the positive effects and mitigate any negative effects of the Proposed Development on Health and Wellbeing. The NHS Healthy Urban Development Unit (HUDU) Planning for Health Rapid HIA Tool, Fourth Edition (October 2019) recommends the assessment of potential health impacts under eleven topics or broad determinants of health. This scope follows the principles of a rapid health assessment, as appropriate for a development of this size (HUDU Rapid Health Impact Assessment Tool, page 13). These are listed in **Table 17.11** below, together with the key potential health impacts associated with each.

***Table 17.1:*** *Health Determinants and Potential Impacts*

| Topic Component | Construction Effect | Operational Effect | Scope In / Out |
|---|---|---|---|
| Housing design and affordability | Given that the current site is brownfield and does not include any housing, it is unlikely that there will be any impacts during the construction phase in relation to housing design and affordability. | As residential units are proposed as part of the Proposed Development, the design of these and the proportion that are affordable will have a direct impact on this health determinant, where finalised residential designs and tenure mixes are known. | Construction: Scoped out<br>Operation: Scoped in |
| Access to health and social care services and other social infrastructure | Given the existing nature of the Site which does not include any social infrastructure, it is not expected that the construction phase will have any impact upon the accessibility to social care services and social infrastructure. | The new residential populations at the Site will require adequate health and social care services, along with being able to access local schools. The designs for the scheme and subsequent operation will have a direct impact | Construction: Scoped out<br>Operation: Scoped in |

[2] NHS Healthy Urban Development Unit (2019) Planning for Health Rapid HIA Tool, Fourth Edition

| Topic Component | Construction Effect | Operational Effect | Scope In / Out |
|---|---|---|---|
| | | upon this health determinant. | |
| Access to open space and nature | Given the existing nature of the Site which does not include any accessible open space and nature, it is not expected that the construction phase will have any impact upon the accessibility of open space and nature. | The new residential populations at the Site will require access to open space and nature. The designs for the scheme and subsequent operation will have a direct impact upon this health determinant. | Construction: Scoped out<br>Operation: Scoped in |
| Air quality, noise and neighbourhood amenity | The construction phase will likely involve activities which could have impacts upon air quality, noise and neighbourhood amenity. | It is unlikely that the Proposed Development will have any significant impacts to air quality and noise during operation, to be reviewed in further detail within Volume 2: Main Text, Chapter 12 – Air Quality and Dust and Volume 2, Main Text, Chapter 13 - Noise. The Proposed Development will however likely improve neighbourhood amenity through the regeneration of the Site, although this has not been considered to be a significant effect. | Construction: Scoped in<br>Operation: Scoped out |
| Accessibility and active travel | Given the existing nature of the Site which is not currently accessible by the public, it is not expected that the construction phase will have any impact upon accessibility and active travel. | The proposals for the Site will involve residential and commercial developments where residents, workers and visitors will be travelling to and within. As such, there will likely be direct impacts to the take up of active travel as a result of the Proposed Development. | Construction: Scoped out<br>Operation: Scoped in |
| Crime reduction and community safety | As the Site is not currently accessible to the public and will remain in this state throughout the construction phase, it is unlikely that there will be any effects relating to crime reduction and community safety. | The Proposed Development and the residential and commercial elements it proposes will have a direct impact upon this health determinant through the ways in which the buildings and public realm are designed and operated to reduce crime and enhance | Construction: Scoped out<br>Operation: Scoped in |

| Topic Component | Construction Effect | Operational Effect | Scope In / Out |
|---|---|---|---|
| | | perceptions of community safety. | |
| Access to healthy food | Given the existing nature of the Site, there is no current provision for healthy food access and therefore this will not be impacted during the construction phase. | The types of businesses to be encouraged to be integrated within the Proposed Development will have a direct impact upon the availability of fresh food for future residents and workers at the Site. | Construction: Scoped out<br>Operation: Scoped in |
| Access to work and training | The construction phase will involve significant investment which will result in employment opportunities along with opportunities for people to take up traineeships, apprenticeships and other upskilling activities. | The commercial floorspaces proposed as part of the Proposed Development will enable new employment opportunities to be created at the Site. | Construction: Scoped in<br>Operation: Scoped in |
| Social cohesion and inclusive design | Given the existing nature of the Site, there are no current residential communities meaning that the construction phase will not impact upon social cohesion or inclusive design principles. | As residential units are proposed as part of the Proposed Development, the design of these will have a direct impact upon social cohesion and inclusivity across the development. This will therefore have a direct impact on this health determinant. | Construction: Scoped out<br>Operation: Scoped in |
| Minimising the use of resources | The construction phase will include opportunities to minimise the use of resources and to incorporate recycled materials where possible. | The designs for the Proposed Development will have a direct impact on whether residents and businesses will be able to reduce their use of resources. | Construction: Scoped in<br>Operation: Scoped in |
| Climate change | The ability to influence climate change throughout the construction phase will be limited, given that the aspects relating to resource usage will be covered in the assessment of 'minimising the use of resources' as listed above. | The designs for the Proposed Development will have a direct impact upon the use of renewable energy sources, buildings which can adapt to different climatic conditions, sustainable drainage techniques and how the biodiversity of the Site can be enhanced. | Construction: Scoped out<br>Operation: Scoped in |

17.9 The NHS Healthy Urban Development Unit (HUDU) assessment matrix identifies eleven broad health determinants and encourages assessors to consider the planning issues which are likely to influence health and

wellbeing associated with these determinants. It is noted that "*it may not be possible to quantify the impacts as many of the effects on an individual's or community's health are not easily measurable and many health effects are indirect and take many years to manifest themselves. Health impacts may be short-term or temporary, related to construction or longer-term, related to the operation and maintenance of a development and may particularly affect vulnerable or priority groups of the population. Where an impact is identified, actions should be recommended to mitigate a negative impact or enhance or secure a positive impact*"[2].

17.10 The assessment of potential effects on Health and Wellbeing takes into account the number of people affected (both existing and future population), the duration of the change, its frequency and permanence. The vulnerability of the population experiencing the impact and their ability to absorb the impacts is considered. Where specific population groups are predicted to be particularly affected by a health impact, this is identified.

17.11 This is a qualitative rather than quantitative assessment, due to the diverse nature of health determinants and health outcomes which are assessed. Although this Chapter describes the likely qualitative health impacts through the use of the HUDU assessment matrix, it is not possible to quantify the severity or extent of the effects which give rise to these impacts.

## Significance Criteria

17.12 The Institute of Environmental Management & Assessment (IEMA) paper on Determining Significance for Human Health in EIA (November 2022)[3] explains the complexities associated with defining significance for population and human health. This guidance document provides health sensitivity and health magnitude tables, along with details on how to provide an evidence-based narrative to explain why the change is or is not significant for public health.

17.13 A qualitative assessment of the likely significant health effects is based on the level of exposure of the population to changes in the health determinants. The assessment identifies whether there would be changes to health determinants that would lead to beneficial or adverse, direct or indirect and long-term or temporary health outcomes. It considers any mitigation measures embedded into the design of the Proposed Development. The approach for defining significance considers:

- The magnitude of the impact on a health determinant; and
- The size and sensitivity of the population exposed to the impact.

17.14 Most potential health effects cannot be reliably quantified because there are currently no robust or scientifically widely agreed upon methods for quantifying them, or because the types of data required cannot realistically be obtained. Therefore, a quantitative assessment of health effects has been scoped out.

[3] The Institute of Environmental Management (IEMA) (2022) Determining Significance for Human Health in EIA – November 2022

## Magnitude of Impact

17.1 The magnitude of a change to a health determinant (impact) relates to its severity and / or scale. Magnitude is determined by professional judgement, based on defined assessment criteria, as set out within **Table 17.2** The characteristics of an impact (i.e. whether direct or indirect, secondary or cumulative, short, medium or long-term, permanent or temporary, reversible or irreversible) is assessed and the magnitude classified as high, medium, low or very low. The assessment of magnitude also considers the nature of potential health outcomes associated with the change, for example the effects on physical or mental health conditions, quality of life, or comfort.

***Table 17.2:*** *Methodology for assessing magnitude of health impact*[3]

| Magnitude | Guidelines |
|---|---|
| High | High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness / injury outcomes; majority of population affected; permanent change; substantial service quality implications. |
| Medium | Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in morbidity or major change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications. |
| Low | Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications |
| Negligible | Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication. |

## Population Sensitivity

17.2 Population sensitivity is defined by a combination of two factors: the size of the population exposed to an impact and its vulnerability to health effects. The size of the exposed population is judged on a scale of high, medium, low and very low, dependent on geographical area and number of people exposed. The vulnerability of the population is also judged on a scale of high, medium, low and very low based on indicators of the health and social status of the population (**Table 17.3**). More vulnerable populations include those with higher levels of social deprivation or relatively poor health status.

***Table 17.3:*** *Guidelines for the assessment of population exposure and vulnerability*[3]

| Category / Level | Guidelines |
|---|---|
| **High** | High levels of deprivation (including pockets of deprivation); reliance on resources shared (between the population and the project); existing wide inequalities between the most and least healthy; a community whose outlook is predominantly anxiety or concern; people who are prevented from undertaking daily activities; dependants; people with very poor health status; and/or people with a very low capacity to adapt. |
| **Medium** | Moderate levels of deprivation; few alternatives to shared resources; existing widening inequalities between the most and least healthy; a community whose outlook is predominantly uncertainty with some concern; people who are highly limited from undertaking daily activities; people providing or requiring a lot of care; people with poor health status; and/or people with a limited capacity to adapt. |
| **Low** | Low levels of deprivation; many alternatives to shared resources; existing narrowing inequalities between the most and least healthy; a community whose outlook is predominantly ambivalence with some concern; people who are slightly limited from undertaking daily activities; people providing or requiring some care; people with fair health status; and/or people with a high capacity to adapt |
| **Very Low** | Very low levels of deprivation; no shared resources; existing narrow inequalities between the most and least healthy; a community whose outlook is predominantly support with some concern; people who are not limited from undertaking daily activities; people who are independent (not a carer or dependant); people with good health status; and/or people with a very high capacity to adapt. |

17.15 Population exposure and population vulnerability are combined to give an overall judgement on population sensitivity, on a scale of high, medium, low or very low, as shown in **Table 17.4** below.

***Table 17.4:*** *Population sensitivity matrix*

| Population exposure | Population vulnerability | | | |
|---|---|---|---|---|
| | High | Medium | Low | Very Low |
| High | High | High | Medium | Low |
| Medium | High | Medium | Low | Low |
| Low | Medium | Low | Low | Very Low |
| Very Low | Low | Low | Very Low | Very Low |

17.16 To determine overall significance of a health impact, the assessment matrix provided in **Table 17.5** will be used. This classifies significance of health impacts as major, moderate, minor or negligible. For the purpose of the EIA, a **significant** impact is defined as any health impacts identified as **Moderate** and above (beneficial or adverse).

***Table 17.5:*** *Significance of impact*

| **Population Exposure** | **Population Sensitivity** | | | |
|---|---|---|---|---|
| | High | Medium | Low | Very Low |
| High | Major | Major / moderate | Moderate / minor | Minor / negligible |
| Medium | Major / moderate | Moderate | Minor | Minor / negligible |
| Low | Moderate / minor | Minor | Minor | Negligible |
| Very Low | Minor / negligible | Minor / negligible | Negligible | Negligible |

17.17 To determine the nature of these significant effects, health impacts are outlined in **Table 17.6** below, based on broad categories for the health determinants contained within the HUDU assessment matrix. Where an adverse impact has been identified, recommendations are outlined to mitigate any adverse impacts on health, and any opportunities to enhance health benefits are identified.

***Table 17.6:*** *Significance and assessment criteria*

| Level of Significance | Assessment Criteria |
|---|---|
| Major (significant) | • Changes, due to the project, have a substantial effect on the ability to deliver current health policy and / or the ability to narrow health inequalities<br>• Change, due to the project, could result in a regulatory threshold or statutory standard being crossed (if applicable).<br>• There is likely to be a substantial change in the health baseline of the population<br>• In addition, health priorities for the relevant study area are of specific relevance to the determinant of health or population group affected by the project. |
| Moderate (significant) | • Changes, due to the project, have an influential effect on the ability to deliver current health policy and / or the ability to narrow health inequalities<br>• Change, due to the project, could result in a regulatory threshold or statutory standard being approached (if applicable).<br>• There is likely to be a small change in the health baseline of the population<br>• In addition, health priorities for the relevant study area are of general relevance to the determinant of health or population group affected by the project. |
| Minor (not significant) | • Changes, due to the project, have a marginal effect on the ability to deliver current health policy and / or the ability to narrow health inequalities<br>• Change, due to the project, would be well within a regulatory threshold or statutory standard (if applicable); but could result in a guideline being crossed (if applicable).<br>• There is likely to be a slight change in the health baseline of the population.<br>• In addition, health priorities for the relevant study area are of low relevance to the determinant of health or population group affected by the project. |
| Negligible (not significant) | • Changes, due to the project, are not related to the ability to deliver current health policy and / or the ability to narrow health inequalities<br>• Change, due to the project, would not affect a regulatory threshold, statutory standard or guideline (if applicable).<br>• There is likely to be a very limited change in the health baseline of the population<br>• In addition, health priorities for the relevant study area are not relevant to the determinant of health or population group affected by the project. |

## Red Bank Methodology (Outline Application 4)

### Study Area

17.18 The geographical extent of the impacts assessed within this chapter is dependent upon the type of effects and receptors. Catchments identified are proportionate to describe the likely Health and Wellbeing effects and are based on published guidance, professional judgement and best practice. Given that the assessment of Health and Wellbeing impacts is a qualitative assessment rather than quantitative, the majority of the health determinants assessed in the HUDU approach[2] (as outlined in **Table 17.1**) do not have specific geographical parameters.

17.19 For the purposes of establishing a baseline of demographic data, where possible (and relevant), ward level data has been presented as the lowest geographical level of information. Datasets for larger geographical areas have been used where ward level data are not available, and for means of comparison against the ward. The various area profiles are as follows:

- **Neighbourhood** – as defined by the LSOA covering the majority of the Site (Manchester 056C). This impact area will be used to assess the deprivation conditions;
- **Local** – as defined by the Cheetham ward boundary (the local ward in which the Site is located);
- **District** – as defined by the Manchester City Council (MCC) local authority administrative boundary;
- **Regional** – as defined as the wider North West Region; and
- **National** – depending on the dataset used, national comparisons in the baseline assessment vary between England, England and Wales, Great Britain and the United Kingdom.

17.20 Those health determinants for which some specific geographical parameters can be applied in relation to the Site location are outlined below.

### Healthcare

17.21 The Site is located within the NHS Greater Manchester Integrated Care Partnership (ICP) area, replacing the former Manchester Clinical Commissioning Group (CCG) in July 2022. The area overseen by the ICP is where the majority of residents at the Proposed Development are likely to access primary care provision.

17.22 There is no standardised catchment area within which residents typically access GP and dental services. As such, a 'typical' walking distance for urban, city centre locations (such as the Proposed Development) of one mile (circa 1.61km) has been assumed, on the basis of past experience (this also being the same catchment area selected for the adjacent 'Victoria Riverside' development) and professional judgement.

17.23 Residents are likely to access secondary healthcare services (for example, hospitals) within a wider geographical area, and therefore a three-mile radius has been assumed given the urban nature of the Site location. It is

acknowledged however that there are no geographical restrictions on accessing secondary healthcare facilities, in the way that catchments are applied for primary care services.

## Survey and Data Sources

17.24 A desk-based baseline data collection exercise has been undertaken which included a review of available information to determine the baseline conditions in the relevant geographical areas of effect. The following data sources have been reviewed:

- Office for National Statistics (ONS) NOMIS Area Profiles[4] and NOMIS ward level datasets;
- English Indices of Deprivation 2019[5];
- NHS Digital[6];
- Public Health England – Health Profiles[7,8;]
- Department for Education School Data[9];
- ONS Population Projections[10];
- ONS 2021 Census Maps[11] and data query functions;
- ONS Wellbeing Subnational Indicators Explorer[12]; and
- ONS Not in Education, Employment or Training (NEET) and Participation Figures[13].

## Construction Phase

17.25 The assessment will consider each theme of the HUDU framework in turn, relevant to temporary effects throughout the construction phase.

[4] ONS (2022) Local Area Report – Manchester [Online] available from: https://www.nomisweb.co.uk/reports/localarea?compare=E08000003
[5] Ministry of Housing, Communities and Local Government (2019) English Indices of Deprivation 2019 [Online] Available from: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019
[6] NHS Digital (2022) General Practice Workforce [Online] Available from: https://digital.nhs.uk/data-and-information/publications/statistical/general-and-personal-medical-services
[7] Public Health England (2022) Local Authority Health Profile - Manchester [Online] Available from: https://fingertips.phe.org.uk/profile/health-profiles
[8] Public Health England (2022) Local Health – Ward – Cheetham [Online] Available from: https://fingertips.phe.org.uk/profile/local-health/data#page/1/gid/1938133185/pat/401/par/E08000003/ati/8/are/E05011356/yrr/1/cid/4/tbm/1
[9] Department for Education (2022) Get Information About Schools [Online] Available from: https://get-information-schools.service.gov.uk/
[10] ONS (2022) Population projections for local authorities [Online] Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/localauthoritiesinenglandtable2
[11] ONS (2021). Census Maps [Online] Available from: https://www.ons.gov.uk/census/maps
[12] ONS (2022) Wellbeing - Subnational Indicators Explorer [Online] Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/subnationalindicatorsexplorer/2022-01-06
[13] ONS (2022) NEET and participation: local authority figures [Online] Available from: https://www.gov.uk/government/publications/neet-and-participation-local-authority-figures

### Operational Phase

17.26 As above, the assessment will consider each theme of the HUDU framework in turn, relevant to permanent effects during the operation of the complete and operational Development.

### Identification of Sensitive Receptors

17.27 The sensitive receptor groups considered as part of this assessment are as follows:

- Construction workers;
- Existing residents, businesses, communities around the Site, including any sensitive receptors such as hospitals and schools; and
- Future users and residents of the Site.

17.28 Consideration of these sensitive receptor groups ensures that the potential effects upon health and wellbeing through both the construction and operation phases can be assessed.

## NT02 – NT04 Methodology (Full Application 5)

### Study Area

17.29 The Study Area for the Full Application 5 remains the same as that proposed for Outline Application 4.

### Healthcare

17.30 The assessment methodology for healthcare provision remains the same for Full Application 5 as that proposed for Outline Application 4.

### Survey and Data Sources

17.31 The data sources relied upon in the assessment of impacts of Full Application 5 remain the same as Outline Application 4.

### Construction Phase

17.32 The assessment of construction phase effects for Full Application 5 will follow the same methodology as that proposed for Outline Application 4.

### Operational Phase

17.33 As above, the assessment of operational phase effects for Full Application 5 will follow the same methodology as that proposed for Outline Application 4.

### Identification of Sensitive Receptors

17.34 The sensitive receptor groups considered as part of this assessment for Full Application 5 will remain the same as those identified for Outline Application 4.

## Assumptions / Limitations

17.35 The majority of the information included in this assessment is derived from desk-based studies and other ES chapter study outcomes and assessments. As such, uncertainty exists where assumptions have been made and the reliability of conclusions drawn from third party reports is based on the accuracy of the information provided.

17.36 Any key assumptions or limitations associated with each technical impact assessment that is referenced in this Chapter is considered within the individual chapters of the other technical disciplines. The overall approach for collating, assessing and reporting impacts on human health and wellbeing is considered to be appropriate and proportionate such that there are no limitations.

17.37 As Application 4 is in outline, there are some particulars which may not be known until detailed design has been completed. As such, these matters have been assessed based on the illustrative information available at the time of writing. Any further revisions will be assessed in subsequent detailed planning applications.

## Consultation

17.38 The EIA Scoping Report was issued to MCC on 31 January 2023 which outlined the approach to the Health and Wellbeing assessment. The Scoping Opinion was received on 16 March 16, 2023, which confirmed that the approach to the assessment was acceptable.

***Table 17.7**: Consultation*

| Consultee | Application | Date and Time | Comments | Actions |
|---|---|---|---|---|
| **MCC** | 4 and 5 | 16 March 2023. | The comments within your Scoping Report are noted and are acceptable in terms of their consideration in the ES. | No actions required. |

# Red Bank (Outline Application 4)

## Baseline Conditions (Application 4)

17.39 The Health and Wellbeing Baseline Assessment is included at **Appendix 17.1**. The Health and Wellbeing Baseline Assessment has reviewed a study area defined by the following geographies:

- **Neighbourhood** – as defined by the LSOA covering the majority of the Site (Manchester 056C). This impact area will be used to assess the deprivation conditions;
- **Local** – as defined by the Cheetham ward boundary (the local ward in which the Site is located);
- **District** – as defined by the Manchester City Council (MCC) local authority administrative boundary;
- **Regional** – as defined as the wider North West Region; and
- **National** - depending on the dataset used, national comparisons in the baseline assessment vary between England, England and Wales, Great Britain and the United Kingdom.

17.40 In summary, the baseline assessment included in **Appendix 17.1** has identified the following positive trends:

- **Population** – the proportion of residents who are children at the ward level is higher than at the local authority level. Despite this, the proportion of working age residents (16 to 64 years) is similar at both ward and local authority level. The population across MCC is also anticipated to grow at a rate of 9.2% between the years 2018 and 2043. This is a slower rate of growth than that anticipated across the national population (10.3%);
- **Unemployment** – the unemployment rate for MCC has more than halved in the years 2011 to 2021.
- **Education** – the proportion of people in the Cheetham ward who have Level 4 and above qualifications (35.1%) is higher than the national average (33.8%).
- **Self-assessment of health** – the proportion of Cheetham ward residents who perceived themselves to have 'good' or 'very good' health was higher than that at the local authority and national level.

17.41 However, despite this, the following adverse trends were also identified:

- **Economic Activity** – in general, economic activity levels are lower at the ward level when compared to all other impact areas, with the Cheetham ward having the highest rate of unemployment when compared against MCC and England and Wales according to the 2021 Census.
- **Employment Structure** - the proportion of people employed in higher skilled occupations in Cheetham ward was notably lower than both and MCC and comparative figures for England and Wales as a whole. This is reflected in the average wages earned across MCC, which are lower than that earned across the wider region and nationally.

- **Education** – at the ward level, the proportion of people with no qualifications was higher than the rates at the local authority level and across the country as a whole. Concurrently, the proportion of residents within Cheetham ward with higher level qualifications was lower than the MCC average, however remained above the England and Wales average.
- **Young person participation** – the proportion of 16 and 17-year-olds who were considered to be not in education, employment and training (NEET) within MCC was higher in MCC than the national average, however this did remain below the regional rate across the North West.
- **Health** – the health of people in MCC and the Cheetham ward specifically is generally worse than the England average.
- **Deprivation –** the neighbourhood impact area (LSOA Manchester 056C) is ranked among the 17% most deprived areas in England. Overall, while the LSOA scores well across some domains (namely income and employment) this is offset by a poorer performance across others, with the neighbourhood found to be in the 2% most deprived communities for living environment in the country. Deprivation relevant to health, housing and crime were also evident.
- **Subnational Indicator Explorer** – MCC performed in-line or worse than the median local authority across the UK, with the exception of broadband connectivity and access to jobs.

17.42 Taken together, these factors suggest that the local area is relatively deprived, although it benefits from its close proximity to the business activities in central Manchester for employment opportunities and transport connections. Data over the last decade shows that the populations in MCC are now less likely to be unemployed, however recent data on young person participation shows that there are persistent issues relating to economic participation. On the whole, the health of residents in the Cheetham ward is worse than England overall and there are significant issues relating to living environment deprivation.

## Embedded Mitigation (Application 4)

### Demolition and Construction

17.43 There is no embedded mitigation proposed for the demolition and construction phase.

### The Completed and Operational Development

17.44 With regards to Outline Application 4, a primary school may be included within Plot RB05 of the Site, as currently included as a 'swing plot' within the scheme which could either be used for education or residential purposes. If this school were to come forward, this would act as an embedded mitigation measure for the proposals as it would mitigate any adverse effects arising from the child yield of the Outline Application 4 Development.

17.45 Similarly, the potential provision of health centre uses within Outline Application 4 could provide embedded mitigation against the increase in GP demand arising from the new population yielded from the Outline Application 4 Development.

17.46 Similarly, the provision of cycle spaces and end of trip facilities within commercial facilities would represent embedded mitigation within the Outline Application 4 Development.

17.47 The provision of homes that meet the M4(2) standards, which could comprise 10% provision of the overall residential units proposed, would also embed mitigation for the Outline Application 4 Development to be inclusive and able to be lived in by a range of people with different physical needs and abilities, including those who are disabled and elderly.

## Assessment of Likely Significant Effects (Application 4)

17.48 There are likely to be some impacts to health and wellbeing in relation to the health determinants identified in **Table 17.1**. These effects have been reviewed against each of the health determinants for the demolition and construction, and operational phases of the Outline Application 4 Development, once completed. As discussed in the Assessment Methodology, this has followed the HUDU Rapid HIA Tool. This is included in **Appendix 17.2,** in Tables 1-1 to 1-11. Effects identified in **Appendix 17.2** have been summarised for each determinant of health theme scoped into the assessment for each phase (demolition and construction, operation) of the Outline Application 4 Development.

### Demolition and Construction

#### Air quality, noise and neighbourhood amenity

17.49 During the construction phase, effects on amenity and health associated with dust and particulate matter will be mitigated using best practice measures in line with the Institute of Air Quality Management guidance. This will ensure that any such residual effects will be negligible. Further details on this are provided within **Volume 2: Main Text, Chapter 12: Air Quality and Dust**.

17.50 Emissions from construction traffic and plant will also contribute to local pollutant concentrations. However, based on the information available regarding construction traffic, air quality along proposed routes is largely good, and as such, any increase in emissions is not expected to result in any significant adverse effects at sensitive receptors located along the identified routes. Additional analysis is highlighted within **Volume 2: Main Text, Chapter 12: Air Quality and Dust**.

17.51 With regards to noise during the construction phase, **Volume 2: Main Text, Chapter 13: Noise and Vibration** highlights that there will likely be some direct, temporary effects. These range in significance from negligible to moderate adverse, with the majority of receptors assessed as having effects considered to be 'not significant'. This is with the exception of residents within receptor NSR7 (future residential receptors of the Victoria Riverside development situated on Dantzic Street to the west of the Site), where the effect is considered to be significant during the construction phase.

17.52 Considering these findings overall, it is anticipated that there will be a direct, short to medium-term, **Minor Adverse** effect at the district level upon residential amenity during the construction phase.

### Access to Work and Training

17.53 As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, whilst there would be a minimum of 4,379 gross construction jobs supported, taking into account leakage, displacement and multiplier effects, this equates to approximately 1,362 net additional construction jobs for the district area being supported (1,238 jobs on-site and 124 in the supply chain).

17.54 More broadly at the regional scale, the construction activity required to build the Outline Application 4 Development would support 3,278 jobs across the North West (excluding residents of MCC). This would be for the entire Works Programme.

17.55 As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, the generation of additional temporary construction employment has been assessed as a direct, short to medium-term, **Moderate Beneficial** effect at the district (MCC) level which is **Significant** and direct, short to medium-term, **Minor Beneficial** effect at the regional (North West) level which is **Not Significant**.

### Minimising the use of resources

17.56 During construction, waste management measures will be put in place, with any salvageable materials considered for reuse on-site or recycling. This will form part of a wider requirement to promote sustainable construction techniques on Site during the construction phase. In adhering to these requirements, it is anticipated that there will be a direct, short to medium-term, **Minor Beneficial** effect at the district level which is **Not Significant**.

## The Completed and Operational Development

### Housing Design and Affordability

17.57 The Outline Application 4 Development would result in the provision of up to 3,250 net additional dwellings. This would be equivalent to 90% of MCC's annual delivery target of 3,600 units per year (2022 – 2032)) in the Manchester Housing Strategy 2022-2032. Affordable housing is proposed in accordance with Policy H 8 of the Manchester Core Strategy with the extant quantum of affordable housing proposed at the detailed design stage subject to viability. This will be beneficial to the affordable dwelling stock throughout MCC. Furthermore, the properties included within the Outline Application 4 Development will be of a range of sizes, providing a mixture of one-, two- and three-bedroom properties. A proportion of these will also meet the M4(2) standards for adaptable dwellings, ensuring that they can be lived in by people of a range of abilities – including older people. As a result, it has been assessed that the Outline Application 4 Development would result in a direct, long-term, **Minor Beneficial** effect at the district level which is **Not Significant**.

## Access to Health and Social Care Services and Other Social Infrastructure

17.58 As set out within **Volume 2: Main Text, Chapter 16: Socio-economics**, once complete and operational, the 6,066 new residents of the Outline Application 4 Development will likely require access to dental services. As demonstrated within the baseline assessment, there are currently nine practices within one mile (circa 1.61km) of the Site, however none of these practices are currently accepting NHS patients and only two are accepting private patients. This may mean that there will be a shortfall in dental provision across the local area and that any new residents of the Site will not be able to access dental care locally. Despite this however, dentists usually do not have bespoke catchment areas and therefore residents may be able to access dental services across an area larger than a one-mile radius from their future home addresses (for example, a practice close to their place of work) as practices generally do not have catchment areas based on residential addresses, like GP clinics. As a result, it has been assessed that this would have a **Minor Adverse** long-term permanent impact upon future residents of the Outline Application 4 Development which is **Not Significant**.

17.59 In addition to dental services, the new 6,066 residents will also require access to a GP practice. As identified in the baseline set out within **Appendix 17.1**, there are eight GP surgeries within one mile of the Site. Assuming all the new residents register at these surgeries, the patient to GP will increase from 1,848 patients per FTE GP, to 2,000 patients per FTE GP. This is above the recommended ratio of one FTE GP for every 1,800 patients[14]. This would result in a **Minor Adverse** long-term permanent effect to residents of the Outline Application 4 Development and local area which is **Not Significant.**

17.60 Despite this, the Outline Application 4 Development has the potential for up to 3,250 sqm (GIA) of floorspace for Health Centre uses which could potentially provide an estimated 10 GPs[15], along with other clinical staff providing a range of healthcare services. Taking this into account, the GP to patient ratio could then be decreased to be 1,601 patients per FTE GP. This would be below the recommended ratio of one FTE GP for every 1,800 patients.

17.61 As a result, the adverse effects arising from the increase in residential population in the local area would be avoided through the embedded mitigation of a health care facility. As such, the overall effect upon GP provision would have a **Minor Beneficial** long-term permanent effect to residents of the Outline Application 4 Development and local area which is **Not Significant.**

## Primary School Provision

17.62 Based on the population yield, the Outline Application 4 Development is estimated to yield a requirement for an additional 322 primary school places once complete and operational (see **Volume 2: Main Text, Chapter 16: Socio-economics, Table 16.15** – see age range 5-11).

[14] NHS London Healthy Urban Development Unit (2009) HUDU Planning Contribution Model Guidance Notes [Online] Available from: https://www.healthyurbandevelopment.nhs.uk/wp-content/uploads/2013/03/GuidanceNotes-2009.pdf

[15] This is based on guidance issued by the NHS London Healthy Urban Development Unit (HUDU) which estimates one GP per 165 sqm. We have presumed that 3,250 is equivalent to 2,600 net internal area (NIA).

17.63 As set out within **Volume 2: Main Text, Chapter 16: Socio-economics**, there are 11 state funded primary schools within 1-mile of the Site. Across the 11 schools there are a total of 409 surplus pupil places.

17.64 In view of the above, the likely effect of the new resident population of the Outline Application 4 Development on the supply of primary school places is considered to be a **negligible** effect at the district level which is **Not Significant**.

17.65 As part of the application, up to 2,750 sqm of primary school uses are proposed for the Site, which is anticipated to comprise a one form-entry (1FE) primary school of around 210 places. This is considered to be a swing plot, meaning it could either be used for a primary school, or for additional residential.

17.66 When factoring for this, it is considered that the effects of the new residential population would be reduced, whilst also assisting in meeting sustainability objectives in promoting active transport to and from school. As a result, the likely effect of the new resident population of the Outline Application 4 Development on the supply of primary school places, following the provision of an on-site primary school is considered to be a direct, long term, **Moderate Beneficial** effect at the district level which is considered to be **Significant**.

### Primary School Provision- Swing Plot Scenario

17.67 As above, if the swing plot currently included within the Outline Application 4 Development were to be used for residential purposes, rather than for a 1FE primary school, the effect upon local primary school provision would remain **negligible** at the district level which is **Not Significant**.

### Secondary School Provision

17.68 Based on the estimated population yield, the Outline Application 4 Development would create a requirement for an additional 300 secondary school places once complete and operational (see **Appendix 16.1**). As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, there are 18 state funded secondary schools within three miles of the Site. Across the 18 schools there is a total of 2,769 surplus pupil places.

17.69 In view of the above, there is likely to be sufficient capacity across the secondary schools surrounding the Site to accommodate the additional 300 pupils generated by the Outline Application 4 Development. The likely effect of the new resident population of the Outline Application 4 Development on the supply of secondary school places is therefore considered to be **negligible** at the district level.

### Access to open space and nature

17.70 The Outline Application 4 Development will provide open space, however as the application is in outline, it is not yet known the final quantum of this space. This will be confirmed at the detailed design stage.

17.71 High-quality public realm will support the new neighbourhoods of Red Bank. The public spaces throughout the neighbourhood will provide a pleasant environment for socialising and relaxing. The nuance in landscape

characters will offer lush green landscapes with grasses, bushes, trees, and ample space for recreational activities. Key public squares are active hubs of activity with restaurants, cafes, shops, and other services. Dantzic Street will be a bustling urban place with busy sidewalks for pedestrians and cyclists. Smaller green spaces and good neighbourhood streets will complete the public realm structure, to create a lively and inhabited urban centre near Manchester City Centre. The neighbourhood will offer a unique combination of character, quality, hierarchy, and accessibility, making it a desirable place to live and work

17.72 The Outline Application 4 Development will include both hard and soft landscaping in the form of new public realm space which will feature focal squares, formal and informal play areas. The design and layout of the public realm and landscaping will be defined at the detailed application stage. However, this outline application seeks to establish the maximum plot extents and defines the key areas of public realm within the site and provides for the following:

- **Travis Island Wetlands** at New Town is a terraced landscape north of plots RB16 and RB17 that will allow local residents and visitors to experience a new urban wetland landscape typology in Manchester. The greenspace makes the most of its position by the River Irk and its natural assets. Its design encourages people to explore and engage with the environment and feel connected to nature. It also includes play trails, walking routes and a small public square adjacent to RB16.
- **Red Bank Viaduct** is diverse in public open spaces. Upgraded existing streets will form a high-quality public realm. Vehicle access on Roger Street, Chase Street, and Back Red Bank is for emergency servicing and some visitor/resident parking. Three key destinations will provide different experiences in the Red Bank Viaduct area. Union Waterfront and Red Bank Terraces were approved as part of the HIF permissions. Brewery Square is a further vibrant artisan public space prop framed by a legacy of railway infrastructure, topped by Viaduct Gardens, an elevated linear park. Filled with activity, Brewery Square will be a marketplace for making and exchanging during the day, and an intimate, edgy restaurant and bar destination during the night supporting the existing commercial uses already in the Red Bank arches. Steps lead up to the Viaduct Gardens above where people can stroll around its abundant nature all the way to Red Bank Square.
- **Red Bank Plateau** will include two key areas of public realm in Red Bank Square and St Catherine's Square. Red Bank Square is the gateway into the Plateau. The public realm from Red Bank Square steps down into Red Bank Terraces. St Catherine's Square is a neighbourhood destination adjacent to St. Catherine's Wood. Fronted by a clubhouse with co-working spaces and a cafe, play facilities, and primary school.

17.73 This has been assessed as having a **Minor Beneficial** long-term permanent impact upon future residents of and workers at the Outline Application 4 Development which is **Not Significant**.

### Accessibility and Active Travel

17.74 The Outline Application 4 Development will promote cycling by ensuring that there is one secure cycle space per residential property (up to 3,250 cycle spaces). In addition to this, there will be several dedicated cycle parking areas on Site for visitors and workers. The provision of an extensive number of cycle spaces will have a **Minor Beneficial** long-term permanent impact upon future residents and workers of the Outline Application 4 Development which is **Not Significant**.

### Crime Reduction and Community Safety

17.75 The existing Site does not contribute to the general character and appearance of the area, whereas the Outline Application 4 Development will improve the quality of the local environment, with landscaping softening the edges of the Site, encouraging pedestrian movement throughout. Landscaped amenity space within the Site will also provide an attractive area for communal use and social interaction. This will be enhanced by the fact that the Outline Application 4 Development is mixed-use, meaning that it will have multiple functions enabling it to be activated at all times of day. Further details are contained within the Crime Impact Statement which accompanies the planning application for the Outline Application 4 Development.

17.76 The Outline Application 4 Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Outline Application 4 Development and local area which is **Not Significant.**

### Access to Healthy Food

17.77 The Development Specification shows that within Plot RB10, potential provision has been made for a ground floor outdoor market space. If provided this would support the supply of local food by providing a space for local traders to operate. Further details will be confirmed in future detailed planning applications. Furthermore, up to 7,000 sqm GEA is allocated to non-residential uses within the Outline Application 4 Development, some of which will include retail uses (both food and non-food). At this stage the end use of the space is not yet known, however it is possible a food shop could occupy the space.

17.78 The Outline Application 4 Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Outline Application 4 Development and local area which is **Not Significant.**

### Access to Work and Training

17.79 The Outline Application 4 Development will include a range of non-residential uses which will provide employment opportunities both on and off-Site. As demonstrated in **Volume 2: Main Text, Chapter 16: Socio-economics**, it is estimated that between 362 and 657 net additional jobs across Manchester and the North West will be supported.

17.80 The provision of these jobs will have a **Minor Beneficial** long-term permanent effect upon future residents of the Outline Application 4 Development and existing residents across the region which is **Not Significant**.

### Social cohesion and inclusive design

17.81 The Outline Application 4 Development will create new connections with existing communities, encouraging pedestrian movement through the Site and surrounding developments within the Victoria North masterplan and the local area more generally. The multi-use nature of the Outline Application 4 Development will also encourage people from outside the Site to enter to use the range of facilities on offer. Furthermore, as part of the Outline Application 4 Development, the potential non-residential floorspaces include uses under F2 'Local Community' which might include halls and meeting places for principal use of the community.

17.82 The Outline Application 4 Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Outline Application 4 Development and local area which is **Not Significant.**

### Minimising the use of resources

17.83 The Outline Application 4 Development will be constructed on previously developed land, making it a brownfield development. The intensity of uses on the Site will be greatly increased compared with its current use and optimised to provide much needed housing in a sustainable location, close to the city centre and a range of other amenities.

17.84 The Outline Application 4 Development will incorporate a range of energy efficiency measures to reduce the use of resources during operation.

17.85 The Outline Application 4 Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Outline Application 4 Development and local area which is **Not Significant.**

### Climate change

17.86 The new landscaped areas will help to enhance biodiversity by providing habitat using a diverse planting scheme. Further information can be found within **Volume 2: Main Text, Chapter 7: Ecology and Nature Conservation** and within the Landscape section of the Design and Access Statement.

17.87 The Outline Application 4 Development will also incorporate a range of sustainable urban drainage techniques. Further details can be found within **Volume 2: Main Text, Chapter 10: Drainage and Flood Risk**.

17.88 The Outline Application 4 Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Outline Application 4 Development and local area which is **Not Significant.**

## Additional Mitigation / Enhancement Measures (Application 4)

17.89 This section describes the measures which are required to mitigate any significant environmental effects with regards to health and wellbeing considerations.

### Demolition and Construction

17.90 As part of the tendering process for a prospective construction contractor, the Applicant will request that all potential firms be signed up to the Considerate Contractors Scheme (CCS). This scheme promotes contractors who are proactive in upholding neighbourhood amenity and leaving a positive impact upon the places they work. The requirement for a contractor to be signed up to this scheme means that an overarching understanding of how to minimise construction impacts will already be embedded within the processes of the contractor, providing a better chance of implementing appropriate construction mitigation measures which may have an impact on human health and wellbeing. Furthermore, the preparation and submission of a Local Labour Agreement will ensure that the construction phase will maximise employment opportunities for local people. The Outline Application 4 Development will also prepare an extensive CEMP (to be conditioned as part of the planning application process) which will ensure continual monitoring and management of potential construction impacts such as noise and air quality throughout the construction phase.

### The Completed and Operational Development

17.91 No additional mitigation and enhancement measures are required.

## Likely Residual Effects of the Development and their Significance (Application 4)

17.92 The residual effects relating to Health and Wellbeing are detailed below in **Table 17.7**.

***Table 17.7:*** *Residual Effects Summary*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Air quality, noise and neighbourhood amenity | **Minor Adverse** short-term impacts on local area, which is **Not Significant** | Implementation of CEMP | **Negligible** short-term impact on local area, which is **Not Significant** |
| Access to work and training | **Moderate Beneficial** short-term impact on the district economy, which is **Significant**<br><br>**Minor Beneficial** short-term impact on the district economy, which is **Not Significant** | None required | **Moderate Beneficial** short-term impact on the district economy, which is **Significant**<br><br>**Minor Beneficial** short-term impact on the district economy, which is **Not Significant** |
| Minimising the use of resources | **Minor Beneficial** short-term impact on the local | None required | **Minor Beneficial** short-term impact on the local area, which |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| | area, which is **Not Significant** | | is **Not Significant** |
| ***Completed and Operational Development*** | | | |
| Housing design and affordability | **Minor Beneficial** long-term impact on local area, which is **Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Significant** |
| Access to health and social care services and other social infrastructure – dental practices | **Minor Adverse** long-term impact on local area, which is **Not Significant** | None required | **Minor Adverse** long-term impact on local area, which is **Not Significant** |
| Access to health and social care services and other social infrastructure – GP practices | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Access to health and social care services and other social infrastructure – Primary schools (if school *is* provided within swing plot) | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Access to health and social care services and other social infrastructure – Primary schools (if school *is not* provided within swing plot) | **Negligible** | None required | **Negligible** |
| Access to health and social care services and other social infrastructure – Secondary schools | **Negligible** | None required | **Negligible** |
| Access to open space and nature | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Accessibility and active travel | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Crime reduction and community safety | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| Access to healthy food | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Access to work and training | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Social cohesion and inclusive design | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Minimising the use of resources | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Climate change | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |

## Conclusions (Application 4)

17.93 The Health and Wellbeing assessment of the Outline Application 4 Development has shown that there are no identified significant adverse effects during the construction and demolition, or operational phases.

17.94 Through appropriate monitoring and management processes, the demolition and construction phase of the Outline Application 4 Development will unlikely lead to any significant Health and Wellbeing effects. The construction phase represents investment in the local area which will support numerous jobs over a prolonged period of construction activity. This will provide a range of economic benefits to MCC and the North West region more broadly.

17.95 The mixed-use nature of the Outline Application 4 Development, along with its commitment to providing a range of different housing typologies and tenures will provide significant benefits to the new residents expected to reside at the Outline Application 4 Development once complete and operational, along with existing neighbouring residents. The provision of social infrastructure uses will also be beneficial, not only to new residents but existing communities close to the Site.

17.96 Overall, the Outline Application 4 Development will promote active travel, activate a disused space to enhance perceptions of community safety, provide spaces for the sale of locally grown and healthy foods and incorporate links with other future developments and existing communities. Non-residential uses included within the Outline Application 4 Development will also support local employment opportunities, along with options to enhance

health outcomes such as fitness and leisure uses which also foster a sense of community whilst improving physical health.

17.97 Importantly, the proximity to open space will also enhance the amenity of the area, whilst also being beneficially used to create a sustainable and resilient development which can proactively respond to climate change and the potential effects of this.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 4)

17.98 **Table 2.5** of **Volume 2: Main Text, Chapter 2: Approach** provides a list of the committed developments which have been identified as 'Cumulative Schemes' for the purpose of the Cumulative Effects Assessment (CEA). Of the 26 Cumulative Schemes identified, none were scoped-out of the CEA with regards to this Health and Wellbeing assessment.

### Approach

17.99 To undertake the CEA, each of the Cumulative Schemes included within **Table 2.5** were reviewed to ascertain the potential number of residential units and how this might impact existing residents during the construction of the developments and how population growth once complete and operational may impact upon issues which can affect health outcomes in the local area.

17.100 Across the 26 Cumulative Schemes identified in **Volume 2: Main Text, Chapter 2: Approach**, 20 include residential units and 21 include commercial floorspace. For those that include residential units (and are therefore 'scoped in' for the CEA of operational effects), the upper range quantum of the residential units allowed for within the planning applications were reviewed to deduce the worst-case scenario for the local area. As some of the Cumulative Schemes within the CEA are in outline, these numbers may change. Furthermore, through subsequent detailed planning applications, there may be additional changes to the quantum of residential units. In any event, an approximate number has been arrived at which estimates that all 20 residential developments will include a net uplift of around 7,561 residential units.

17.101 Population yields are usually based upon a range of factors including tenure type, number of bedrooms and type of residential unit. In the absence of this level of information across all of the 20 Cumulative Schemes, the projected number of persons per household for the Greater Manchester region has been used as a proxy instead. This estimates 2.27 people per household from 2024[16]. By applying this figure to the estimated 7,561 residential units, it is assumed that the Cumulative Schemes together will yield a population in the region of 17,163 persons.

[16] ONS (2022) Live Tables on Household Projections – Table 427 [Online] Available from: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections#history

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

#### Air quality, noise and neighbourhood amenity

17.102 The 26 Cumulative Schemes in conjunction with Outline Application 4 will mean that there will be a prolonged period of construction in the local area lasting many years. This will likely lead to diversions and temporary access issues to community assets and routes, along with potential effects upon neighbourhood amenity through effects such as noise, air quality and vibration. Whilst this will likely cause some level of disruption for a prolonged period of time, each application will be subject to planning conditions which will mandate the need for CEMPs. Furthermore, for those developments assessed to be EIA development, there will be additional assessments completed to ascertain potential effects upon the neighbouring population during the construction phase which will, in turn, also include CEAs of these issues. As such, any potential impacts relating to health and wellbeing will be dealt with on each respective application.

17.103 Where construction across the sites takes place at the same time, there is a possibility that construction noise, experienced by the same receptors would lead to potential for health effects, especially where these receptors include children, disabled or older people who are generally more sensitive to increased levels of noise. It is likely that the Cumulative Schemes are under separate management which would also mean that the coordination of communication with the public regarding when to expect noise might be more difficult. This may result in additional stress for people who are particularly vulnerable to noise.

17.104 Where construction across the Cumulative Schemes takes place at the same time, any loss of access to open space resulting from these Cumulative Schemes would, cumulatively add magnitude to any potential adverse health effects. Where Cumulative Schemes replace existing buildings or areas previously inaccessible to the public, this is unlikely to result in cumulative effects. Once all Cumulative Schemes are completed, access to open space is likely to be significantly improved across all sites due to the improved public realm and green spaces that are planned within a number of the Cumulative Schemes. Due to the existing environmental deprivation in this part of the city, these improvements across the wider area are likely to bring significant physical and mental health benefits to the population.

17.105 Through the implementation of relevant mitigation measures identified in the Air Quality, Noise and Vibration and Transport chapters – along with the implementation of each CEMP as conditioned by each planning application, there is likely to be a **negligible** residual cumulative effect with regards to health and wellbeing.

#### Access to work and training

17.106 The construction phases of the Cumulative Schemes will also enable a range of employment opportunities to be supported locally. Importantly, as there are numerous large-scale developments proposed – it is likely that a strong pipeline of construction work will be supported, therefore providing local job security. As assessed in

**Volume 2: Main Text, Chapter 16: Socio-economics**, it is therefore assumed that the Outline Application 4 Development in conjunction with the Cumulative Schemes will have a **Moderate Beneficial** short to medium-term temporary residual effect.

### Minimising the use of resources

17.107 Through the implementation of relevant measures identified in each CEMP as conditioned by each planning application, there is unlikely to be any residual cumulative effect with regards to health and wellbeing if processes to reduce the use of resources are upheld. This is therefore likely to result in a **negligible** residual cumulative effect with regards to health and wellbeing.

## The Completed and Operational Development

### Housing design and affordability

17.108 An approximate number has been arrived at which estimates that all 20 residential developments will include a net uplift of around 7,561 residential units. In combination with the Outline Application 4 Development, it is estimated that around 10,811 residential units will be delivered. Given that MCC requires that a portion of these meet accessibility standards and are affordable homes, this will provide a range of housing types for different people within the local community. Affordable housing provision would be in accordance with Policy H 8 of the Manchester Core Strategy with the final quantum of affordable housing known at the detailed design stage informed by viability assessment, as will also likely be the case in relation to other cumulative scheme developments that are in outline. In assessing the provision of at least some new homes and some of the meeting accessibility and affordability requirements across all cumulative schemes, this will result in a **Moderate Beneficial** long-term permanent effect.

### Access to health and social care services and other social infrastructure

17.109 Using the standard approach of one FTE GP for every 1,800 patients[14] – it is presumed that the Outline Application 4 Development in conjunction with the Cumulative Schemes would yield around 23,229 persons. This would therefore require around 13 FTE GPs to serve this new population. The Outline Application 4 Development potentially includes provision for health centre uses. This could provide enough space for around 10 GPs, as assessed within this Chapter. Taking this into consideration, there would still likely be a need for an additional 3 GPs to serve all Cumulative Schemes. Some of the Cumulative Schemes identify that D1 floorspace may come forward. This therefore means that there is the potential for some of this floorspace to be used by a GP practice, which may assist with capacity constraints. Additionally, it is likely that some of the future residents of these schemes may already be registered patients at the GP practices assessed within the one-mile radius. If this is not the case, there is also a likelihood that some may remain registered at a practice further afield. Capacity constraints and wider estate planning will likely be reviewed by the NHS and MCC as developments come forward in the local area in the coming years, which may also alter as some of the Cumulative Scheme's progress to reserved matters applications. These effects will also be considered by MCC in the determination of each

planning application. As a result, there is likely to be a residual **negligible** effect upon the local community in relation to GP primary care provision.

17.110 Furthermore, there will be additional strains upon dental services which were identified to be currently over capacity within the local area. All dental practices within one mile of the Site were reviewed within this Chapter, meaning many of the Cumulative Schemes will also be seeking to rely upon these services. Much like the provision of GPs, it is possible that some of the D1 floorspace could be used for a dental practice. If some of this floorspace were to be used for a dental practice, there would likely be a **negligible** residual effect.

17.111 As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, the Cumulative Schemes would increase the residential population in MCC and would therefore have the potential to increase the pressure on local education services (primary and secondary schools) to varying degrees. It is estimated that the new population yield of the Cumulative Schemes with a residential component would be approximately 17,163 people. At the time of the 2021 Census, primary aged children made up 7.9% of the MCC population and 7.4% of the SCC population.

17.112 Applying these proportions, it is estimated that the Cumulative Schemes would generate around 1,327 primary aged students and 1,064 secondary aged students. Combined with the Outline Application 4 Development, it is therefore estimated that the new population yield with the Cumulative Schemes with a residential component would be approximately 1,727 primary school aged pupils and 1,364 secondary aged pupils.

17.113 As identified within the baseline, primary schools in the local area do not currently have capacity in pupil places equivalent to this level of pupil growth. Even with the potential provision of a 1FE primary school within the swing plot as part of Outline Application 4, this will not be able to provide adequate mitigation across all developments. With regards to secondary schools however, there will be sufficient pupil places to accommodate this population.

17.114 These issues would be considered by MCC in the determination of the planning application in the case of each Cumulative Scheme. Taking this into account, it then considered that the likely residual cumulative effects on education services would be **negligible** at the district level.

### Access to open space and nature

17.115 The additional residential population estimated across all cumulative schemes may place pressure upon existing open spaces and their use by existing and future residents, however there will likely be some new open space provision included across the cumulative schemes.

17.116 The open space and public realm proposals for Outline Application 4 are presented at paragraphs 17.70 and 17.71 of this Chapter. This has been assessed as having a **Minor Beneficial** long-term permanent impact upon future residents and workers of the Outline Application 4 Development which is **Not Significant**.

### Accessibility and active travel

17.117 Given that the Cumulative Schemes are within close proximity to Manchester city centre and the employment, education and leisure uses it supports – it is likely that active travel will be encouraged and supported amongst these schemes. For some, the additional populations in this region will attract public transport improvements which will further enhance accessibility and active travel uptake. It is therefore assumed that the Outline Application 4 Development in conjunction with the Cumulative Schemes will have a **Minor Beneficial** long-term permanent residual effect.

### Crime reduction and community safety

17.118 The activation of space across the local area – included areas of land that are currently disused, will help to enhance natural surveillance. The fact that many of the schemes are mixed-use will also promote a range of different uses in the area, ensuring that different activities operating at different times of the day will enhance perceptions of community safety. As set out within the MCC validation list (2018, revised 2020), a Crime Impact Statement is required for major applications. It is therefore presumed that any potential negative effects of the schemes as identified within the Crime Impact Statements will be managed on a case-by-case basis for each planning application. This would result in a **Minor Beneficial** long-term permanent residual effect.

### Access to healthy food

17.119 The Cumulative schemes, including the Outline Application 4 Development, will support a range of non-residential uses. This may incorporate the sale of healthy food and where possible, support for local farmers markets. This would result in a **Minor Beneficial** long-term permanent residual effect.

### Access to work and training

17.120 As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, the Outline Application 4 Development, together with 21 of the 26 Cumulative Schemes would result in the delivery of employment-generating floorspace across several use classes (including Use Class E which includes the former B1/A1/A2/A3/A4/A5/D2 use classes).

17.121 It is estimated that the 21 Cumulative Schemes which include employment generating floorspace would support between 3,000 and 6,500 jobs across Manchester and Salford, of which between 3,000 and 6,000 would be generated by developments within the boundaries of Manchester City Council and up to 500 would be generated by developments within the boundary of Salford City Council. Combined with the estimated 106 - 193 net additional jobs generated at the Outline Application 4 Development (at the district level) gives an estimated total of approximately 3,106 – 6,693 jobs.

17.122 As a result, the likely residual cumulative effects from net additional employment would be considered to be direct, long-term, **Major Beneficial** residual effect at the district level.

### Social cohesion and inclusive design

17.123 The Outline Application 4 Development along with the identified Cumulative Schemes will attract new residents and support new communities in the local area. Measures to ensure accessibility compliance will be upheld across commercial, residential and public realm developments in line with relevant building regulations and MCC requirements. It is presumed that these developments will seek to integrate with existing communities, creating social cohesion. This is therefore likely to result in a **Minor Beneficial** long-term permanent residual effect.

### Minimising the use of resources

17.124 As set out within the MCC validation list (2018, revised 2020), an Environmental Standards Statement is needed for all major applications. This is required to provide details on sustainability ratings and the provision of renewable energy sources within the developments. As a result, it is presumed that all developments considered as part of the Cumulative Schemes will evidence ways in which resources will be minimised during operation. This is therefore likely to result in a **negligible** residual effect.

### Climate change

17.125 As set out within the MCC validation list (2018, revised 2020), evidence such as flood risk assessments, Sustainable Urban Drainage Systems (SuDS) strategies and ecology assessments are required for submission with major planning applications. By considering aspects relating to climate change and the need to build resilience to natural events within the new developments, it is considered that the Outline Application 4 Development in conjunction with the identified Cumulative Schemes would result in a **negligible** residual effect.

## Assessment of Cumulative Effects with Identified Committed Schemes and SRF (Application 4)

17.126 In February 2019, the MCC Executive endorsed the Northern Gateway SRF as a material consideration in the determination of all future planning applications relevant to the area. Now referred to as Victoria North, the SRF includes seven neighbourhoods which seeks to create 15,000 new homes across 155 hectares. Outline Application 4 forms part of an 'Initial Development Area' of Victoria North. As the SRF is a material consideration in determining all future planning applications, a qualitative review of the Outline Application 4 Development, identified Cumulative Schemes and effects arising from the wider SRF has been considered.

17.127 Given Outline Application 4 seeks permission for up to 3,250 dwellings, the remainder of the SRF would be expected to yield approximately 11,750 units. In addition to this, it is anticipated that a significant quantum of commercial space will also come forward, along with leisure and community uses. Considered in addition to the Cumulative Schemes, there will therefore be around 22,561 new residential units.

17.128 In considering Outline Application 4, the Cumulative Schemes and the SRF, there will likely be a number of beneficial health and wellbeing effects arising from the support for new local employment, the development of communities that can be lived in by people of a wide range of physical abilities and ages, the promotion of

leisure and community uses close to home to encourage social cohesion and to enhance mental and physical wellbeing, a reduction in crime potential and the resilience of homes to climate change impacts.

17.129 Given the vast number of residential units, there may however be adverse effects upon the delivery of social services such as in education or healthcare. Whilst Outline Application 4 includes the potential provision of a primary school within the Outline Application 4 Development, it is unlikely that this school could accommodate the children yielded across the whole SRF – in conjunction with children also yielded from Outline Application 4 and the developments identified as Cumulative Schemes.

17.130 This remains the same when considering primary healthcare provision, for example through the delivery of a health care centre within Outline Application 4. Given the number of residential units within the SRF – there would likely be a need for additional GP and dental clinic capacity across the SRF to accommodate the new residential population in conjunction with the identified Cumulative Schemes.

17.131 It can be expected that further development of the SRF will be required to assess its own effects on school capacity and primary health care to make provision as necessary in agreement with MCC. This will be consistent with the SRF identification of improvements to primary schools and health uses as part of the wider regeneration programme. On this assumption it is likely that significant cumulative effects with the SRF are unlikely.

## In-Combination Climate Impacts (Application 4)

17.132 As identified above, there may be adverse in-combination effects associated with the lack of GP places available in the local area. Similarly, there may be adverse in-combination effects associated with the provision of primary school places. In relation to GP provision, this may be exacerbated by climate change as there could be an increase in health conditions such as heat stroke or heat exhaustion which could require attention from the primary care network of GP clinics. Similarly, the lack of provision of local primary school places could be exacerbated by climate change impacts in extreme weather events which make it more difficult for young children to travel to school over vast distances. An example of this could be walking a prolonged distance to school during a heatwave or needing to rely on public transport which might be cancelled during severe rainfall and flooding events.

# NT02-NT04 (Full Application 5)

## Baseline Conditions (Application 5)

17.133 The Health and Wellbeing Baseline Assessment is included at **Appendix 17.1**. Given the proximity of the sites of Outline Application 4 and Full Application 5, the baseline conditions identified above for Outline Application 4 are consistent for/apply equally to, Full Application 5.

## Embedded Mitigation (Application 5)

### Demolition and Construction

17.134 There is no embedded mitigation proposed for the demolition and construction phase.

### The Completed and Operational Development

17.135 The inclusion of open space and amenity space as part of the Full Application 5 Development would be an embedded mitigation measure which would negate any adverse effects on an increase in demand for open space arising from the population to be yielded at the Proposed Development.

17.136 Similarly, the provision of cycle spaces and end of trip facilities within commercial facilities will represent embedded mitigation within the Full Application 5 Development.

17.137 The provision of 10% of the total number of homes will meet the M4(2) standards will also embed mitigation for the Full Application 5 Development to be inclusive and able to be lived in by a range of people with different physical needs and abilities, including those who are disabled and elderly.

## Assessment of Likely Significant Effects (Application 5)

17.138 There are likely to be some impacts to health and wellbeing in relation to the health determinants identified in **Table 17.1**. These effects have been reviewed against each of the health determinants for the demolition and construction phases and the complete and operational development. As discussed in the Assessment Methodology, this has followed the HUDU Rapid HIA Tool. This is included in **Appendix 17.2,** in Tables 2-1 to 2-11. Effects identified in **Appendix 17.2** have been summarised for each determinant of health theme scoped into the assessment for each phase of the Full Application 5 Development.

### Demolition and Construction

#### Air quality, noise and neighbourhood amenity

17.139 During the construction phase, effects on amenity and health associated with dust and particulate matter will be mitigated using best practice measures in line with the Institute of Air Quality Management guidance. This will

ensure that any such residual effects will be negligible. Further details on this are provided within **Volume 2: Main Text, Chapter 12: Air Quality and Dust**.

17.140 Emissions from construction traffic and plant will also contribute to local pollutant concentrations. However, based on the information available regarding construction traffic, air quality along the routes is largely good and as such any increase in emissions is not expected to result in any significant adverse effects at sensitive receptors located along the identified routes. Additional analysis is highlighted within **Volume 2: Main Text, Chapter 12: Air Quality and Dust**.

17.141 With regards to noise during the construction phase, **Volume 2: Main Text, Chapter 13: Noise and Vibration** highlights that there will likely be some direct, temporary effects.

17.142 Considering these findings overall, it is anticipated that there will be a direct, short to medium-term, **Moderate Adverse** effect at the district level upon residential amenity during the construction phase.

### Access to Work and Training

17.143 As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, whilst there would be a minimum of 1,877 gross construction jobs supported, taking into account leakage, displacement and multiplier effects, this equates to approximately 584 net additional construction jobs for the district area being supported (531 jobs on-site and 53 in the supply chain).

17.144 More broadly at the regional scale, the construction activity required to build the Full Application 5 Development would support 1,988 net additional jobs across the North West (excluding residents of MCC). This would be for the entire Works Programme.

17.145 As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, the generation of additional temporary construction employment has been assessed as a direct, short to medium-term, **Minor Beneficial** effect at the District (MCC) level which is **Not Significant** and direct, short to medium-term, **Minor Beneficial** effect at the regional (North West) level which is **Not Significant**.

### Minimising the use of resources

17.146 During construction, waste management measures will be put in place, with any salvageable materials considered for reuse on-site or recycling. This will form part of a wider requirement to promote sustainable construction techniques on Site during the construction phase. In adhering to these requirements, it is anticipated that there will be a direct, short to medium-term, **Minor Beneficial** effect at the district level which is **Not Significant**.

## The Completed and Operational Development

### Housing Design and Affordability

17.147 The Full Application 5 Development would result in the provision of up to 1,550 net additional dwellings. This would be equivalent to 43% of MCC's annual delivery target of 3,600 units per year (2022 – 2032) in the Manchester Housing Strategy 2022-2032. Of these 1,550 dwellings, 5% will be affordable (intermediate housing). This will be beneficial to the affordable dwelling stock throughout MCC. Furthermore, the properties included within the Full Application 5 Development will be of a range of sizes, providing a mixture of one-, two- and three-bedroom properties. A proportion of these will also meet the M4(2) standards for adaptable dwellings, ensuring that they can be lived in by people of a range of abilities – including older people. As a result, it has been assessed that the Full Application 5 Development would result in a direct, long-term, **Minor Beneficial** effect at the district level which is **Not Significant**.

### Access to Health and Social Care Services and Other Social Infrastructure

17.148 Once complete and operational, the 2,596 new residents of the Full Application 5 Development (as calculated within **Volume 2: Main Text, Chapter 16: Socio-economics**) will likely require access to dental services. As demonstrated within the baseline assessment, there are currently nine practices within one mile (circa 1.61km) of the Site, however none of these practices are currently accepting NHS patients and only two are accepting private patients. This may mean that there will be a shortfall in dental provision across the local area and that any new residents of the Site will not be able to access dental care locally. Despite this however, dentists usually do not have bespoke catchment areas and therefore residents may be able to access dental services across an area larger than a one-mile radius from their future home addresses (for example, a practice close to their place of work) as practices generally do not have catchment areas based on residential addresses, like GP clinics. As a result, it has been assessed that this would have a **Minor Adverse** long-term permanent impact upon future residents of the Full Application 5 Development which is **Not Significant**.

17.149 In addition to dental services, the new 2,596 residents will also require access to a GP practice. As identified in the baseline set out within **Appendix 17.1**, there are eight GP surgeries within one mile of the Site. Assuming all the new residents register at these surgeries, the patient to GP will increase from 1,848 patients per FTE GP, to 1,913 patients per FTE GP. This is above the recommended ratio of one FTE GP for every 1,800 patients[17].

17.150 As such, the overall effect upon GP provision would have a **Minor Adverse** long-term permanent effect to residents of the Full Application 5 Development and local area which is **Not Significant.**

[17] NHS London Healthy Urban Development Unit (2009) HUDU Planning Contribution Model Guidance Notes [Online] Available from: https://www.healthyurbandevelopment.nhs.uk/wp-content/uploads/2013/03/GuidanceNotes-2009.pdf

### Primary School Provision

17.151 Based on the maximum population yield, the Full Application 5 Development is estimated to yield a requirement for an additional 108 primary school places once complete and operational (see **Volume 2: Main Text, Chapter 16: Socio-economics, Table 16.15** – see age range 5-11).

17.152 As set out within **Volume 2: Main Text, Chapter 16: Socio-economics**, there are 11 state funded primary schools within 1-mile of the Site. Across the 11 schools there are a total of 409 surplus pupil places.

17.153 In view of the above, there is likely to be sufficient capacity across the primary schools surrounding the site to accommodate the additional 108 pupils generated by the Full Application 5 Development. Therefore, the likely effect of the new resident population of the Full Application 5 Development on the supply of primary school places is considered to be a **negligible** effect at the district level which is **Not Significant**.

### Secondary School Provision

17.154 Based on the estimated population yield, the Full Application 5 Development is estimated to yield a requirement for an additional 62 secondary school places once complete and operational (see **Appendix 16.1**). As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, there are 18 state funded secondary schools within three miles of the Site. Across the 18 schools there is a total of 2,769 surplus pupil places.

17.155 In view of the above, there is likely to be sufficient capacity across the secondary schools surrounding the Site to accommodate the additional 62 pupils generated by the Full Application 5 Development. The likely effect of the new resident population of the Full Application 5 Development on the supply of secondary school places is therefore considered to be **negligible** at the district level.

### Access to open space and nature

17.156 The Full Application 5 Development will provide a series of new public and private open spaces, with a selection of squares, gardens and attractive pedestrian routes. The focus is using 'Wild Urbanism' and Biophilic design to connect green spaces. The Illustrative Masterplan sets out the concept of Wild Urbanism: a vision of merging nature and city life, bringing the Irk Valley into the city and bringing urban elements to the valley. This approach will highlight the Site's ecological qualities and diverse mix of uses and capitalise on the unique topography, to create a memorable place to live, work, and visit.

17.157 The design of the streetscape and courtyard for the NT02-04 development plots embraces this vision through the application of biophilic design principles, reinforcing connections between communities, the built environment and urban nature. The masterplan ambition is to maximise green connections through both public realm and architectural interventions. New Town is a key connection between the River Irk valley and Angel Meadow Park. The streets and courtyards will act as green stepping stones, connecting St. Catherine's Wood to Victoria North and Angel Meadow Park beyond. The natural forms and structure of the woodland will be expressed through the landscape and planting design. Furthermore, Travis Square provides an opportunity to create lush green

environment, running north- south between Dantzic Street and Dulwich Street, comprised of woodland and woodland edge planting typologies.

17.158 The courtyards of the NT02, NT03 and NT04 plots will offer the tranquillity and enclosure of woodland glades. Breaks in the building form will create framed views out to the surrounding streetscape, river valley and St Catherine's Wood and provide intriguing glimpses of nature and courtyard life as people pass along the surrounding streets.

17.159 The scheme will also see the introduction of Launch Pads within NT02, NT03 and NT04. Launch Pads are a new street typology that secure active space within the public realm. By reducing the number of on street car parking spaces, there exists more space for public life. Launch Pads are approximately 25sqm, similar to that of two car parking spaces. They are activated through either commercial, recreational or ecological uses.

17.160 These will be split between Dulwich West and South; Dulwich West hosts commercial orientated Launch Pads that will serve as a public facing spill out zone for the adjacent commercial tenants and provide space for pop up events and markets. Dulwich Street South is populated with residential orientated Launch Pads which relate better to the residential architecture.

**Dantzic Street**

17.161 Dantzic Street is an existing adopted highway and will be upgraded as part of the project. The upgraded highway will have a strong identity which uses natural stone paving and high-quality furniture along the active commercial edge. Separated cycle lanes sit raised above the carriageway creating a safe active travel corridor. A diverse range of planting provides a characteristic and natural setting to the street. Disabled parking bays and lay-bys are systematically located along the street where required.

17.162 Dulwich Street South and West Dulwich Street is a new road to be formed as part of this development. Dulwich Street will be a private road (not for adoption) and will be managed by FEC as part of the estate, Dulwich Street will be for residents and servicing only with access being controlled by bollards.

17.163 The recreational launch pads serve as an outdoor living room for the residents of the area and offer inviting places to rest for visitors strolling along Dulwich Street. Dappled shade from diverse tree species provide shade in the summertime while dense ground cover and shrubs provide colour and texture year-round. Reclaimed brick and Corten edging complement the planting and surrounding paving palette and serve to make the space especially natural and inviting.

17.164 The play-focused recreational Launch Pads create a space for families, and for children to enjoy a custom designed play structure. Small, covered structures serve as connecting points for a safe, protected, and thrilling canopy walk culminating in a curving slide. A variety of tree planting provides shade in the warmer months and

complement the canopy walk while beech hedges line the southern sidewalk edge to buffer visitors from nearby Dulwich Street.

17.165 The pocket forest launch pad mimics the natural succession of local forests. Whips and feather trees planted at the same time as more mature trees to allow for the pocket forest to naturally adapt and change over time. Small boulders and locally sourced snags imbue a sense of the forest, and dense ground cover and shrub plantings complement the tree canopy. The pocket forest provides critical ecological niches for local pollinators and visiting wildlife while also offering visitors and residents a space to enjoy a naturalistic setting amidst urban life.

**Travis Square**

17.166 Travis Square provides a green ecological heart for the neighbourhood. The space is split into two plateaus which offer a close to nature experience.

17.167 The materiality follows that of Dulwich Street, using a mix of natural stone and concrete pavers. A central section to Travis Square prioritises nature and ecology, the re-wilded space captures the wild urbanism theme and will link New Town back to the surrounding City River Park landscape character. There will be no access to the ecological zone, however it will have viewing platforms at both ends for people to appreciate the ecology. Well-designed fencing, pathways and vegetation will prevent antisocial behaviour from breaching the inaccessible area.

**Dalton Street**

17.168 Dalton Street is an existing adopted highway and will be upgraded as part of the project. The pavement connecting to NT04 will retain the same identity as Dantzic Street which uses natural stone paving and high-quality furniture along the active commercial edge.

17.169 Cycle graphics placed in the carriageway promote cyclist priority and will connect into the cycle infrastructure on Dantzic Street.

17.170 A diverse range of planting provides a characteristic and natural setting to the street. In between the planting on-street parking bays and lay-bys are systematically located along the street where required.

17.171 Future residents will also benefit from the proximity to the open space coming forward as part of Application 2. This will ensure that new residents and workers of the complete and operational Full Application 5 Development will be able to easily access open space for recreation purposes. This has been assessed as having a **Minor Beneficial** long-term permanent impact upon future residents and workers of the Full Application 5 Development which is **Not Significant**.

### Accessibility and Active Travel

17.172 The Full Application 5 Development will promote cycling by ensuring that there is one secure cycle space per residential property (up to 3,250 cycle spaces). In addition to this, there will be several dedicated cycle parking areas on Site for visitors and workers. The provision of an extensive number of cycle spaces will have a **Minor Beneficial** long-term permanent impact upon future residents and workers of the Full Application 5 Development which is **Not Significant**.

### Crime Reduction and Community Safety

17.173 The existing Site does not contribute to the general character and appearance of the area, whereas the Full Application 5 Development will improve the quality of the local environment, with landscaping softening the edges of the Site, encouraging pedestrian movement throughout. Landscaped amenity space within the Site will also provide an attractive area for communal use and social interaction. This will be enhanced by the fact that the Full Application 5 Development is mixed-use, meaning that it will have multiple functions enabling it to be activated at all times of day. Further details are contained within the Crime Impact Statement which accompanies the planning application for the Full Application 5 Development.

17.174 The Full Application 5 Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Full Application 5 Development and local area which is **Not Significant.**

### Access to Healthy Food

17.175 As part of the Full Application 5 Development, a portion of floorspace is allocated to non-residential uses, some of which could include retail uses (both food and non-food). At this stage the end use of the space is not yet known, however it is possible a food shop could occupy the space. Whilst the end use of this commercial floorspace is not known, fast food takeaways would likely be discouraged within the scheme. This will ensure that there is not an over-concentration of hot-food takeaways in the local area.

17.176 The Full Application 5 Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Full Application 5 Development and local area which is **Not Significant.**

### Access to Work and Training

17.177 The Full Application 5 Development will include a range of non-residential uses which will provide employment opportunities both on and off-Site. As demonstrated in **Volume 2: Main Text, Chapter 16: Socio-economics**, it is estimated that between 35 and 220 net additional jobs across Manchester and the North West will be supported.

17.178 The provision of these jobs will have a **Minor Beneficial** long-term permanent effect upon the district economy which is **Not Significant** and a **negligible** effect upon the regional economy which is **Not Significant**.

### Social cohesion and inclusive design

17.179 The Full Application 5 Development will create new connections with existing communities, encouraging pedestrian movement through the Site and surrounding developments within the Victoria North masterplan and the local area more generally. The multi-use nature of the Full Application 5 Development will also encourage people from outside the Site to enter to use the range of facilities on offer. Furthermore, as part of the Full Application 5 Development, there will be residents and non-residents clubhouses, helping to foster a sense of community for residents and others living and working in the local area.

17.180 The Full Application 5 Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Full Application 5 Development and local area which is **Not Significant.**

### Minimising the use of resources

17.181 The Full Application 5 Development will be constructed on previously developed land, making it a brownfield development. The intensity of uses on the Site will be greatly increased compared with its current use and optimised to provide much needed housing in a sustainable location, close to the city centre and a range of other amenities.

17.182 The Full Application 5 Development will incorporate a range of energy efficiency measures to reduce the use of resources during operation.

17.183 The Full Application 5 Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Full Application 5 Development and local area which is **Not Significant.**

### Climate change

17.184 The new landscaped areas will help to enhance biodiversity by providing habitat using a diverse planting scheme. Further information can be found within **Volume 2: Main Text, Chapter 7: Ecology and Nature Conservation** and within the Landscape section of the Design and Access Statement.

17.185 The Full Application 5 Development will also incorporate a range of sustainable urban drainage techniques. Further details can be found within **Volume 2: Main Text, Chapter 10: Drainage and Flood Risk**.

17.186 The Full Application 5 Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Full Application 5 Development and local area which is **Not Significant.**

## Additional Mitigation / Enhancement Measures (Application 5)

17.187 This section describes the measures which are required to mitigate any significant environmental effects with regards to health and wellbeing considerations.

### Demolition and Construction

17.188 As part of the tendering process for a prospective construction contractor, the Applicant will request that all potential firms be signed up to the Considerate Contractors Scheme (CCS). This scheme promotes contractors who are proactive in upholding neighbourhood amenity and leaving a positive impact upon the places they work. The requirement for a contractor to be signed up to this scheme means that an overarching understanding of how to minimise construction impacts will already be embedded within the processes of the contractor, providing a better chance of implementing appropriate construction mitigation measures which may have an impact on human health and wellbeing. Furthermore, the preparation and submission of a Local Labour Agreement will ensure that the construction phase will maximise employment opportunities for local people. The Full Application 5 Development will also prepare an extensive CEMP (to be conditioned as part of the planning application process) which will ensure continual monitoring and management of potential construction impacts such as noise and air quality throughout the construction phase.

### The Completed and Operational Development

17.189 No additional mitigation measures have been identified.

## Likely Residual Effects of the Development and their Significance (Application 5)

17.190 The residual effects relating to Health and Wellbeing are detailed below in **Table 17.8**.

***Table 17.8:*** *Residual Effects Summary*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Air quality, noise and neighbourhood amenity | **Moderate Adverse** short-term impacts on local area, which is **Significant** | Implementation of CEMP | **Minor Adverse** short-term impact on local area, which is **Not Significant** |
| Access to work and training | **Moderate Beneficial** short-term impact on the district economy, which is **Significant**<br><br>**Minor Beneficial** short-term impact on the district economy, which is **Not Significant** | None required | **Moderate Beneficial** short-term impact on the district economy, which is **Significant**<br><br>**Minor Beneficial** short-term impact on the district economy, which is **Not Significant** |
| Minimising the use of resources | **Minor Beneficial** short-term impact on the local area, which is **Not** | None required | **Minor Beneficial** short-term impact on the local area, which is **Not** |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| | **Significant** | | **Significant** |
| ***Completed and Operational Development*** | | | |
| Housing design and affordability | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Access to health and social care services and other social infrastructure – dental practices | **Minor Adverse** long-term impact on local area, which is **Not Significant** | None required | **Minor Adverse** long-term impact on local area, which is **Not Significant** |
| Access to health and social care services and other social infrastructure – GP practices | **Minor Adverse** long-term impact on local area, which is **Not Significant** | None required | **Minor Adverse** long-term impact on local area, which is **Not Significant** |
| Access to health and social care services and other social infrastructure – Primary schools | Negligible | None required | Negligible |
| Access to health and social care services and other social infrastructure – Secondary schools | Negligible | None required | Negligible |
| Access to open space and nature | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Accessibility and active travel | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Crime reduction and community safety | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Access to healthy food | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Access to work and training | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Social cohesion and inclusive design | **Minor Beneficial** long-term impact on local area, | None required | **Minor Beneficial** long-term impact on local area, |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| | which is **Not Significant** | | which is **Not Significant** |
| Minimising the use of resources | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Climate change | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |

## Conclusions (Application 5)

17.191 The Health and Wellbeing assessment of the Full Application 5 Development has shown that there are no identified significant adverse effects during both the construction and demolition phase and once the development is complete and operational.

17.192 Through appropriate monitoring and management processes, the demolition and construction phase of the Full Application 5 Development will unlikely lead to any significant Health and Wellbeing effects. The construction phase represents investment in the local area which will support numerous jobs over a prolonged period of construction activity. This will provide a range of economic benefits to MCC and the North West region more broadly.

17.193 The residential led mixed-use nature of the Full Application 5 Development, along with its commitment to providing a range of different housing typologies and tenures will provide significant benefits to the new residents expected to reside at the complete and operational Full Application 5 Development, along with existing neighbouring residents. The provision of social infrastructure uses will also be beneficial, not only to new residents but existing communities close to the Site.

17.194 Overall, the Full Application 5 Development will promote active travel, activate a disused space to enhance perceptions of community safety, provide spaces for the sale of locally grown and healthy foods and incorporate links with other future developments and existing communities. Non-residential uses included within the Full Application 5 Development will also support local employment opportunities, along with options to enhance health outcomes such as fitness and leisure uses which also foster a sense of community whilst improving physical health.

17.195 Importantly, the proximity of the Site to extensive open space will also enhance the amenity of the area, whilst also being beneficially used to create a sustainable and resilient development which can proactively respond to climate change and the potential effects of this.

## Assessment of Cumulative Effects with Identified Committed Schemes (Application 5)

17.196 **Table 2.5** of **Volume 2: Main Text, Chapter 2: Approach** provides a list of the committed developments which have been identified as 'Cumulative Schemes' for the purpose of the Cumulative Effects Assessment (CEA). Of the 26 Cumulative Schemes identified, none were scoped-out of the CEA with regards to this Health and Wellbeing assessment.

### Approach

17.197 To undertake the CEA, each of the Cumulative Schemes included within **Table 2.5** were reviewed to ascertain the potential number of residential units and how this might impact existing residents during the construction of the developments and how population growth once complete and operational may impact upon issues which can affect health outcomes in the local area.

17.198 Across the 26 Cumulative Schemes identified in **Volume 2: Main Text, Chapter 2: Approach**, 20 include residential units and 21 include commercial floorspace. For those that include residential units (and are therefore 'scoped in' for the CEA of operational effects), the upper range quantum of the residential units allowed for within the planning applications were reviewed to deduce the worst-case scenario for the local area. As some of the Cumulative Schemes within the CEA are in outline, these numbers may change. Furthermore, through subsequent reserved matters applications, there may be additional changes to the quantum of residential units. In any event, an approximate number has been arrived at which estimates that all 20 residential developments will include a net uplift of around 7,561 residential units.

17.199 Population yields are usually based upon a range of factors including tenure type, number of bedrooms and type of residential unit. In the absence of this level of information across all of the 20 Cumulative Schemes, the projected number of persons per household for the Greater Manchester region has been used as a proxy instead. This estimates 2.27 people per household from 2024[18]. By applying this figure to the estimated 7,561 residential units, it is assumed that the Cumulative Schemes together will yield a population in the region of 17,163 persons

### Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

#### Air quality, noise and neighbourhood amenity

17.200 The 26 Cumulative Schemes in conjunction with the Full Application 5 Development will mean that there will be a prolonged period of construction in the local area lasting many years. This will likely lead to diversions and temporary access issues to community assets and routes, along with potential effects upon neighbourhood

[18] ONS (2022) Live Tables on Household Projections – Table 427 [Online] Available from: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections#history

amenity through effects such as noise, air quality and vibration. Whilst this will likely cause some level of disruption for a prolonged period of time, each application will be subject to planning conditions which will mandate the need for CEMPs. Furthermore, for those developments assessed to be EIA development, there will be additional assessments completed to ascertain potential effects upon the neighbouring population during the construction phase which will, in turn, also include CEAs of these issues. As such, any potential impacts relating to health and wellbeing will be dealt with on each respective application.

17.201 Where construction across the sites takes place at the same time, there is a possibility that construction noise, experienced by the same receptors would lead to potential for health effects, especially where these receptors include children, disabled or older people who are generally more sensitive to increased levels of noise. It is likely that the Cumulative Schemes are under separate management which would also mean that the coordination of communication with the public regarding when to expect noise might be more difficult. This may result in additional stress for people who are particularly vulnerable to noise.

17.202 Where construction across the Cumulative Schemes takes place at the same time, any loss of access to open space resulting from these Cumulative Schemes would, cumulatively add magnitude to any potential adverse health effects. Where Cumulative Schemes replace existing buildings or areas previously inaccessible to the public, this is unlikely to result in cumulative effects. Once all Cumulative Schemes are completed, access to open space is likely to be significantly improved across all sites due to the improved public realm and green spaces that are planned within a number of the Cumulative Schemes. Due to the existing environmental deprivation in this part of the city, these improvements across the wider area are likely to bring significant physical and mental health benefits to the population.

17.203 Through the implementation of relevant mitigation measures identified in the Air Quality, Noise and Vibration and Transport ES chapters – along with the implementation of each CEMP as conditioned by each planning application, there is likely to be a **negligible** residual cumulative effect with regards to health and wellbeing.

### Access to work and training

17.204 The construction phases of the Cumulative Schemes will also enable a range of employment opportunities to be supported locally. Importantly, as there are numerous large-scale developments proposed – it is likely that a strong pipeline of construction work will be supported, therefore providing local job security. As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, it is therefore assumed that the Full Application 5 Development in conjunction with the Cumulative Schemes will have a **Moderate Beneficial** short to medium-term temporary residual effect.

### Minimising the use of resources

17.205 Through the implementation of relevant measures identified in each CEMP as conditioned by each planning application, there is unlikely to be any residual cumulative effect with regards to health and wellbeing if

processes to reduce the use of resources are upheld. This is therefore likely to result in a **negligible** residual cumulative effect with regards to health and wellbeing.

## The Completed and Operational Development

### Housing design and affordability

17.206 An approximate number has been arrived at which estimates that all 20 residential developments will include a net uplift of around 7,561 residential units. In combination with the Full Application 5 Development, it is estimated that around 9,111 residential units will be delivered. Given that these meet accessibility standards and affordable homes will be provided, this will provide a range of housing types for different people within the local community. This will result in a **Major Beneficial** long-term permanent effect.

### Access to health and social care services and other social infrastructure

17.207 Using the standard approach of one FTE GP for every 1,800 patients[14] – it is presumed that the Full Application 5 Development, in conjunction with the Cumulative Schemes, would therefore yield around 19,759 persons. This would therefore require around 11 FTE GPs to serve this new population. Some of the Cumulative Schemes identify that D1 floorspace may come forward. Additionally, it is likely that some of the future residents of these schemes may already be registered patients at the GP practices assessed within the one-mile radius. If this is not the case, there is also a likelihood that some may remain registered at a practice further afield. Capacity constraints and wider estate planning will likely be reviewed by the NHS and MCC as developments come forward in the local area in the coming years, which may also alter as some of the Cumulative Scheme's progress to reserved matters applications. These effects will also be considered by MCC in the determination of each planning application. As a result, there is likely to be a residual **negligible** effect upon the local community in relation to GP primary care provision.

17.208 Furthermore, there will be additional strains upon dental services which were identified to be currently over capacity within the local area. All dental practices within one mile of the Site were reviewed within this Chapter, meaning many of the Cumulative Schemes will also be seeking to rely upon these services. Much like the provision of GPs, it is possible that some of the D1 floorspace could be used for a dental practice. If some of this floorspace were to be used for a dental practice, there would likely be a **negligible** residual effect.

17.209 As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, the Cumulative Schemes would increase the residential population in MCC and would therefore have the potential to increase the pressure on local education services (primary and secondary schools) to varying degrees. It is estimated that the new population yield of the Cumulative Schemes with a residential component would be approximately 17,163 people. At the time of the 2021 Census, primary aged children made up 7.9% of the MCC population and 7.4% of the SCC population. Applying these proportions, it is estimated that the Cumulative Schemes would generate around 1,327 primary aged students. Combined with the Full Application 5 Development, it is therefore estimated that

the new population yield with the Cumulative Schemes with a residential component would be approximately 1,435 primary school aged pupils.

17.210 At the time of the 2021 Census, secondary aged pupils made up 6.4% of the MCC population and 5.8% of the SCC population. Applying these proportions to the population estimated at the Cumulative Schemes, it is estimated that these developments together would yield 1,064 secondary school aged pupils. Combined with the Full Application 5 Development, it is therefore estimated that the new population yield of the Full Application 5 Development with the Cumulative Schemes with a residential component would be approximately 1,172 secondary school aged pupils.

17.211 As identified within the baseline assessment, primary schools in the local area would not currently have sufficient pupil places to be able to accommodate this level of pupil growth. Secondary schools, however, do currently have sufficient pupil places.

17.212 These issues would be considered by MCC in the determination of the planning application in the case of each Cumulative Scheme. It is therefore assumed that any required mitigation to minimise adverse effects to education provision would be considered on a case-by-case basis.

17.213 Taking the above measures into account, it was considered that the likely residual cumulative effects on education services would be **negligible** at the district level.

### Access to open space and nature

17.214 The additional residential population estimated across all cumulative schemes may place pressure upon existing open spaces and their use by existing and future residents, however there will likely be some new open space provision included across the cumulative schemes.

17.215 This has been assessed as having a **Minor Beneficial** long-term permanent impact upon future residents and workers of the Full Application 5 Development which is **Not Significant**.

### Accessibility and active travel

17.216 Given that the Cumulative Schemes are within close proximity to Manchester city centre and the employment, education and leisure uses it supports – it is likely that active travel will be encouraged and supported amongst these schemes. For some, the additional populations in this region will attract public transport improvements which will further enhance accessibility and active travel uptake. It is therefore assumed that the Full Application 5 Development in conjunction with the Cumulative Schemes will have a **Minor Beneficial** long-term permanent residual effect.

### Crime reduction and community safety

17.217 The activation of space across the local area – including areas of land that are currently disused, will help to enhance natural surveillance. The fact that many of the schemes are mixed-use will also promote a range of different uses in the area, ensuring that different activities operating at different times of the day will enhance perceptions of community safety. As set out within the MCC validation list (2018, revised 2020), a Crime Impact Statement is required for major applications. It is therefore presumed that any potential negative effects of the schemes as identified within the Crime Impact Statements will be managed on a case-by-case basis for each planning application. This would result in a **Minor Beneficial** long-term permanent residual effect.

### Access to healthy food

17.218 The Cumulative schemes, including the Full Application 5 Development, will support a range of non-residential uses. This may incorporate the sale of healthy food and where possible, support for local farmers markets. This would result in a **Minor Beneficial** long-term permanent residual effect.

### Access to work and training

17.219 As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, the Full Application 5 Development, together with 21 of the 26 Cumulative Schemes would result in the delivery of employment-generating floorspace across several use classes (including Use Class E which includes the former B1/A1/A2/A3/A4/A5/D2 use classes).

17.220 It is estimated that the 21 Cumulative Schemes which include employment generating floorspace would support between 3,000 and 6,500 jobs across Manchester and Salford, of which between 3,000 and 6,000 would be generated by developments within the boundaries of Manchester City Council and up to 500 would be generated by developments within the boundary of Salford City Council. Combined with the estimated 35 to 65 net additional jobs generated at the Full Application 5 Development (at the district level) gives an estimated total of approximately 3,035 and 6,565 jobs.

17.221 As a result, the likely residual cumulative effects from net additional employment would be considered to be direct, long-term, **Major Beneficial** residual effect at the district level.

### Social cohesion and inclusive design

17.222 The Full Application 5 Development along with the identified Cumulative Schemes will attract new residents and support new communities in the local area. Measures to ensure accessibility compliance will be upheld across commercial, residential and public realm developments in line with relevant building regulations and MCC requirements. It is presumed that these developments will seek to integrate with existing communities, creating social cohesion. This is therefore likely to result in a **Minor Beneficial** long-term permanent residual effect.

### Minimising the use of resources

17.223 As set out within the MCC validation list (2018, revised 2020), an Environmental Standards Statement is needed for all major applications. This is required to provide details on sustainability ratings and the provision of renewable energy sources within the developments. As a result, it is presumed that all developments considered as part of the Cumulative Schemes will evidence ways in which resources will be minimised during operation. This is therefore likely to result in a **negligible** residual effect.

### Climate change

17.224 As set out within the MCC validation list (2018, revised 2020), evidence such as flood risk assessments, Sustainable Urban Drainage Systems (SuDS) strategies and ecology assessments are required for submission with major planning applications. By considering aspects relating to climate change and the need to build resilience to natural events within the new developments, it is considered that the Full Application 5 Development in conjunction with the identified Cumulative Schemes would result in a **negligible** residual effect.

## Assessment of Cumulative Effects with Identified Committed Schemes and SRF (Application 5)

17.225 In February 2019, the MCC Executive endorsed the Northern Gateway Strategic Regeneration Framework (SRF) as a material consideration in the determination of all future planning applications relevant to the area. Now referred to as Victoria North, the SRF includes seven neighbourhoods which seeks to create 15,000 new homes across 155 hectares. Full Application 5 forms part of an 'Initial Development Area' of Victoria North. As the SRF is a material consideration in determining all future planning applications, a qualitative review of the Full Application 5 Development and effects arising from the wider SRF has been considered.

17.226 Given Full Application 5 seeks permission for up to 1,550 dwellings, the remainder of the SRF would be expected to yield approximately 13,450 units. In addition to this, it is anticipated that a significant quantum of commercial space will also come forward, along with leisure and community uses. Considered in addition to the Cumulative Schemes, there will therefore be around 22,561 new residential units.

17.227 In considering Full Application 5 along with the SRF, there will likely be a number of beneficial health and wellbeing effects arising from the support for new local employment, the development of communities that can be lived in by people of a wide range of physical abilities and ages, the promotion of leisure and community uses close to home to encourage social cohesion and to enhance mental and physical wellbeing, a reduction in crime potential and the resilience of homes to climate change impacts.

17.228 Given the vast number of residential units, there may however be adverse effects upon the delivery of social services such as in education or healthcare. Whilst it is known that Outline Application 4 (within the wider SRF) includes the potential provision of a primary school, it remains unknown if this school could accommodate the

children yielded across the whole SRF – in conjunction with children also yielded from the Full Application 5 Development and the developments identified as Cumulative Schemes.

17.229 This remains the same when considering primary healthcare provision. Given the number of residential units within the SRF – there would likely be a need for additional GP and dental clinic capacity across the SRF to accommodate the new residential population.

17.230 It can be expected that further development of the SRF will be required to assess its own effects on school capacity and primary health care to make provision as necessary in agreement with MCC. This will be consistent with the SRF identification of improvements to primary schools and health uses as part of the wider regeneration programme. On this assumption, it is likely that significant cumulative effects with the SRF are unlikely.

## In-Combination Climate Impacts (**Application 4**)

17.231 As identified above, there may be adverse in-combination effects associated with the lack of GP places available in the local area. Similarly, there may be adverse in-combination effects associated with the provision of primary school places. In relation to GP provision, this may be exacerbated by climate change as there could be an increase in health conditions such as heat stroke or heat exhaustion which could require attention from the primary care network of GP clinics. Similarly, the lack of provision of local primary school places could be exacerbated by climate change impacts in extreme weather events which make it more difficult for young children to travel to school over vast distances. An example of this could be walking a prolonged distance to school during a heatwave or needing to rely on public transport which might be cancelled during severe rainfall and flooding events.

# In Combination Effects of Applications 4 and 5

17.232 Information relating to the baseline conditions and the embedded mitigation measures for both Outline Application 4 and Full Application 5 (the 'Proposed Development') has been set out previously in this chapter.

## Assessment of Likely Significant Effects (Applications 4 and 5)

17.233 There are likely to be some impacts to health and wellbeing in relation to the health determinants identified in **Table 17.1**. These effects have been reviewed against each of the health determinants for the demolition and construction phases and the complete and operational development. As discussed in the Assessment Methodology, this has followed the HUDU Rapid HIA Tool. This is included in **Appendix 17.2,** in Tables 3-1 to 3-11. Effects identified in **Appendix 17.2** have been summarised for each determinant of health theme scoped into the assessment for each phase (demolition and construction, operation) of the Proposed Development.

### Demolition and Construction

#### Air quality, noise and neighbourhood amenity

17.234 During the construction phase, effects on amenity and health associated with dust and particulate matter will be mitigated using best practice measures in line with the Institute of Air Quality Management guidance. This will ensure that any such residual effects will be negligible. Further details on this are provided within **Volume 2: Main Text, Chapter 12: Air Quality and Dust**.

17.235 Emissions from construction traffic and plant will also contribute to local pollutant concentrations. However, based on the information available regarding construction traffic, air quality along the routes is largely good and as such any increase in emissions is not expected to result in any significant adverse effects at sensitive receptors located along the identified routes. Additional analysis is highlighted within **Volume 2: Main Text, Chapter 12: Air Quality and Dust**.

17.236 With regards to noise during the construction phases of both Outline Application 4 and Full Application 5, **Volume 2: Main Text, Chapter 13: Noise and Vibration** highlights that there will likely be some direct, temporary effects.

17.237 Considering these findings overall, it is anticipated that there will be a direct, short to medium-term, **Moderate Adverse** effect at the district level upon residential amenity during the construction phase.

#### Access to Work and Training

17.238 As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, whilst there would be a minimum of 6,256 gross construction jobs supported, taking into account leakage, displacement and multiplier effects, this equates to approximately 1,946 net additional construction jobs for the district area being supported (1,769 jobs on-site and 177 in the supply chain).

17.239 More broadly at the regional scale, the construction activity required to build the Proposed Development would support 4,682 net additional jobs across the North West (excluding residents of MCC). This would be for the entire Works Programme.

17.240 As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, the generation of additional temporary construction employment has been assessed as a direct, short to medium-term, **Moderate Beneficial** effect at the District (MCC) level which is **Significant** and direct, short to medium-term, **Minor Beneficial** effect at the regional (North West) level which is **Not Significant**.

### Minimising the use of resources

17.241 During the construction phase for both applications, waste management measures will be put in place, with any salvageable materials considered for reuse on-site or for recycling. This will form part of a wider requirement to promote sustainable construction techniques on Site during the construction phase. In adhering to these requirements, it is anticipated that there will be a direct, short to medium-term, **Minor Beneficial** effect at the district level which is **Not Significant**.

## The Completed and Operational Development

### Housing Design and Affordability

17.242 The Proposed Development would result in the provision of up to 4,801 net additional dwellings. This would be equivalent to 133% of MCC's annual delivery target of 3,600 units per year (2022 – 2032)) in the Manchester Housing Strategy 2022-2032. In terms of affordable housing, Outline Application 4 and Full Application 5 propose:

- Outline Application 4 – affordable housing provision in accordance with Policy H 8 of the Manchester Core Strategy.
- Full Application 5 – 5% affordable housing resulting in 78 units of intermediate tenure. This affordable housing provision is justified by a Financial Viability Assessment prepared by Savills.

17.243 The affordable housing provision will be beneficial to the affordable dwelling stock throughout MCC. Furthermore, the properties included within the Proposed Development will be of a range of sizes, providing a mixture of one-, two- and three-bedroom properties. A proportion of these will also meet the M4(2) standards for adaptable dwellings, ensuring that they can be lived in by people of a range of abilities – including older people. As a result, it has been assessed that the Proposed Development would result in a direct, long-term, **Minor Beneficial** effect at the district level which is **Not Significant**.

### Access to Health and Social Care Services and Other Social Infrastructure

17.244 As calculated within **Volume 2: Main Text, Chapter 16: Socio-economics**, once complete and operational, the 8,662 new residents of the Proposed Development will likely require access to dental services. As demonstrated within the baseline assessment, there are currently nine practices within one mile (circa 1.61km) of the Site,

however none of these practices are currently accepting NHS patients and only two are accepting private patients. This may mean that there will be a shortfall in dental provision across the local area and that any new residents of the Site will not be able to access dental care locally. Despite this however, dentists usually do not have bespoke catchment areas and therefore residents may be able to access dental services across an area larger than a one-mile radius from their future home addresses (for example, a practice close to their place of work) as practices generally do not have catchment areas based on residential addresses, like GP clinics. As a result, it has been assessed that this would have a **Minor Adverse** long-term permanent impact upon future residents of the Proposed Development which is **Not Significant**.

17.245 In addition to dental services, the new 8,662 residents will also require access to a GP practice. As identified in the baseline set out within **Appendix 17.1**, there are eight GP surgeries within one mile of the Site. Assuming all the new residents register at these surgeries, the patient to GP will increase from 1,848 patients per FTE GP, to 2,064 patients per FTE GP. Despite this however, Outline Application 4 potentially includes the provision of health centre uses. As set out previously in this Chapter, it is presumed that this centre could support around 10 FTE GPs. When considering this additional provision of GPs, the FTE GP to patient ratio would be 1 GP to every 1,652 patients. This would also be a worst-case scenario given that some new residents may already be registered to local GP clinics, and/or may remain registered at other practices further afield. Even so, this is below the recommended ratio of one FTE GP for every 1,800 patients[19].

17.246 As such, the overall effect upon GP provision would have a **Minor Beneficial** long-term permanent effect to residents of the Proposed Development and local area which is **Not Significant.**

### Primary School Provision

17.247 Based on the population yield, the Proposed Development is estimated to yield a requirement for an additional 430 primary school places once complete and operational (see **Volume 2: Main Text, Chapter 16: Socio-economics, Table 16.35** – see age range 5-11).

17.248 As set out within **Volume 2: Main Text, Chapter 16: Socio-economics**, there are 11 state funded primary schools within one mile of the Site. Across the 11 schools there are a total of 409 surplus pupil places.

17.249 In view of the above, there is likely to be insufficient capacity across the primary schools surrounding the Site to accommodate the additional 430 pupils generated by the Proposed Development. Therefore, it is likely that there would be a direct, long-term, permanent **Minor Adverse** effect upon primary education provision which is **Not Significant**.

17.250 As part of the Outline Application 4 Development however, up to 2,750 sqm of primary school uses are proposed for the Site, which is anticipated to comprise a one form-entry (1FE) primary school of around 210 places. This is considered to be a swing plot, meaning it could either be used for a primary school, or for additional residential.

[19] NHS London Healthy Urban Development Unit (2009) HUDU Planning Contribution Model Guidance Notes [Online] Available from: https://www.healthyurbandevelopment.nhs.uk/wp-content/uploads/2013/03/GuidanceNotes-2009.pdf

17.251 If a primary school is provided within the Outline Application 4 Development, this would enhance the number of primary school places on offer in the local area. Presuming a 1FE primary school, this would therefore mean that across all schools there would be a surplus of 189 pupil places. This would be considered to have a direct, long-term, permanent **Minor Beneficial** effect at the district level which is **Not Significant**.

### Secondary School Provision

17.252 Based on the estimated population yield, the Proposed Development is estimated to yield a requirement for an additional 317 secondary school places once complete and operational (see **Appendix 16.1**). As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, there are 18 state funded secondary schools within three miles of the Site. Across the 18 schools there is a total of 2,769 surplus pupil places.

17.253 In view of the above, there is likely to be sufficient capacity across the secondary schools surrounding the Site to accommodate the additional 317 pupils generated by both Developments. The likely effect of the new resident population of the Proposed Development on the supply of secondary school places is therefore considered to be **negligible** at the district level.

### Access to open space and nature

17.254 As set out within previous sections of this chapter for Outline Application 4 and Full Application 5, the Proposed Development will provide a range of new and enhanced open spaces which will be accessed by both future residents of the Proposed Development and existing neighbourhoods. As a result, it is likely that the provision of open space and access to nature will have a direct, long-term, permanent **Minor Beneficial** effect at the district level which is **Not Significant.**

### Accessibility and Active Travel

17.255 The Proposed Development will promote cycling by ensuring that there is one secure cycle space per residential property. In addition to this, there will be several dedicated cycle parking areas on Site for visitors and workers. The provision of an extensive number of cycle spaces will have a **Minor Beneficial** long-term permanent impact upon future residents and visitors of the Proposed Development which is **Not Significant**.

### Crime Reduction and Community Safety

17.256 The existing Site does not contribute to the general character and appearance of the area, whereas the Proposed Development will improve the quality of the local environment, with landscaping softening the edges of the Site, encouraging pedestrian movement throughout. Landscaped amenity space within the Site will also provide attractive areas for communal use and social interaction. This will be enhanced by the fact that the Proposed Development is mixed-use, meaning that it will have multiple functions enabling it to be activated at all times of day.

17.257 The Proposed Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Proposed Development and local area which is **Not Significant.**

### Access to Healthy Food

17.258 As part of both applications within the Proposed Development, a portion of floorspace is allocated to non-residential uses, some of which could include retail uses (both food and non-food). At this stage the end use of the space is not yet known, however it is possible a food shop could occupy the space. Whilst the end use of this commercial floorspace is not known, fast food takeaways would likely be discouraged within the scheme. This will ensure that there is not an over-concentration of hot-food takeaways in the local area. Furthermore, Outline Application 4 includes areas which could accommodate farmers markets to further support healthy eating.

17.259 The Proposed Development are therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Proposed Development and local area which is **Not Significant.**

### Access to Work and Training

17.260 As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, the net additional uplift in employment for Outline Application 4 and Full Application 5 represent between 135 and 258 net additional jobs at the district level, with an additional 324 to 620 jobs at the regional level. Taken together, the Proposed Development could support between 459 and 878 net additional FTE jobs.

17.261 The provision of these jobs will have a **Minor Beneficial** long-term permanent effect upon the district economy which is **Not Significant** and a **negligible** effect upon the regional economy which is **Not Significant**.

### Social cohesion and inclusive design

17.262 The Site will create new connections with existing communities, encouraging pedestrian movement through the Site and surrounding developments within the Victoria North masterplan and the local area more generally. The multi-use nature of the Proposed Development will also encourage people from outside the Site to enter to use the range of facilities on offer. Furthermore, as part of the Proposed Development, there will be residents and non-residents clubhouses, helping to foster a sense of community for residents and others living and working in the local area. This will also be enhanced through the inclusion of fitness and leisure uses, along with social infrastructure provision. The Proposed Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Proposed Development and local area which is **Not Significant.**

### Minimising the use of resources

17.263 The Proposed Development will be constructed on previously developed land, making them brownfield developments. The intensity of uses on the Site will be greatly increased compared with its current use and optimised to provide much needed housing in a sustainable location, close to the city centre and a range of other amenities.

17.264 The Proposed Development will incorporate a range of energy efficiency measures to reduce the use of resources during operation. The Proposed Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Proposed Development and the surrounding local area which is **Not Significant.**

### Climate change

17.265 The new landscaped areas will help to enhance biodiversity by providing habitat using a diverse planting scheme. Further information can be found within **Volume 2: Main Text, Chapter 7: Ecology and Nature Conservation** and within the Landscape section of the Design and Access Statement.

17.266 The Proposed Development will also incorporate a range of sustainable urban drainage techniques. Further details can be found within **Volume 2: Main Text, Chapter 10: Drainage and Flood Risk**.

17.267 The Proposed Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Proposed Development and local area which is **Not Significant.**

### Phasing Effects

17.268 The phasing of the Proposed Development along with other schemes as part of the SRF will need to be cognisant of new residents who will commence living at the Site whilst other demolition and construction phases are ongoing. As such, any CEMPs developed will need to consider existing neighbouring residents, along with those who will be resident at the dwellings included within Outline Application 4 and Full Application 5.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5)

17.269 This section describes the measures which are required to mitigate any significant environmental effects with regards to health and wellbeing considerations.

### Demolition and Construction

17.270 As part of the tendering process for a prospective construction contractor, the Applicant will request that all potential firms be signed up to the Considerate Contractors Scheme (CCS). This scheme promotes contractors who are proactive in upholding neighbourhood amenity and leaving a positive impact upon the places they work. The requirement for a contractor to be signed up to this scheme means that an overarching understanding of how to minimise construction impacts will already be embedded within the processes of the contractor, providing a better chance of implementing appropriate construction mitigation measures which may have an impact on human health and wellbeing. Furthermore, the preparation and submission of Local Labour Agreements will ensure that the construction phase will maximise employment opportunities for local people. The Proposed Development will also prepare extensive CEMPs (to be conditioned as part of the planning application process) which will ensure continual monitoring and management of potential construction impacts such as noise and air quality throughout the construction phase.

### The Completed and Operational Development

17.271 No additional mitigation measures are required.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5)

17.272 The residual effects relating to Health and Wellbeing are detailed below in **Table 17.9**.

***Table 17.9:*** *Residual Effects Summary*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Air quality, noise and neighbourhood amenity | **Moderate Adverse** short-term impacts on local area, which is **Significant** | Implementation of CEMP | **Minor Adverse** short-term impact on local area, which is **Not Significant** |
| Access to work and training | **Moderate Beneficial** short-term impact on the district economy, which is **Significant**<br><br>**Minor Beneficial** short-term impact on the district economy, which is **Not Significant** | None required | **Moderate Beneficial** short-term impact on the district economy, which is **Significant**<br><br>**Minor Beneficial** short-term impact on the district economy, which is **Not Significant** |
| Minimising the use of resources | **Minor Beneficial** short-term impact on the local area, which is **Not Significant** | None required | **Minor Beneficial** short-term impact on the local area, which is **Not Significant** |
| ***Completed and Operational Development*** | | | |
| Housing design and affordability | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Access to health and social care services and other social infrastructure – dental practices | **Minor Adverse** long-term impact on local area, which is **Not Significant** | None required | **Minor Adverse** long-term impact on local area, which is **Not Significant** |
| Access to health and social care services and other social infrastructure – GP practices | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| Access to health and social care services and other social infrastructure – Primary schools (if school *is not* provided within swing plot) | **Minor Adverse** long-term impact on local area, which is **Not Significant** | None required | **Minor Adverse** long-term impact on local area, which is **Not Significant** |
| Access to health and social care services and other social infrastructure – Primary schools (if school *is* provided within swing plot) | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Access to health and social care services and other social infrastructure – Secondary schools | Negligible | None required | Negligible |
| Access to open space and nature | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Accessibility and active travel | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Crime reduction and community safety | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Access to healthy food | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Access to work and training | **Moderate Beneficial** long-term impact on local area, which is **Significant**<br><br>**Minor Beneficial** long-term impact on the North West region, which is **Not Significant** | None required | **Moderate Beneficial** long-term impact on local area, which is **Significant**<br><br>**Minor Beneficial** long-term impact on the North West region, which is **Not Significant** |
| Social cohesion and inclusive design | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| Minimising the use of resources | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Climate change | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |

## Conclusions (Applications 4 and 5)

17.273 The Health and Wellbeing assessment of Outline Application 4 and Full Application 5 combined has shown that there are no identified significant adverse effects during the construction and demolition and operational phases.

17.274 Through appropriate monitoring and management processes, the demolition and construction phase of the Proposed Development will unlikely lead to any significant Health and Wellbeing effects. The construction phase represents investment in the local area which will support numerous jobs over a prolonged period of construction activity. This will provide a range of economic benefits to MCC and the North West region more broadly.

17.275 The mixed-use nature of the Proposed Development, along with its commitment to providing a range of different housing typologies and tenures will provide significant benefits to the new residents expected to reside at the complete and operational Development.

17.276 Overall, the Proposed Development will promote active travel, activate a disused space to enhance perceptions of community safety, provide spaces for the sale of healthy foods and incorporate links with other future developments and existing communities. Non-residential uses included within the Proposed Development will also support local employment opportunities, along with options to enhance health outcomes such as fitness and leisure uses which also foster a sense of community whilst improving physical health.

17.277 Importantly, the proximity to open space will also enhance the amenity of the area, whilst also being beneficially used to create a sustainable and resilient Development which can proactively respond to climate change and the potential effects of this.

17.278 It is considered that Outline Application 4 and Full Application 5 combined may result in some minor adverse effects upon health infrastructure such as dental clinic provision and education provision, if the potential primary school in Outline Application 4 is not realised. This will therefore be subject to further review with MCC.

## Assessment of Cumulative Effects with Identified Committed Schemes (Applications 4 and 5)

17.279 **Table 2.5** of **Volume 2: Main Text, Chapter 2: Approach** provides a list of the committed developments which have been identified as 'Cumulative Schemes' for the purpose of the Cumulative Effects Assessment (CEA). Of the 26 Cumulative Schemes identified, none were scoped-out of the CEA with regards to this Health and Wellbeing assessment.

### Approach

17.280 To undertake the CEA, each of the Cumulative Schemes included within **Table 2.5** were reviewed to ascertain the potential number of residential units and how this might impact existing residents during the construction of the Proposed Development and how population growth may impact upon issues which can affect health outcomes in the local area.

17.281 Across the 26 Cumulative Schemes identified in **Volume 2: Main Text, Chapter 2: Approach**, 20 include residential units and 21 include commercial floorspace. For those that include residential units (and are therefore 'scoped in' for the CEA of operational effects), the upper range quantum of the residential units allowed for within the planning applications were reviewed to deduce the worst-case scenario for the local area. As some of the Cumulative Schemes within the CEA are in outline, these numbers may change. Furthermore, through subsequent reserved matters applications, there may be additional changes to the quantum of residential units. In any event, an approximate number has been arrived at which estimates that all 20 residential developments will include a net uplift of around 7,561 residential units.

17.282 Population yields are usually based upon a range of factors including tenure type, number of bedrooms and type of residential unit. In the absence of this level of information across all of the 20 Cumulative Schemes, the projected number of persons per household for the Greater Manchester region has been used as a proxy instead. This estimates 2.27 people per household from 2024[20]. By applying this figure to the estimated 7,561 residential units, it is assumed that the Cumulative Schemes together will yield a population in the region of 17,163 persons

### Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

#### Air quality, noise and neighbourhood amenity

17.283 The 26 Cumulative Schemes in conjunction with Outline Application 4 and Full Application 5 will mean that there will be a prolonged period of construction in the local area lasting many years. This will likely lead to diversions and temporary access issues to community assets and routes, along with potential effects upon neighbourhood

[20] ONS (2022) Live Tables on Household Projections – Table 427 [Online] Available from: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections#history

amenity through effects such as noise, air quality and vibration. Whilst this will likely cause some level of disruption for a prolonged period of time, each application will be subject to planning conditions which will mandate the need for CEMPs. Furthermore, for those developments assessed to be EIA development, there will be additional assessments completed to ascertain potential effects upon the neighbouring population during the construction phase which will, in turn, also include CEAs of these issues. As such, any potential impacts relating to health and wellbeing will be dealt with on each respective application.

17.284 Where construction across the sites takes place at the same time, there is a possibility that construction noise, experienced by the same receptors would lead to potential for health effects, especially where these receptors include children, disabled or older people who are generally more sensitive to increased levels of noise. It is likely that the Cumulative Schemes are under separate management which would also mean that the coordination of communication with the public regarding when to expect noise might be more difficult. This may result in additional stress for people who are particularly vulnerable to noise.

17.285 Where construction across the Cumulative Schemes takes place at the same time, any loss of access to open space resulting from these Cumulative Schemes would, cumulatively add magnitude to any potential adverse health effects. Where Cumulative Schemes replace existing buildings or areas previously inaccessible to the public, this is unlikely to result in cumulative effects. Once all Cumulative Schemes are completed, access to open space is likely to be significantly improved across all sites due to the improved public realm and green spaces that are planned within a number of the Cumulative Schemes. Due to the existing environmental deprivation in this part of the city, these improvements across the wider area are likely to bring significant physical and mental health benefits to the population.

17.286 Through the implementation of relevant mitigation measures identified in the air quality, noise and vibration and transport chapters – along with the implementation of each CEMP as conditioned by each planning application, there is likely to be a **negligible** residual cumulative effect with regards to health and wellbeing.

### Access to work and training

17.287 The construction phases of the Cumulative Schemes will also enable a range of employment opportunities to be supported locally. Importantly, as there are numerous large-scale developments proposed – it is likely that a strong pipeline of construction work will be supported, therefore providing local job security. As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, it is therefore assumed that the Proposed Development in conjunction with the Cumulative Schemes will have a **Major Beneficial** short to medium-term temporary residual effect.

### Minimising the use of resources

17.288 Through the implementation of relevant measures identified in each CEMP as conditioned by each planning application including both Outline Application 4 and Full Application 5 and the Cumulative Schemes, there is unlikely to be any residual cumulative effect with regards to health and wellbeing if processes to reduce the use

of resources are upheld. There is likely to be a **negligible** residual cumulative effect with regards to health and wellbeing.

## The Completed and Operational Development

### Housing design and affordability

17.289 An approximate number has been arrived at which estimates that all 20 residential developments will include a net uplift of around 7,561 residential units. In combination with the Proposed Development, it is estimated that around 12,361 residential units will be delivered. Given that MCC requires that a portion of these meet accessibility standards and are affordable homes, this will provide a range of housing types for different people within the local community. Affordable housing provision would be in accordance with Policy H 8 of the Manchester Core Strategy with the final quantum of affordable housing known at the detailed design stage informed by viability assessment, as will also likely be the case in relation to other cumulative scheme developments that are in outline. In assessing the provision of at least some new homes and some of the meeting accessibility and affordability requirements across all cumulative schemes, this will result in a **Moderate Beneficial** long-term permanent effect.

### Access to health and social care services and other social infrastructure

17.290 Using the standard approach of one FTE GP for every 1,800 patients[14] – it is presumed that the Proposed Development as part of Outline Application 4 and Full Application 5, in conjunction with the Cumulative Schemes, would therefore yield around 25,825 persons. This would therefore require around 14 FTE GPs to serve this new population. Outline Application 4 includes potential provision for health centre uses. This could potentially provide enough space for around 10 GPs. Taking this into consideration, there would still likely be a need for an additional 4 GPs to serve all developments. Some of the Cumulative Schemes identify that D1 floorspace may come forward. This therefore means that there is the potential for some of this floorspace to be used by a GP practice, which may assist with capacity constraints. Additionally, it is likely that some of the future residents of these schemes may already be registered patients at the GP practices assessed within the one-mile radius. If this is not the case, there is also a likelihood that some may remain registered at a practice further afield. Capacity constraints and wider estate planning will likely be reviewed by the NHS and MCC as developments come forward in the local area in the coming years, which may also alter as some of the Cumulative Scheme's progress to reserved matters applications. These effects will also be considered by MCC in the determination of each planning application. As a result, there is likely to be a residual **negligible** effect upon the local community in relation to GP primary care provision.

17.291 Furthermore, there will be additional strains upon dental services which were identified to be currently over capacity within the local area. All dental practices within one mile of the Site were reviewed within this Chapter, meaning many of the Cumulative Schemes will also be seeking to rely upon these services. Much like the provision of GPs, it is possible that some of the D1 floorspace could be used for a dental practice. If some of this floorspace were to be used for a dental practice, there would likely be a **negligible** residual effect.

17.292 As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, the Cumulative Schemes would increase the residential population in MCC and would therefore have the potential to increase the pressure on local education services (primary and secondary schools) to varying degrees. It is estimated that the new population yield of the Cumulative Schemes with a residential component would be approximately 17,163 people. At the time of the 2021 Census, primary aged children made up 7.9% of the MCC population and 7.4% of the SCC population. Applying these proportions, it is estimated that the Cumulative Schemes would generate around 1,327 primary aged students. Combined with the Proposed Development, it is therefore estimated that the new population yield with the Cumulative Schemes with a residential component would be approximately 1,435 primary school aged pupils.

17.293 At the time of the 2021 Census, secondary aged pupils made up 6.4% of the MCC population and 5.8% of the SCC population. Applying these proportions to the population estimated at the Cumulative Schemes, it is estimated that these developments together would yield 1,064 secondary school aged pupils. Combined with the Proposed Development, it is therefore estimated that the new population yield of the Proposed Development with the Cumulative Schemes with a residential component would be approximately 1,172 secondary school aged pupils.

17.294 As identified within the baseline assessment, the existing primary schools in the local area would not currently be able to accommodate this level of pupil growth. Even if the potential primary school included in Outline Application 4 were to come forward, there would still not be sufficient pupil places available.

17.295 For secondary schools however, it is evident that all children expected to be yielded from Outline Application 4 and Full Application 5 and the Cumulative Schemes could be accommodated within existing schools.

17.296 For the effects upon GP, dental and primary school provision, these would be considered by MCC in the determination of the planning application in the case of each Cumulative Scheme. It is therefore assumed that any required mitigation to minimise adverse effects to education provision would be considered on a case-by-case basis.

17.297 Taking the above measures into account, it was considered that the likely residual cumulative effects on education services would be **negligible** at the district level.

### Access to open space and nature

17.298 The additional residential population estimated across all cumulative schemes may place pressure upon existing open spaces and their use by existing and future residents. It is presumed that this will be dealt with on each respective planning application to ensure adequate provision is maintained across the MCC local authority.

17.299 As set out within previous sections of this chapter for Outline Application 4 and Full Application 5, the Proposed Development will provide a range of new and enhanced open spaces which will be accessed by both future residents of the Proposed Development and existing neighbourhoods. As a result, it is likely that the provision of

open space and access to nature will have a direct, long-term, permanent **Minor Beneficial** effect at the district level which is **Not Significant**.

### Accessibility and active travel

17.300 Given that the Cumulative Schemes are within close proximity to Manchester city centre and the employment, education and leisure uses it supports – it is likely that active travel will be encouraged and supported amongst these schemes in conjunction with Outline Application 4 and Full Application 5. For some, the additional populations in this region will attract public transport improvements which will further enhance accessibility and active travel uptake. It is therefore assumed that the Proposed Development in conjunction with the Cumulative Schemes will have a **Minor Beneficial** long-term permanent residual effect.

### Crime reduction and community safety

17.301 The activation of space across the local area – including areas of land that are currently disused, will help to enhance natural surveillance. The fact that many of the schemes are mixed-use will also promote a range of different uses in the area, ensuring that different activities operating at different times of the day will enhance perceptions of community safety. As set out within the MCC validation list (2018, revised 2020), a Crime Impact Statement is required for major applications. It is therefore presumed that any potential negative effects of the schemes as identified within the Crime Impact Statements will be managed on a case-by-case basis for each planning application. This would result in a **Minor Beneficial** long-term permanent residual effect.

### Access to healthy food

17.302 The Cumulative schemes, including the Proposed Development, will support a range of non-residential uses. This may incorporate the sale of healthy food. This would result in a **Minor Beneficial** long-term permanent residual effect.

### Access to work and training

17.303 As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, the Proposed Development, together with 21 of the 26 Cumulative Schemes would result in the delivery of employment-generating floorspace across several use classes (including Use Class E which includes the former B1/A1/A2/A3/A4/A5/D2 use classes).

17.304 It is estimated that the 21 Cumulative Schemes which include employment generating floorspace would support between 3,000 and 6,500 jobs across Manchester and Salford, of which between 3,000 and 6,000 would be generated by developments within the boundaries of Manchester City Council and up to 500 would be generated by developments within the boundary of Salford City Council. Combined with the estimated 135 and 258 net additional jobs generated at the Proposed Development (at the district level, as calculated in **Volume 2: Main Text, Chapter 16: Socio-economics**) gives an estimated total of approximately 3,135 and 6,758 jobs.

17.305 As a result, the likely residual cumulative effects from net additional employment would be considered to be direct, long term, **Major Beneficial** residual effect at the district level.

### Social cohesion and inclusive design

17.306 The Proposed Development along with the identified Cumulative Schemes will attract new residents and support new communities in the local area. DDA compliance will be upheld across commercial, residential and public realm developments in line with relevant building regulations and MCC requirements. It is presumed that these developments will seek to integrate with existing communities, creating social cohesion. This is therefore likely to result in a **Minor Beneficial** long-term permanent residual effect.

### Minimising the use of resources

17.307 As set out within the MCC validation list (2018, revised 2020), an Environmental Standards Statement is needed for all major applications. This is required to provide details on sustainability ratings and the provision of renewable energy sources within the Proposed Development. As a result, it is presumed that all developments considered as part of the Cumulative Schemes, in conjunction with Outline Application 4 and Full Application 5 will evidence ways in which resources will be minimised during operation. This is therefore likely to result in a **negligible** residual effect.

### Climate change

17.308 As set out within the MCC validation list (2018, revised 2020), evidence such as flood risk assessments, Sustainable Urban Drainage Systems (SuDS) strategies and ecology assessments are required for submission with major planning applications. By considering aspects relating to climate change and the need to build resilience to natural events within the new developments, it is considered that the Proposed Development in conjunction with the identified Cumulative Schemes would result in a **negligible** residual effect.

## Assessment of Cumulative Effects with Identified Committed Schemes and SRF (Applications 4 and 5)

17.309 In February 2019, the MCC Executive endorsed the Northern Gateway SRF as a material consideration in the determination of all future planning applications relevant to the area. Now referred to as Victoria North, the SRF includes seven neighbourhoods which seeks to create 15,000 new homes across 155 hectares. Outline Application 4 and Full Application 5 form part of an 'Initial Development Area' of Victoria North. As the SRF is a material consideration in determining all future planning applications, a qualitative review of the Proposed Development and effects arising from the wider SRF has been considered.

17.310 Given both Outline Application 4 and Full Application 5 together seek permission for up to 4,801 dwellings, the remainder of the SRF would be expected to yield approximately 13,450 units. In addition to this, it is anticipated that a significant quantum of commercial space will also come forward, along with leisure and community uses. Considered in addition to the Cumulative Schemes, there will therefore be around 22,561 new residential units.

17.311 In considering Outline Application 4 and Full Application 5 along with the SRF, there will likely be a number of beneficial health and wellbeing effects arising from the support for new local employment, the development of communities that can be lived in by people of a wide range of physical abilities and ages, the promotion of leisure and community uses close to home to encourage social cohesion and to enhance mental and physical wellbeing, a reduction in crime potential and the resilience of homes to climate change impacts.

17.312 Given the vast number of residential units, there may however be adverse effects upon the delivery of social services such as in education or healthcare. Whilst it is known that Outline Application 4 (within the wider SRF) includes the potential provision of a primary school, it is unlikely that this school could accommodate the children yielded across the whole SRF – in conjunction with children also yielded from Outline Application 4 and Full Application 5, and the developments identified as Cumulative Schemes.

17.313 This remains the same when considering primary healthcare provision. Given the number of residential units within the SRF – there would likely be a need for additional GP and dental clinic capacity across the SRF to accommodate the new residential populations.

17.314 It can be expected that further development of the SRF will be required to assess its own effects on school capacity and primary health care to make provision as necessary in agreement with MCC. This will be consistent with the SRF identification of improvements to primary schools and health uses as part of the wider regeneration programme. On this assumption, it is likely that significant cumulative effects with the SRF are unlikely.

## In-Combination Climate Impacts (Applications 4 and 5)

17.315 As identified above, there may be adverse in-combination effects associated with the lack of GP places available in the local area. Similarly, there may be adverse in-combination effects associated with the provision of primary school places. In relation to GP provision, this may be exacerbated by climate change as there could be an increase in health conditions such as heat stroke or heat exhaustion which could require attention from the primary care network of GP clinics. Similarly, the lack of provision of local primary school places could be exacerbated by climate change impacts in extreme weather events which make it more difficult for young children to travel to school over vast distances. An example of this could be walking a prolonged distance to school during a heatwave or needing to rely on public transport which might be cancelled during severe rainfall and flooding events.

# In Combination Effects of Applications 4 and 5 and SRF

17.316 Information relating to the baseline conditions and the embedded mitigation measures for both Outline Application 4 and Full Application 5 has been set out previously in this chapter.

## Assessment of Likely Significant Effects (Applications 4 and 5 and SRF)

17.317 There are likely to be some impacts to health and wellbeing in relation to the health determinants identified in **Table 17.1**. These effects have been reviewed against each of the health determinants for the demolition and construction phases and the complete and operational development. Effects identified in **Appendix 17.2** have been summarised for each determinant of health theme scoped into the assessment for each phase of the Proposed Development, supplemented with a qualitative review of how this might accord with the wider SRF.

### Demolition and Construction

#### Air quality, noise and neighbourhood amenity

17.318 During the construction phase, effects on amenity and health associated with dust and particulate matter will be mitigated using best practice measures in line with the Institute of Air Quality Management guidance. This will ensure that any such residual effects will be negligible. Further details on this are provided within **Volume 2: Main Text, Chapter 12: Air Quality and Dust**.

17.319 Emissions from construction traffic and plant will also contribute to local pollutant concentrations. However, based on the information available regarding construction traffic, air quality along the routes is largely good and as such any increase in emissions is not expected to result in any significant adverse effects at sensitive receptors located along the identified routes. Additional analysis is highlighted within **Volume 2: Main Text, Chapter 12: Air Quality and Dust**.

17.320 With regards to noise during the construction phases of both Outline Application 4 and Full Application 5, along with the wider SRF, **Volume 2: Main Text, Chapter 13: Noise and Vibration** highlights that there will likely be some direct, temporary effects.

17.321 Considering these findings overall, it is anticipated that there will be a direct, short to medium-term, **Moderate Adverse** effect at the district level upon residential amenity during the construction phase.

#### Access to Work and Training

17.322 As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, whilst there would be a minimum of 6,256 gross construction jobs supported across Outline Application 4 and Full Application 5, taking into account leakage, displacement and multiplier effects, this equates to approximately 1,946 net additional construction jobs for the district area being supported (1,769 jobs on-site and 177 in the supply chain).

17.323 More broadly at the regional scale, the construction activity required to build the Proposed Development would support 4,682 net additional jobs across the North West (excluding residents of MCC). This would be for the entire Works Programme.

17.324 As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, the calculation of construction employment is based on the build costs for each phase of the Proposed Development. In the absence of this information for the remainder of the SRF at this time, it has been presumed that the effects would remain the same as identified for Outline Application 4 and Full Application 5. This means there will be a direct, short to medium-term, **Major Beneficial** effect at the district level, which is **Significant** and direct, short to medium-term, **Minor Beneficial** effect at the regional (North West) level which is **Not Significant**.

### Minimising the use of resources

17.325 During construction, waste management measures will be put in place, with any salvageable materials considered for reuse on-site or recycling. This will form part of a wider requirement to promote sustainable construction techniques on Site during the construction phases for Outline Application 4 and Full Application 5 and it is anticipated that a similar approach would be adopted across the wider SRF. In adhering to these requirements, it is anticipated that there will be a direct, short to medium-term, **Minor Beneficial** effect at the district level which is **Not Significant**.

## The Completed and Operational Development

### Housing Design and Affordability

17.326 The developments as part of the wider SRF would result in the provision of up to 15,000 net additional dwellings. This would be equivalent to 417% of MCC's annual delivery target of 3,600 units per year (2022 – 2032)) in the Manchester Housing Strategy 2022-2032. Of these 15,000 dwellings, a portion will likely be affordable housing (comprising both social rent and intermediate housing types, subject to viability reviews). This will be beneficial to the affordable dwelling stock throughout MCC. Furthermore, the properties included within the Proposed Development and the SRF will be of a range of sizes, providing a mixture of one-, two- and three-bedroom properties. Of these 10% will also meet the M4(2) standards for adaptable dwellings, ensuring that they can be lived in by people of a range of abilities – including older people. As a result, it has been assessed that the Proposed Development with the wider SRF would result in a direct, long-term, **Major Beneficial** effect at the district level which is **Significant**.

### Access to Health and Social Care Services and Other Social Infrastructure

17.327 As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, **Table 16.41** – it is estimated that Outline Application 4 and Full Application 5 along with the SRF would yield a population of around 27,000 persons.

17.328 Once complete and operational, the 27,000 new residents of the Proposed Development will likely require access to dental services. As demonstrated within the baseline assessment, there are currently nine practices within one

mile (circa 1.61km) of the Site, however none of these practices are currently accepting NHS patients and only two are accepting private patients. This may mean that there will be a shortfall in dental provision across the local area and that any new residents of the Site will not be able to access dental care locally. Despite this however, dentists usually do not have bespoke catchment areas and therefore residents may be able to access dental services across an area larger than a one-mile radius from their future home addresses (for example, a practice close to their place of work) as practices generally do not have catchment areas based on residential addresses, like GP clinics. As a result, it has been assessed that this would have a **Minor Adverse** long-term permanent impact upon future residents of the Proposed Development and the wider SRF which is **Not Significant**.

17.329 In addition to dental services, the new 27,000 residents will also require access to a GP practice. As identified in the baseline set out within **Appendix 17.1**, there are eight GP surgeries within one mile of the Site. Assuming all the new residents register at these surgeries, the patient to GP will increase from 1,848 patients per FTE GP, to 2,521 patients per FTE GP. This would be greater than the recommended ratio of one FTE GP for every 1,800 patients. Despite this however, Outline Application 4 includes the provision of a health centre. As set out previously in this Chapter, it is presumed that this centre may support around 10 FTE GPs. When considering this additional provision of GPs, the FTE GP to patient ratio would be 1 GP to every 2,018 patients. This would also be a worst-case scenario given that some new residents may already be registered to local GP clinics, and/or may remain registered at other practices further afield.

17.330 As such, the overall effect upon GP provision would have a **Minor Adverse** long-term permanent effect to residents of the Proposed Development and local area which is **Not Significant.**

### Primary School Provision

17.331 Based on the population yield, the Proposed Development with the SRF are estimated to yield a requirement for an additional 1,344 primary school places once complete and operational (see **Volume 2: Main Text, Chapter 16: Socio-economics, Table 16.41** – see age range 5-11).

17.332 As set out within **Volume 2: Main Text, Chapter 16: Socio-economics**, there are 11 state funded primary schools within 1-mile of the Site. Across the 11 schools there are a total of 409 surplus pupil places.

17.333 In view of the above, there is likely to be insufficient capacity across the primary schools surrounding the Site to accommodate the additional 1,344 pupils generated by the Proposed Development which would remain with a deficit of 935 pupil places. Therefore, without the provision of a primary school within Outline Application 4 (as incorporated within the proposed 'swing plot') - it is likely that there would be a direct, long-term, permanent **Moderate Adverse** effect upon primary education provision which is **Significant**.

17.334 If a primary school is provided within the swing plot within Outline Application 4 however, this would enhance the number of primary school places on offer in the local area. Presuming a 1FE primary school (with a capacity

of 210 places), this would therefore mean that additional capacity would result in a deficit of 725 pupil places. It is also anticipated that even if the school did not come forward as part of Outline Application 4, another primary school would be incorporated elsewhere within the wider SRF. Whilst both of these scenarios (i.e., either a primary school within Outline Application 4 or somewhere else in the SRF) would reduce the deficit in primary school places identified, there would still remain a deficit of 725 pupil places. This would therefore still be considered to have a direct, long-term, permanent **Moderate Adverse** effect at the district level which is **Significant**.

### Secondary School Provision

17.335 Based on the estimated population yield, the Proposed Development with the SRF are estimated to yield a requirement for an additional 991 secondary school places once complete and operational (see **Appendix 16.1**). As set out in **Volume 2: Main Text, Chapter 16: Socio-economics**, there are 18 state funded secondary schools within three miles of the Site. Across the 18 schools there is a total of 2,769 surplus pupil places.

17.336 In view of the above, there is likely to be sufficient capacity across the secondary schools surrounding the Site to accommodate the additional 991 pupils generated by the Proposed Development and the wider SRF. The likely effect of the new resident population of the Proposed Development on the supply of secondary school places is therefore considered to be **negligible** at the district level.

### Access to open space and nature

17.337 Future residents of both Outline Application 4 and Full Application 5 and the wider SRF will benefit from the proximity to the 3.03 hectares of open space coming forward as part of Application 2, along with the extensive open spaces and connections to nature proposed as part of the Proposed Development and the wider SRF. This will ensure that new residents and workers of the complete and operational Developments will be able to easily access open space for recreation purposes. This has been assessed as having a **Minor Beneficial** long-term permanent impact upon future residents and workers of the Proposed Development which is **Not Significant**.

### Accessibility and Active Travel

17.338 The Proposed Development will promote cycling by ensuring that there is one secure cycle space per residential property. It is likely that other developments within the SRF will follow a similar approach. In addition to this, there will be several dedicated cycle parking areas on Site for visitors and workers. The provision of an extensive number of cycle spaces will have a **Minor Beneficial** long-term permanent impact upon future residents and workers of the Proposed Development and SRF which is **Significant**.

### Crime Reduction and Community Safety

17.339 The existing Site does not contribute to the general character and appearance of the area, whereas the Proposed Development will improve the quality of the local environment, with landscaping softening the edges of the Site, encouraging pedestrian movement throughout. Landscaped amenity space within the Site will also provide

attractive areas for communal use and social interaction. This will be enhanced by the fact that the Proposed Development is mixed-use, meaning that it will have multiple functions enabling it to be activated at all times of day. As set out within the MCC validation list (2018, revised 2020), a Crime Impact Statement is required for major applications. It is therefore presumed that any potential negative effects of the schemes forthcoming as part of the SRF will be identified within the Crime Impact Statements will be managed on a case-by-case basis for each planning application

17.340 The Proposed Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Proposed Development and local area which is **Not Significant.**

### Access to Healthy Food

17.341 As part of the Proposed Development, a portion of floorspace is allocated to non-residential uses, some of which could include retail uses (both food and non-food). At this stage the end use of the space is not yet known, however it is possible that food shops could occupy the spaces included in the non-residential uses across the SRF. Whilst the end use of this commercial floorspace is not known, fast food takeaways would likely be discouraged within the scheme. This will ensure that there is not an over-concentration of hot-food takeaways in the local area.

17.342 The Proposed Development is therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Proposed Development and local area which is **Not Significant.**

### Access to Work and Training

17.343 As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, the net additional uplift in employment for Outline Application 4 and Full Application 5 represent between 135 and 258 net additional jobs at the district level, with an additional 324 to 620 jobs at the regional level. Taken together, the Proposed Development could support between 459 and 878 net additional FTE jobs. Presuming Outline Application 4 and Full Application 5 make up roughly one third of the wider SRF, it could therefore be presumed that between 1,400 to 2,600 jobs could be supported on-site once the SRF is complete and operational, with around 420 to 765 of these at the district level. This is a high-level assumption and may not reflect the actual employment to be supported across the SRF, however in the absence of this information – this provides a possible indication of the magnitude of the effect.

17.344 In considering this estimation, it has been assessed that the additional employment generated across the SRF will result in a direct, long-term **Moderate Beneficial** effect at the district level and a direct, long-term **Minor Beneficial** effect at the regional level which is **Not Significant**.

### Social cohesion and inclusive design

17.345 The Site will create new connections with existing communities, encouraging pedestrian movement through the Site and surrounding developments. The multi-use nature of the Proposed Development and the wider SRF will

also encourage people from outside the Site to enter to use the range of facilities on offer. Furthermore, as part of the Proposed Development, there will be residents and non-residents clubhouses, helping to foster a sense of community for residents and others living and working in the local area. This will also be enhanced through the inclusion of fitness and leisure uses, along with social infrastructure provision. The Proposed Development with the SRF are therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Proposed Development and the surrounding local area which is **Not Significant.**

### Minimising the use of resources

17.346 The Proposed Development and the wider SRF will be constructed on previously developed land, making them brownfield developments. The intensity of uses on the Site will be greatly increased compared with its current use and optimised to provide much needed housing in a sustainable location, close to the city centre and a range of other amenities.

17.347 the Proposed Development will incorporate a range of energy efficiency measures to reduce the use of resources during operation. The Proposed Development, plus the wider SRF are therefore assessed to have a **Minor Beneficial** long-term permanent effect to residents of the Proposed Development and local area which is **Not Significant.**

### Climate change

17.348 The new landscaped areas will help to enhance biodiversity by providing habitat using a diverse planting scheme. Further information can be found within **Volume 2: Main Text, Chapter 7: Ecology and Nature Conservation** and within the Landscape section of the Design and Access Statements submitted for Outline Application 4 and Full Application 5.

17.349 The Proposed Development will also incorporate a range of sustainable urban drainage techniques. Further details can be found within **Volume 2: Main Text, Chapter 10: Drainage and Flood Risk**.

17.350 It has been presumed that the other developments coming forward as part of the SRF will adopt similar approaches to climate change adaptation and mitigation. Based on this assumption, it is therefore assessed that there would be a **Minor Beneficial** long-term permanent effect to residents of the Proposed Development and local area which is **Not Significant.**

### Phasing Effects

17.351 The phasing of the Proposed Development along with other schemes as part of the SRF will need to be cognisant of new residents who will commence living at the Site whilst other demolition and construction phases are ongoing. As such, any CEMPs developed will need to consider existing neighbouring residents, along with those who will be resident at the dwellings included within Outline Application 4 and Full Application 5.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5 and SRF)

17.352 This section describes the measures which are required to mitigate any significant environmental effects with regards to health and wellbeing considerations.

### Demolition and Construction

17.353 As part of the tendering process for a prospective construction contractor, the Applicant will request that all potential firms be signed up to the Considerate Contractors Scheme (CCS). It is likely that this will extend across the SRF. This scheme promotes contractors who are proactive in upholding neighbourhood amenity and leaving a positive impact upon the places they work. The requirement for a contractor to be signed up to this scheme means that an overarching understanding of how to minimise construction impacts will already be embedded within the processes of the contractor, providing a better chance of implementing appropriate construction mitigation measures which may have an impact on human health and wellbeing. Furthermore, the preparation and submission of Local Labour Agreements will ensure that the construction phases will maximise employment opportunities for local people. The Proposed Development and the those within the wider SRF will also prepare extensive CEMPs (to be conditioned as part of the planning application process) which will ensure continual monitoring and management of potential construction impacts such as noise and air quality throughout the construction phase.

### The Completed and Operational Development

17.354 Additional mitigation measures are identified below as follows:

- The Applicant should seek to review any future changes in primary education provision across the local area as new developments are built out and further modelling on school capacities is available. This will be critical to the review of any potential primary schools either within Outline Application 4 or part of other developments within the SRF. Where relevant, this would be part of any future detailed planning applications and secured through conditions.

17.355 Additional mitigation measures are not required.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5 and SRF)

17.356 The residual effects relating to Health and Wellbeing are detailed below in **Table 17.10**.

***Table 17.10:*** *Residual Effects Summary*

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Air quality, noise and neighbourhood amenity | **Moderate Adverse** short-term impacts on local area, which is **Significant** | Implementation of CEMPs across all developments | **Minor Adverse** short-term impact on local area, which is **Not Significant** |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| Access to work and training | **Major Beneficial** short-term impact on the district economy, which is **Significant**<br><br>**Minor Beneficial** short-term impact on the district economy, which is **Not Significant** | None required | **Major Beneficial** short-term impact on the district economy, which is **Significant**<br><br>**Minor Beneficial** short-term impact on the district economy, which is **Not Significant** |
| Minimising the use of resources | **Minor Beneficial** short-term impact on the local area, which is **Not Significant** | None required | **Minor Beneficial** short-term impact on the local area, which is **Not Significant** |
| ***Completed and Operational Development*** | | | |
| Housing design and affordability | **Major Beneficial** long-term impact on local area, which is **Significant** | None required | **Major Beneficial** long-term impact on local area, which is **Significant** |
| Access to health and social care services and other social infrastructure – dental practices | **Minor Adverse** long-term impact on local area, which is **Not Significant** | None required | **Minor Adverse** long-term impact on local area, which is **Not Significant** |
| Access to health and social care services and other social infrastructure – GP practices | **Minor Adverse** long-term impact on local area, which is **Not Significant** | None required | **Minor Adverse** long-term impact on local area, which is **Not Significant** |
| Access to health and social care services and other social infrastructure – Primary schools (if school *is not* provided) | **Moderate Adverse** long-term impact on local area, which is **Significant** | Continued review of school place planning modelling with MCC to understand the changing needs of primary education provision as future schemes across the SRF are realised. | **Moderate Adverse** long-term impact on local area, which is **Significant** |
| Access to health and social care services and other social infrastructure – Primary schools (if school *is* | **Moderate Adverse** long-term impact on local area, which is **Significant** | Continued review of school place planning modelling with MCC to | **Moderate Adverse** long-term impact on local area, which is **Significant** |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| provided) | | understand the changing needs of primary education provision as future schemes across the SRF are realised. | |
| Access to health and social care services and other social infrastructure – Secondary schools | Negligible | None required | Negligible |
| Access to open space and nature | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Accessibility and active travel | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Crime reduction and community safety | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Access to healthy food | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Access to work and training | **Moderate Beneficial** long-term impact on local area, which is **Significant**<br><br>**Minor Beneficial** long-term impact on the North West region, which is **Not Significant** | None required | **Moderate Beneficial** long-term impact on local area, which is **Significant**<br><br>**Minor Beneficial** long-term impact on the North West region, which is **Not Significant** |
| Social cohesion and inclusive design | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Minimising the use of resources | **Minor Beneficial** long-term impact on local area, which is **Not Significant** | None required | **Minor Beneficial** long-term impact on local area, which is **Not Significant** |
| Climate change | **Minor Beneficial** long-term impact on local area, | None required | **Minor Beneficial** long-term impact on local area, |

| Description of Effect | Potential Effect (including significance) | Additional Mitigation | Residual Effect (including significance) |
|---|---|---|---|
| | which is **Not Significant** | | which is **Not Significant** |

## Conclusions (Applications 4 and 5 and SRF)

17.357 Through appropriate monitoring and management processes, the demolition and construction phases of the Proposed Development and the wider SRF will unlikely lead to any significant Health and Wellbeing effects. The construction phase represents investment in the local area which will support numerous jobs over a prolonged period of construction activity. This will provide a range of economic benefits to MCC and the North West region more broadly.

17.358 The mixed-use nature of the Proposed Development and the presumption that this typology will extend across the SRF, along with its commitment to providing a range of different housing types and tenures will provide significant benefits to the new residents expected to reside at the complete and operational Developments.

17.359 Overall, the Proposed Development along with the wider SRF will promote active travel, activate a disused space to enhance perceptions of community safety, provide spaces for the sale of healthy foods and incorporate links with other future developments and existing communities. Non-residential uses included within the Proposed Development and the SRF will also support local employment opportunities, along with options to enhance health outcomes such as fitness and leisure uses which also foster a sense of community whilst improving physical health.

17.360 Importantly, the inclusion of open space across the SRF will also enhance the amenity of the area, whilst also being beneficially used to create a sustainable and resilient Development which can proactively respond to climate change and the potential effects of this.

17.361 It is considered that Outline Application 4 and Full Application 5 and the SRF combined may result in some moderate adverse effects upon dental clinic and GP provision, however following the consideration of mitigation measures – the residual effects would likely be negligible.

17.362 With regards to primary school provision however, regardless of whether the potential primary school in Outline Application 4 or elsewhere in the SRF is realised or not, there will be a residual moderate adverse effect upon primary pupil places when considering the overall potential population yield from the SRF. This will therefore be subject to further review with MCC as the other schemes within the SRF are realised through the planning process.

## Assessment of Cumulative Effects with Identified Committed Schemes (Applications 4 and 5 and SRF)

17.363 **Table 2.5** of **Volume 2: Main Text, Chapter 2: Approach** provides a list of the committed developments which have been identified as 'Cumulative Schemes' for the purpose of the Cumulative Effects Assessment (CEA). Of the 26 Cumulative Schemes identified, none were scoped-out of the CEA with regards to this Health and Wellbeing assessment.

## Approach

17.364 To undertake the CEA, each of the Cumulative Schemes included within **Table 2.5** were reviewed to ascertain the potential number of residential units and how this might impact existing residents during the construction of the developments and how population growth may impact upon issues which can affect health outcomes in the local area.

17.365 Across the 26 Cumulative Schemes identified in **Volume 2: Main Text, Chapter 2: Approach**, 20 include residential units and 21 include commercial floorspace. For those that include residential units (and are therefore 'scoped in' for the CEA of operational effects), the upper range quantum of the residential units allowed for within the planning applications were reviewed to deduce the worst-case scenario for the local area. As some of the Cumulative Schemes within the CEA are in outline, these numbers may change. Furthermore, through subsequent reserved matters applications, there may be additional changes to the quantum of residential units. In any event, an approximate number has been arrived at which estimates that all 20 residential developments will include a net uplift of around 7,561 residential units.

17.366 Population yields are usually based upon a range of factors including tenure type, number of bedrooms and type of residential unit. In the absence of this level of information across all of the 20 Cumulative Schemes, the projected number of persons per household for the Greater Manchester region has been used as a proxy instead. This estimates 2.27 people per household from 2024[21]. By applying this figure to the estimated 7,561 residential units, it is assumed that the Cumulative Schemes together will yield a population in the region of 17,163 persons

## Likely Residual Cumulative Effects and their Significance

## Demolition and Construction

### Air quality, noise and neighbourhood amenity

17.367 The 26 Cumulative Schemes in conjunction with the Proposed Development and the SRF will mean that there will be a prolonged period of construction in the local area lasting many years. This will likely lead to diversions and temporary access issues to community assets and routes, along with potential effects upon neighbourhood amenity through effects such as noise, air quality and vibration. Whilst this will likely cause some level of disruption for a prolonged period of time, each application will be subject to planning conditions which will mandate the need for CEMPs. Furthermore, for those developments assessed to be EIA development, there will

[21] ONS (2022) Live Tables on Household Projections – Table 427 [Online] Available from: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections#history

be additional assessments completed to ascertain potential effects upon the neighbouring population during the construction phase which will, in turn, also include CEAs of these issues. As such, any potential impacts relating to health and wellbeing will be dealt with on each respective application.

17.368 Where construction across the sites takes place at the same time, there is a possibility that construction noise, experienced by the same receptors would lead to potential for health effects, especially where these receptors include children, disabled or older people who are generally more sensitive to increased levels of noise. It is likely that the Cumulative Schemes are under separate management which would also mean that the coordination of communication with the public regarding when to expect noise might be more difficult. This may result in additional stress for people who are particularly vulnerable to noise.

17.369 Where construction across the Cumulative Schemes takes place at the same time, any loss of access to open space resulting from these Cumulative Schemes would, cumulatively add magnitude to any potential adverse health effects. Where Cumulative Schemes replace existing buildings or areas previously inaccessible to the public, this is unlikely to result in cumulative effects. Once all Cumulative Schemes are completed, access to open space is likely to be significantly improved across all sites due to the improved public realm and green spaces that are planned within a number of the Cumulative Schemes. Due to the existing environmental deprivation in this part of the city, these improvements across the wider area are likely to bring significant physical and mental health benefits to the population.

17.370 Through the implementation of relevant mitigation measures identified in the air quality, noise and vibration and transport chapters – along with the implementation of each CEMP as conditioned by each planning application, there is likely to be a **negligible** residual cumulative effect with regards to health and wellbeing.

### Access to work and training

17.371 The construction phases of the Cumulative Schemes in conjunction with the Proposed Development and the SRF will also enable a range of employment opportunities to be supported locally. Importantly, as there are numerous large-scale developments proposed – it is likely that a strong pipeline of construction work will be supported, therefore providing local job security. As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, it is therefore assumed that the Proposed Development and the SRF in conjunction with the Cumulative Schemes will have a **Major Beneficial** short to medium-term temporary residual effect.

### Minimising the use of resources

17.372 Through the implementation of relevant measures identified in each CEMP as conditioned by each planning application, there is unlikely to be any residual cumulative effect with regards to health and wellbeing if processes to reduce the use of resources are upheld. There is likely to be a **negligible** residual cumulative effect with regards to health and wellbeing.

## The Completed and Operational Development

### Housing design and affordability

17.373 An approximate number has been arrived at which estimates that all 20 residential developments included as Cumulative Schemes will include a net uplift of around 7,561 residential units. In combination with the Proposed Development and the SRF, it is estimated that around 22,561 residential units will be delivered. Given that MCC requires that a portion of these meet accessibility standards and are affordable homes, this will provide a range of housing types for different people within the local community. This will result in a **Major Beneficial** long-term permanent residual effect.

### Access to health and social care services and other social infrastructure

17.374 As calculated in **Volume 2: Main Text, Chapter 16: Socio-economics**, it is presumed that the Proposed Development and the SRF, in conjunction with the Cumulative Schemes, would yield around 44,000 persons. This would therefore require around 25 FTE GPs to serve this new population. Outline Application 4 includes potential provision of health centre uses. This could potentially provide enough space for around 10 GPs. Taking this into consideration, there would still likely be a need for an additional 15 GPs to serve all developments. Some of the Cumulative Schemes identify that D1 floorspace may come forward. This therefore means that there is the potential for some of this floorspace to be used by a GP practice, which may assist with capacity constraints. Additionally, it is likely that some of the future residents of these schemes may already be registered patients at the GP practices assessed within the one-mile radius. If this is not the case, there is also a likelihood that some may remain registered at a practice further afield. Capacity constraints and wider estate planning will likely be reviewed by the NHS and MCC as developments come forward in the local area in the coming years, which may also alter as some of the Cumulative Scheme's progress to reserved matters applications. These effects will also be considered by MCC in the determination of each planning application. As a result, there is likely to be a residual **negligible** effect upon the local community in relation to GP primary care provision.

17.375 Furthermore, there will be additional strains upon dental services which were identified to be currently over capacity within the local area. All dental practices within one mile of the Site were reviewed within this Chapter, meaning many of the Cumulative Schemes will also be seeking to rely upon these services. Much like the provision of GPs, it is possible that some of the D1 floorspace could be used for a dental practice. If some of this floorspace were to be used for a dental practice, there would likely be a **negligible** residual effect.

17.376 As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, the Cumulative Schemes would increase the residential population in MCC and would therefore have the potential to increase the pressure on local education services (primary and secondary schools) to varying degrees. It is estimated that the new population yield of the Cumulative Schemes with a residential component would be approximately 17,163 people. At the time of the 2021 Census, primary aged children made up 7.9% of the MCC population and 7.4% of the SCC population. Applying these proportions, it is estimated that the Cumulative Schemes would generate around 1,327 primary aged students. Combined with the Proposed Development plus the SRF, it is therefore estimated

that the new population yield with the Cumulative Schemes with a residential component would be approximately 2,671 primary school aged pupils.

17.377 At the time of the 2021 Census, secondary aged pupils made up 6.4% of the MCC population and 5.8% of the SCC population. Applying these proportions to the population estimated at the Cumulative Schemes, it is estimated that these developments together would yield 1,064 secondary school aged pupils. Combined with Outline Application 4 and Full Application 5, and the SRF, it is therefore estimated that the new population yield of the Proposed Development with the Cumulative Schemes with a residential component would be approximately 2,055 secondary school aged pupils.

17.378 As identified within the baseline assessment, the existing primary schools in the local area would not be able to accommodate this level of pupil growth. Even if the potential primary school included in Outline Application 4 (or elsewhere within the wider SRF) were to come forward, there would still not be sufficient pupil places available. For secondary schools however, this increase in population would be able to be accommodated based on current pupil place figures.

17.379 For the effects upon primary and secondary school provision, these would be considered by MCC in the determination of the planning application in the case of each Cumulative Scheme. It is therefore assumed that any required mitigation to minimise adverse effects to education provision would be considered on a case-by-case basis.

17.380 Taking the above measures into account, it was considered that the likely residual cumulative effects on education services would be **negligible** at the district level.

### Access to open space and nature

17.381 The additional residential population estimated across Outline Application 4 and Full Application 5 and all Cumulative Schemes may place pressure upon existing open spaces and their use by existing and future residents. It is presumed that this will be dealt with on each respective planning application to ensure adequate provision is maintained across the MCC local authority.

17.382 Future residents of both Outline Application 4 and Full Application 5, the wider SRF and the Cumulative Schemes will benefit from the proximity to the open space coming forward as part of Application 2, along with the open space and connections to nature proposed as part of Proposed Development and the wider SRF. This will ensure that new residents and workers of the complete and operational Developments will be able to easily access open space for recreation purposes. This has been assessed as having a **Minor Beneficial** long-term permanent impact upon future residents and workers of the Proposed Development which is **Not Significant**.

### Accessibility and active travel

17.383 Given that the Cumulative Schemes, the Proposed Development and the SRF are within close proximity to Manchester city centre and the employment, education and leisure uses it supports – it is likely that active travel will be encouraged and supported amongst these schemes. For some, the additional populations in this region will attract public transport improvements which will further enhance accessibility and active travel uptake. It is therefore assumed that the Proposed Development, plus the SRF, in conjunction with the Cumulative Schemes will have a **Minor Beneficial** long-term permanent residual effect.

### Crime reduction and community safety

17.384 The activation of space across the local area – included areas of land that are currently disused, will help to enhance natural surveillance. The fact that many of the schemes are mixed-use will also promote a range of different uses in the area, ensuring that different activities operating at different times of the day will enhance perceptions of community safety. As set out within the MCC validation list (2018, revised 2020), a Crime Impact Statement is required for major applications. It is therefore presumed that any potential negative effects of the schemes as identified within the Crime Impact Statements will be managed on a case-by-case basis for each planning application. This would result in a **Minor Beneficial** long-term permanent residual effect.

### Access to healthy food

17.385 The Cumulative schemes, including the Proposed Development and the wider SRF will support a range of non-residential uses. This may incorporate the sale of healthy food. This would result in a **Minor Beneficial** long-term permanent residual effect.

### Access to work and training

17.386 As assessed in **Volume 2: Main Text, Chapter 16: Socio-economics**, the Proposed Development, plus the SRF and together with 21 of the 26 Cumulative Schemes would result in the delivery of employment-generating floorspace across several use classes (including Use Class E which includes the former B1/A1/A2/A3/A4/A5/D2 use classes).

17.387 It is estimated that the 21 Cumulative Schemes which include employment generating floorspace would support between 3,000 and 6,500 jobs across Manchester and Salford, of which between 3,000 and 6,000 would be generated by developments within the boundaries of MCC and up to 500 would be generated by developments within the boundary of Salford City Council. Combined with the estimated 420 to 765 net additional jobs estimated to be generated across the SRF at the district level, this gives an estimated total of approximately 3,420 and 7,265 jobs.

17.388 As a result, the likely residual cumulative effects from net additional employment would be considered to be direct, long term, **Major Beneficial** residual effect at the district level, and a direct, long term, **Moderate Beneficial** residual effect at the regional level.

### Social cohesion and inclusive design

17.389 The Proposed Development with the SRF, along with the identified Cumulative Schemes, will attract new residents and support new communities in the local area. DDA compliance will be upheld across commercial, residential and public realm developments in line with relevant building regulations and MCC requirements. It is presumed that these developments will seek to integrate with existing communities, creating social cohesion. This is therefore likely to result in a **Minor Beneficial** long-term permanent residual effect.

### Minimising the use of resources

17.390 As set out within the MCC validation list (2018, revised 2020), an Environmental Standards Statement is needed for major applications. This is required to provide details on sustainability ratings and the provision of renewable energy sources within the developments. As a result, it is presumed that all developments considered as part of the Cumulative Schemes will evidence ways in which resources will be minimised during operation. This is therefore likely to result in a **negligible** residual effect.

### Climate change

17.391 As set out within the MCC validation list (2018, revised 2020), evidence such as flood risk assessments, Sustainable Urban Drainage Systems (SuDS) strategies and ecology assessments are required for submission with major planning applications. By considering aspects relating to climate change and the need to build resilience to natural events within the new developments, it is considered that the Proposed Development and the wider SRF in conjunction with the identified Cumulative Schemes would result in a **negligible** residual effect.

# 18. Climate Change

## Introduction

18.1 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 require: *"A description of the likely significant effects of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change."*

18.2 This chapter considers the impacts and effects of Application 4 and 5 (the Proposed Development) in terms of:

- PART A - The contribution to climate change: the greenhouse gas (GHG) emissions assessment; and
- PART B - The vulnerability of the Proposed Development to climate change (climate change resilience and adaptation).

18.3 This chapter is divided into the two aspects above and describes, for each, the assessment methodology and the baseline conditions relevant to the assessment. These have been used to assess the significant effects.

## PART A – GHG ASSESSMENT

## Introduction

18.4 This chapter assesses the effects of the Proposed Development on climate change considerations. In particular it considers effects that may arise as a result of the Proposed Development on climate change and greenhouse gases (GHGs).

18.5 This chapter describes the methods used to assess the likely significant effects of the Proposed Development; assess the baseline conditions currently existing at the Site and surroundings; the potential direct and indirect effects of the Proposed Development arising in terms of climate change considerations; the mitigation measures required to prevent, reduce, or offset the identified significant effects; and the residual effects. It has been written by WSP.

## Assessment Methodology and Significance Criteria

18.6 The assessment scenarios in respect of the EIA for the Proposed Development are set out in **Volume 2: Main Text, Chapter 2: Approach – Table 2.2**.

## Planning Policy Context

18.7 This section lists the legislation, policy and strategy which is considered relevant to this chapter. Whilst not intended to be an exhaustive list, it considers legislation, policy and strategy at international, national and local levels most relevant to the assessment of climate impacts for the Proposed Development.

### Legislation

#### Climate Change Act 2008 (2050 Target Amendment) Order 2019[1]

18.8 The Climate Change Act 2008 ("2008 Act") sets targets for reducing the UK's impacts on climate change and the need to prepare for managing the impacts. The 2008 Act sets a target of 100% (net zero) carbon dioxide ($CO_2$) emissions reduction by 2050 (against a 1990 baseline) and sets interim targets to ensure progress towards this target. The 2008 Act also requires a Climate Change Risk Assessment (CCRA) to be used to assess the risks from the impact of climate change to the UK.

18.9 The first CCRA in the UK was presented to Parliament in an Evidence Report in 2012, with subsequent assessments presented in 2017 and 2022. The overall aim of the Reports was to assess the urgency of further action to tackle current and future risks, and realise opportunities, arising for the UK, from climate change.

18.10 The 2008 Act also requires the production of a national adaptation plan for the UK Government to implement to be ready for the challenges of climate change, and a variety of organisations with key responsibilities (i.e., deemed to have adaptation reporting powers, ARP), were required to submit an ARP report of the steps they were and are taking to prepare for climate change.

### Planning and Energy Act 2008[2]

18.11 The Planning and Energy Act 2008 ("PEA 2008") enables local planning authorities in England and Wales to set requirements for energy use and energy efficiency by including policies in local plans imposing reasonable requirements for the use of energy from renewable sources and low carbon energy. The PEA 2008 enables local planning authorities to ensure that development in the area complies with energy efficiency standards.

### Carbon Budgets 2021[3]

18.12 Carbon budgets place restrictions on the amount of GHG emissions the UK can emit over a five-year period. The UK is the first country to set legally binding carbon budgets. Every tonne of human induced GHG emitted between now and 2050 will be counted towards the budget. If emissions rise in one sector, the UK will have to reduce emissions in another sector to balance the budget.

[1] UK Government (2008) Climate Change Act 2008. Available from: https://www.legislation.gov.uk/ukpga/2008/27/contents [Accessed 18 March 2023]
[2] Planning and Energy Act 2008. Available at: https://www.legislation.gov.uk/ukpga/2008/21/contents [Accessed 18 March 2023]
[3] HM Government, 2021. The Carbon Budgets Order 2021. Available at: https://www.legislation.gov.uk/uksi/2021/750/contents/made [Accessed 18 March 2023]

18.13 **Table 18.1** presents the six UK Carbon Budgets currently in existence. Carbon Budgets beyond 2037 have not yet been set.

***Table 18.1:*** *UK Carbon Budgets*

| Carbon budget | Years | 5-year Carbon Budget ($MtCO_2e$) |
|---|---|---|
| First | 2008-2012 | 3,018 |
| Second | 2013-2017 | 2,782 |
| Third | 2018-2022 | 2,544 |
| Fourth | 2023-2027 | 1,950 |
| Fifth | 2028-2032 | 1,725 |
| Sixth | 2033-2037 | 965 |

### The Carbon Plan: Delivering our Low Carbon Future, 2011[4]

18.14 The Carbon Plan sets out how the UK will achieve decarbonisation in line with the first four legally binding carbon budgets, while maintaining energy security and minimising costs to consumers, particularly those in the poorer households. The document envisions the cutting of emissions from various sectors including buildings, transport, industry, electricity, and agriculture through greater energy efficiency and use of low carbon technology.

## National Planning Policy

### National Planning Policy: National Planning Policy Framework 2021[5]

18.15 The National Planning Policy Framework (NPPF) 2021 sets out the Government's planning policies for England and how these are to be applied. Guidance relating to the reduction of greenhouse gases is mainly set out in Section 14, "Meeting the Challenge of Climate Change, Flooding and Coastal Change". Within paragraph 8, the document confirms that the purpose of the planning system is to contribute to the achievement of sustainable development, which includes economic, social, and environmental dimensions. The main relevant policies are set out in paragraphs 8, 20, 148, 150 and 154 which all support the reduction of greenhouse gas emissions.

[4] DECC, 2011. The Carbon Plan: Delivering our Low Carbon Future. Available at The Carbon Plan - reducing greenhouse gas emissions - GOV.UK (www.gov.uk)
[5] Ministry of Housing, Communities & Local Government (2019). National Planning Policy Framework. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed 18 March 2023]

## Local Planning Policy

### Manchester Local Development Framework[6]

18.16 The Manchester Local Development Core Strategy was adopted by Manchester City Council in 2012, which covers a period of 15 years from 2012 to 2027. It describes Manchester today and outlines the Council's vision for Manchester in 2027 along with the planning policies which will be used to deliver that vision. In addition to the carbon targets for 2020-25, the council also has a target to reach net zero carbon by 2038. This means reducing direct emissions by 95% by 2038 (compared to a 2015-16 baseline).

## Guidance

### Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (IEMA) 2022[7]

18.17 The aim of this guidance is to assist practitioners with addressing greenhouse gas (GHG) emissions assessment and mitigation in statutory and non-statutory Environmental Impact Assessment (EIA). This guidance has been prepared to assist EIA practitioners to take an informed approach to the treatment of GHG emissions within an EIA. It sets out areas for consideration at all stages of the assessment.

### RIBA 2030 Climate Change Targets, Version 2 (2021)8 and LETI Climate Emergency Design Guide[9]

18.18 The Royal Institute of British Architects (RIBA) has developed targets for embodied carbon, operational energy, and water use. These consider the latest recommendations from the Green Construction Board and have been developed by RIBA in consultation with other UK professional bodies. Similarly, The Embodied Carbon Target Alignment document developed by Low Energy Transformation Initiative (LETI) in consultation with industry groups, including the Chartered Institute of Building Services Engineers, RIBA, IStructE, and the Greater London Authority outlines total embodied carbon targets, as well as upfront carbon targets. These targets (summarised in **Table 18.2** and **Figure 18.1**) are progressive yet realistic, and a vital first step to ensure the construction industry has delivered the significant reductions necessary by 2030 in order to have a realistic prospect of achieving net zero carbon for the whole UK building stock by 2050.

[6] Manchester City Council, The Manchester Local Development Framework. Available at: General information | About the Local Development Framework (LDF) | Manchester City Council [Accessed 18 March 2023]
[7] Institute of Environmental Management and Assessment, 2022. Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance [Accessed 18 March 2023]
[8] Royal Institute of British Architects (RIBA), 2021. RIBA 2030 Climate Challenge version 2 (2021). Available at: https://www.architecture.com/about/policy/climate-action/2030-climate-challenge/resources [Accessed 18 March 2023]
[9] LETI Climate Emergency Design Guide. Available at: https://www.leti.uk/_files/ugd/252d09_3b0f2acf2bb24c019f5ed9173fc5d9f4.pdf (Accessed 23 March 2023)

***Table 18.2:*** *RIBA 2030 Climate Challenge target for embodied carbon for domestic and non-domestic buildings*

| RIBA sustainable outcome metrics | Business as usual (New build, compliance approach) | 2025 Targets | 2030 Targets |
|---|---|---|---|
| **Domestic** | | | |
| Embodied Carbon $kgCO_2e/m^2$ | 1200 $kgCO_2e/m^2$ | <800 $kgCO_2e/m^2$ | <625 $kgCO_2e/m^2$ |
| **Non-domestic (new build offices and workshop)** | | | |
| Embodied Carbon $kgCO_2e/m^2$ | 1400 $kgCO_2e/m^2$ | <970 $kgCO_2e/m^2$ | <750 $kgCO_2e/m^2$ |

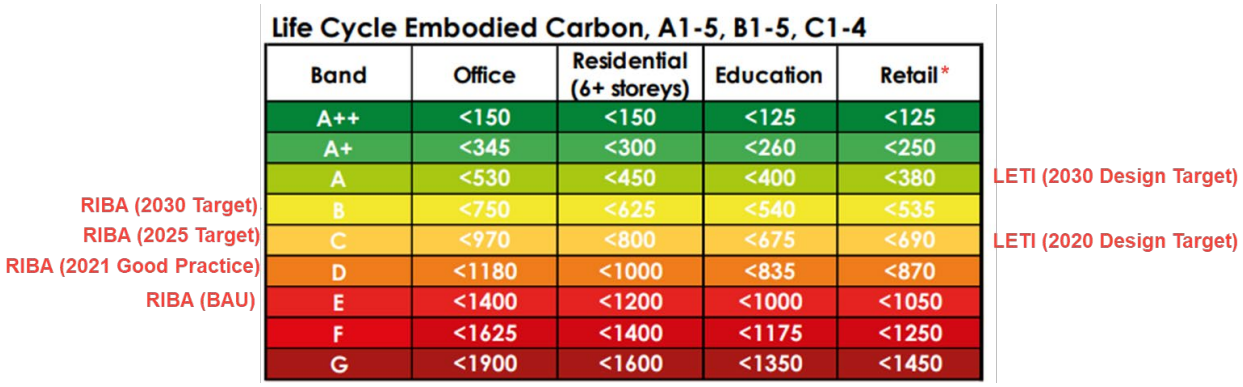



***Figure 18.1:*** *LETI Embodied carbon target alignment benchmarks and mapping with RIBA 2030 targets*

### RICS guidance on Whole Life Carbon Assessment for the Built Environment (2017)10

18.19 The Royal Institute of Chartered Surveyors (RICS) guidance mandates a whole life approach to reducing carbon emissions within the built environment. Specific objectives of this professional statement include providing a consistent whole life carbon assessment implementation plan and reporting structure for built projects; and promoting the reliability of whole life carbon assessments by acting as a solid reference for the industry, primarily for the UK.

## Significance Criteria

18.20 With regards to assigning significance, the 2nd edition of the IEMA guidance on Assessing Greenhouse Gas Emissions and Evaluating their Significance, February 2022, provides five distinct levels of significance. These levels

[10] RICS Guidance WLCA for the Built Environment. Available at: https://www.rics.org/profession-standards/rics-standards-and-guidance/sector-standards/building-surveying-standards/whole-life-carbon-assessment-for-the-built-environment [Accessed 18 March 2023]

are not solely based on whether a project emits GHG emissions alone, but how the project makes a relative contribution towards achieving a science-based 1.5°C aligned transition towards net zero. Specifically, when considering the aspect of significance, IEMA guidance on GHG assessment states:

"When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative, or negligible…"and;

"…. The crux of significance therefore is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050."

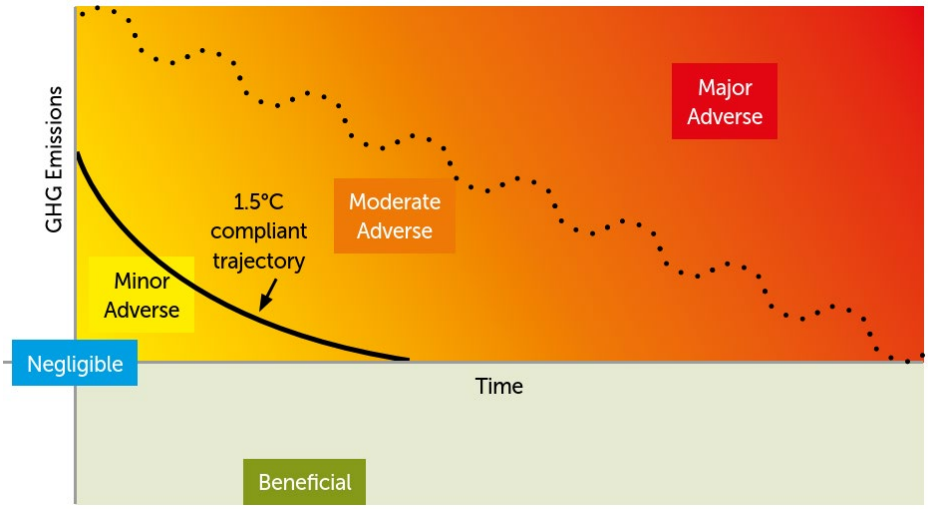



***Figure 18.2**: IEMA (2021) Assessing Greenhouse Gas Emissions and Evaluating their Significance*

18.21 The different levels of significance defined in the IEMA guidance are explained in **Table 18.3.**

***Table 18.3:** IEMA significance level definitions*

| Level of Significance | Description |
|---|---|
| **Beneficial** | The project's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact. |
| **Negligible** | The project's GHG impacts are reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG |

| Level of Significance | Description |
|---|---|
| | performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions. |
| **Minor adverse** | The project's GHG impacts are fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero. |
| **Moderate adverse** | The project's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero. |
| **Major adverse** | The project's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero. |

18.22 As per the IEMA guidance, "Major or moderate adverse effects and beneficial effects are considered to be significant. Minor adverse and negligible effects are considered to be not significant".

18.23 Contextualising the GHG emissions from a project helps to determine whether it supports or undermines the UK's trajectory towards net zero. IEMA guidance further suggests that "It is down to the practitioner's professional judgement on how best to contextualise a project's GHG impact".

18.24 Taking into account this clarification, and in addition from the RIBA 2030 Climate Change targets (2021) described in **Table 18.2,** the carbon emissions of the Proposed Development will also be compared to the UK Carbon Budgets as described in **Table 18.1.**

18.25 Based on this contextualisation and professional judgement, the overall significance of effect of the Proposed Development will be defined as outlined in **Table 18.4**, in accordance with the RIBA targets.

***Table 18.4:*** *Significance of effects as per RIBA guidance*

| Significance of effect | Description |
|---|---|
| **Negligible magnitude of impact** | Where the Proposed Development is below the "2030 Targets" for the embodied carbon and operational energy performance respectively defined by the RIBA guidance. |

| | |
|---|---|
| **Minor magnitude of impact** | Where the Proposed Development is between the "2025 Targets" and the "2030 Targets" for the embodied carbon and operational energy performance, respectively, defined by the RIBA guidance. |
| **Moderate magnitude of impact** | Where the Proposed Development is between the "Business as Usual" and the "2025 Targets" for embodied carbon and operational energy performance, respectively, as defined by the RIBA guidance. |
| **Major magnitude of impact** | Where the Proposed Development exceeds the "Business as Usual" threshold for embodied carbon and operational energy performance, respectively, as defined by the RIBA guidance. |

## Source of Effect

18.26 In accordance with guidance from IEMA, the emissions sources for the Proposed Development (also described as 'elements'), alongside their associated Lifecycle Stage as derived from Publicly Available Specification (PAS 2080), have been identified in **Table 18.5.**

***Table 18.5**: Likely Emission Sources in the Proposed Development*

| Lifecycle Stage (As per PAS 2080) | Element | Likely Source of emission |
|---|---|---|
| **Construction Phase** | Product stage (manufacture and transport of raw materials to suppliers) (A1-3) | Embodied emissions associated with extraction and manufacturing of the required raw materials. |
| | Transport of materials to site (A4) | Emissions from fuel and electricity used in vehicles transporting materials to the Site. |
| | Plant and equipment used during construction (A5) | Emissions from fuels and electricity used in plant and equipment on the Site. |
| | Transport of waste (A5) | Emissions from fuel/energy used in vehicles transporting materials away from the Site. |
| | Disposal of waste (A5) | Emissions from the final disposal of waste materials. |
| **Operational Phase** | Operation (B1) | Embodied emissions, and emissions associated with electricity use for lighting. |
| | Maintenance (B2) | Embodied emissions, and emissions from transport and plant associated with maintenance. |
| | Repair (B3) | Embodied emissions, and emissions from transport and plant associated with repair. |
| | Replacement (B4) | Embodied emissions and emissions from transport and plant associated with replacement. |

| Lifecycle Stage (As per PAS 2080) | Element | Likely Source of emission |
|---|---|---|
| | Refurbishment (B5) | Embodied emissions and emissions from transport and plant associated with refurbishment. |
| | Operational energy Use (B6) | Emissions resulting from the energy used, e.g., heating and cooling, ventilation, lighting, and the combustion of gas. |
| | Operational water Use (B7) | Emissions from the use of water required by infrastructure to enable it to operate and deliver its service. |
| | Other operational processes (B8) | Carbon emissions arising from infrastructure to enable it to operate and deliver its service including management of operational waste. |
| | User's utilisation (B9) | Represents the activities associated with user's utilisation of the infrastructure during the use stage. |
| **End of life** | Decommissioning process (C1) | Emissions from decommissioning work (i.e., fuel/electricity). |
| | Transport and disposal of materials (C2-C4) | Emissions sources as fuel/energy consumption from the transport of materials to disposal sites or recovery. |

## Red Bank Methodology (Outline Application 4)

### Study Area

18.27 The GHG emissions assessment has not been restricted by geographical area, but has, instead, been established to include any increase or decrease in emissions because of the Proposed Development, wherever that may be. This comprises:

- **Construction stage** embodied carbon emissions (as per stages A1-A5 of PAS 2080) associated with the manufacture of materials, transport of materials to and from the Site, and the disposal of the building elements during construction.
- **Operational stage** embodied carbon emissions (as per stages B1-B9 of PAS 2080), associated with the buildings' elements energy use, including but not limited to: electricity, heating and lighting, and emissions associated with the replacement/refurbishment of building parts.
- **Operational stage** transport emissions arising from the use of the Proposed Development, as well as from the surrounding regional road network used to gain access to the Site, and in addition any shifts in transport modes/patterns which may result from the Proposed Development.
- **End of life stage** embodied carbon emissions (as per stages C1-C4 of PAS 2080) associated with decommissioning works as well as from transport, processing, and disposal of materials during this phase.

## Assessment Survey and Data Sources

18.28 The GHG assessment has been prepared based on desk-based research; no primary surveys have been carried out as they are not applicable to this assessment.

18.29 Baseline data for the GHG assessment has been derived and modelled using:

- One Click LCA Software - embodied carbon calculation;
- The Energy Statement (as submitted in support of the planning submission);
- The Transport Assessment (as submitted in support of the planning submission);
- Department for Business, Energy & Industrial Strategy, 2005 to 2020 UK local and regional $CO_2$ emissions – data tables, 2020; and
- Royal Institute of British Architects (RIBA) 2030 Climate Challenge.

## Construction Phase

18.30 **Table 18.6** provides details of the approach to the construction phase assessment.

***Table 18.6:*** *GHG emissions assessment – construction phase*

| **Assessment scope: Impact of the development on climate (GHG emissions)** | | | | |
|---|---|---|---|---|
| **Stage** | **Assessment scenario** | **Type of assessment** | **Rationale** | **Approach to assessment** |
| **Assessment scenarios 1a and 3a: Impacts of the Application 4 only** | | | | |
| Demolition, Groundworks, and Construction Effects | 1a and 3a | Quantitative assessment (data collection and quantification undertaken by WSP Carbon Management Team) | Application 4 could give rise to significant effects on GHG emissions due to the impact of demolition and construction activities. | The GHG assessment for scenario 1a quantifies and reports the GHG emissions anticipated to be generated, or avoided, by Application 4, reported in tonnes of carbon dioxide equivalent ($tCO_2e$).<br><br>To quantify direct and indirect emissions associated with Application 4, a lifecycle approach has been adopted. **Table 18.8** identifies the key contributing GHG sources or activities from Application 4, with a justification for those excluded from GHG emissions assessment. |
| **In-Combination Assessment: Assessment Scenarios 4a considering impacts of the Application 4 alongside the wider development project and the Strategic Regeneration Framework (SRF)** | | | | |

| **Assessment scope: Impact of the development on climate (GHG emissions)** | | | | |
|---|---|---|---|---|
| Demolition, Groundworks, and Construction Effects | 4a | Qualitative, in-combination assessment | Application 4 could give rise to significant effects on GHG emissions due to the impact of demolition and construction activities. | Detailed construction and demolition information was not available for Application 4 at the time of the assessment.<br><br>To ensure the potential impacts of the combined applications are considered as part of this environmental statement, a high-level qualitative assessment of the potential GHG emissions has been undertaken.<br><br>This has been based on current understanding of the applications. The high-level assessment is presented in Assessment of Likely Significant Effects & In-Combination Assessment. |

## Operational Phase

18.31 **Table 18.7** provides details of the approach to the operational phase assessment.

***Table 18.7:*** *GHG emissions assessment – operational phase*

| **Assessment scope: Impact of the development on climate (GHG emissions)** | | | | |
|---|---|---|---|---|
| **Stage** | **Assessment scenario** | **Type of assessment** | **Rationale** | **Approach to assessment** |
| **Assessment scenarios 1b and 3b: Impacts of the Application 4 only** | | | | |
| Operational Effects | 1b and 3b | Quantitative assessment (data collection and quantification undertaken by WSP Carbon Management Team) | Application 4 could give rise to significant effects on GHG emissions due to the impact of operational activities. | The GHG assessment for scenario 1b and 3b quantifies and reports the GHG emissions anticipated to be generated, or avoided, by Application 4, reported in tonnes of carbon dioxide equivalent ($tCO_2e$).<br><br>To adequately capture direct and indirect emissions associated with Application 4, a lifecycle approach has been adopted. **Table 18.8** identifies the key contributing GHG sources or activities from Application |

| **Assessment scope: Impact of the development on climate (GHG emissions)** | | | | |
|---|---|---|---|---|
| | | | | 4, with a justification for those excluded from GHG emissions assessment. |
| **In-Combination Assessment: Assessment Scenario 4b considering impacts of the Application 4 alongside the wider development project and SRF** | | | | |
| Operational Phase | 4b | Qualitative, in-combination assessment | Operational activities associated with Application 4 could give rise to significant effects on GHG emissions. | Detailed operational information was not available for Application 4 as it is an outline application. This information will be available at the detailed design stage.<br><br>To ensure the potential impacts of the combined applications are considered as part of this environmental statement, a high-level qualitative assessment of the potential GHG emissions has been undertaken.<br><br>This has been based on current understanding of the applications. The high-level assessment will be presented in Assessment of Likely Significant Effects & In-Combination Assessment. |

## Cumulative Effects for Application 4, 5 and in-Combination Assessment: assessment scenarios 1c, 1d, 2c, 2d, 3c and 4c. - considering impacts of the Proposed Development with identified committed schemes and SRF.

18.32 For the purposes of this assessment, an "in combination" assessment is taken to mean a qualitative appraisal of the potential impact of the development as a whole (i.e., Applications 4 and 5 and the wider SRF scenario 4a and 4b). Assessment scenarios 1c, 1d, 2c, 2d, 3c and 4c are excluded from the assessment as the information was not available with which to quantify emissions (Cumulative Effects with Identified Committed Schemes and Cumulative Effects with Identified Committed Schemes + SRF).

18.33 **Table 18.8** provides the details of scoped in and scoped out lifecycle stages for quantitative assessment for the construction and operation phases (Scenario 1a and 1b) of the Application 4 plots.

***Table 18.8:*** *Scenarios 1a and 1b GHG emissions assessment – scope of the quantitative assessment undertaken by the WSP Carbon Management Team*

| Lifecycle stage and source of GHG emissions | Scoped in | Scoped out | Justification | Assessment methodology |
|---|---|---|---|---|
| **Construction phase – (A1-A5)** | | | | |
| Product stage (manufacture and transport of raw materials to suppliers) A1-A3 | ✓ | | Raw materials required for Application 4 will result in embodied emissions and have the potential to be significant. | For Application plots (Application 4), the details of material quantities were not available. Hence, the domestic and non-domestic typologies are modelled in Carbon Designer, which is an add-on to One Click Life-Cycle Assessment software. This procedure is suitable for early-stage projects where building shape and areas are available. Inputs used to inform the software were based on floor area provided, number of floors, buildings use and material assumptions that were coordinated with the design of Application 4. |
| Transport of materials to site A4 | ✓ | | Construction stage emissions from fuel / energy consumption due to the delivery of material to the Site have the potential to be significant. | The Carbon Designer model provides estimates for A4 stage based on standard assumptions for transport. These assumptions were used for calculating the impact of A4 stage. |
| Plant and equipment use during construction A5 | ✓ | | Fuel / energy consumption of plant and equipment used during construction would generate GHG emissions. | The Carbon Designer model provides estimates for A5 stage based on standard assumptions for equipment use during construction. These assumptions were used for calculating the impact of A5 stage. |
| Disposal of waste A5 | | ✓ | Emissions from the disposal of waste are unlikely to be significant, due to a large proportion of construction waste being inert. This | n/a |

| Lifecycle stage and source of GHG emissions | Scoped in | Scoped out | Justification | Assessment methodology |
|---|---|---|---|---|
| | | | includes the waste from the demolition of existing assets. | |
| **Operational Phase (B1-B9)** | | | | |
| In-use Emissions B1 | | ✓ | B1 refers to Carbon emissions released from building elements and the impact of potential carbon absorption. This is not anticipated to be a significant emission source. | n/a |
| Maintenance B2 | | ✓ | Maintenance associated with Application 4 is not considered to be a significant emissions source, by comparison with that which already takes place within the region. | n/a |
| Repair B3 | | ✓ | Application 4 is designed to be maintained rather than repaired, therefore subsequent repair emissions sources are not considered to be material to the assessment. | n/a |
| Replacement B4 | ✓ | | Replacement and refurbishment activities on Application 4 would release a potentially significant magnitude of emissions | The assessment was based on the number of replacement cycles for different elements, materials, and assets over the 60-year lifespan of the scheme. The assessment will account for the carbon emissions associated with the production of the replacement items, transport of the |

| Lifecycle stage and source of GHG emissions | Scoped in | Scoped out | Justification | Assessment methodology |
|---|---|---|---|---|
| | | | | items to the Site and exported waste emissions to landfill. |
| Refurbishment B5 | ✓ | | Replacement and refurbishment activities on Application 4 would release a potentially significant magnitude of emissions | The assessment was based on the frequency of refurbishment for different elements, materials, and assets over the 60-year life span of the scheme. The assessment will account for the carbon emissions associated with the production of the items to be refurbished, transport of those items to the Site and exported waste emissions to landfill. |
| Operational Energy Use B6 | | ✓ | Due to the nature of scenario 1b it is considered that there will be no operational energy consumption under scenario 1b. | n/a |
| Operational Water use B7 | | ✓ | Due to the nature of scenario 1b it is considered that there will be no operational water consumption under scenario 1b. | n/a |
| End-user emissions (regional traffic flows) – Traffic B9 | ✓ | | Changes to regional traffic flows are expected and this has the potential to result in a significant adverse effect on GHG emissions. | The number of trips per vehicle / transport mode, and the average trip distance, have been multiplied by emissions factors for each key vehicle type listed in Application 4. The data required has been taken from the Transport Assessment undertaken by WSP for Application 4. |
| **Decommissioning phase (C1-C4)** | | | | |
| End of life emissions | ✓ | | Emissions are likely to arise from decommissioning, stripping out, | The Carbon Designer model provides estimates for C1-C4 stage based on standard assumptions for end-of-life scenario. These assumptions were |

| Lifecycle stage and source of GHG emissions | Scoped in | Scoped out | Justification | Assessment methodology |
|---|---|---|---|---|
| | | | disassembly, deconstruction, and demolition operations as well as from transport, processing, and disposal of materials at the end of life of the Proposed Scheme. | used for calculating the impact of C stage. |

### Identification of Sensitive Receptors

18.34 The sensitive receptor relevant to this assessment is the global climate, as impacted by the generation and release of GHG emissions.

## NT02 – NT04 Methodology (Full Application 5)

### Study Area and Survey Data Source

18.35 The study area and the survey and data source details are the same as mentioned in the Application 4 methodology section.

### Construction Phase

18.36 **Table 18.9** provides details of the approach to the construction phase assessment.

***Table 18.9****: GHG emissions assessment – construction phase*

| Assessment scope: Impact of the development on climate (GHG emissions) | | | | |
|---|---|---|---|---|
| **Stage** | **Assessment scenario** | **Type of assessment** | **Rationale** | **Approach to assessment** |
| **Assessment scenarios 2a: Impacts of Application 5 only** | | | | |
| Demolition, Groundworks, and Construction Effects | 2a | Quantitative assessment (data collection and quantification undertaken by WSP Carbon Management Team) | Application 5 could give rise to significant effects on GHG emissions due to the impact of demolition and construction activities. | The GHG assessment, for scenario 2a quantifies and reports the GHG emissions anticipated to be generated, or avoided, by Application 5, reported in tonnes of carbon dioxide equivalent ($tCO_2e$).<br>To quantify direct and indirect emissions associated with Application 5, a lifecycle approach |

| | | | | |
|---|---|---|---|---|
| **Assessment scope: Impact of the development on climate (GHG emissions)** | | | | |
| | | | | has been adopted. **Table 18.11** identifies the key contributing GHG sources or activities from Application 5, with a justification for those excluded from GHG emissions assessment. |
| **In-Combination Assessment: Assessment Scenarios 3a and 4a considering impacts of the Application 5 alongside the wider development project and SRF** | | | | |
| Demolition, Groundworks, and Construction Effects | 3a and 4a | Qualitative, in-combination assessment | Application 5 could give rise to significant effects on GHG emissions due to the impact of demolition and construction activities. | Detailed construction and demolition information was not available for Applications 5 at the time of the assessment with respect to other Committed Schemes or SRF.<br><br>To ensure the potential impacts of the combined applications are considered as part of this environmental statement, a high-level qualitative assessment of the potential GHG emissions has been undertaken.<br><br>This has been based on current understanding of the applications. The high-level assessment is presented in Assessment of Likely Significant Effects & In-Combination Assessment. |

## Operational Phase

18.37 **Table 18.10** provides the detail of the approach to the operational phase assessment.

***Table 18.10:*** *GHG emissions assessment – operational phase approach*

| **Assessment scope: Impact of the development on climate (GHG emissions)** | | | | |
|---|---|---|---|---|
| **Stage** | **Assessment scenario** | **Type of assessment** | **Rationale** | **Approach to assessment** |
| **Assessment scenarios 2b and 3b: Impacts of Application 5 only** | | | | |
| Operational Effects | 2b and 3b | Quantitative assessment (data collection and quantification undertaken by WSP Carbon Management Team) | Application 5 could give rise to significant effects on GHG emissions due to the impact of operational activities. | The GHG assessment for scenario 2b and 3b quantifies and reports the GHG emissions anticipated to be generated, or avoided, by Application 5, reported in tonnes of carbon dioxide equivalent ($tCO_2e$).<br><br>To adequately capture direct and indirect emissions associated with Application 5, a lifecycle approach has been adopted. **Table 18.11** identifies the key contributing GHG sources or activities from Application 5, with a justification for those excluded from GHG emissions assessment. |
| **In-Combination Assessment: Assessment Scenario 4b considering impacts of Application 5 alongside the wider development project and SRF** | | | | |
| Operational Phase | 4b | Qualitative, in-combination assessment | Operational activities associated with Application 5 could give rise to significant effects on GHG emissions. | Detailed operational information was not available for Applications 5 at the time of the assessment with respect to other Committed Schemes or SRF.<br><br>To ensure the potential impacts of the combined applications are considered as part of this environmental statement, a high-level qualitative assessment of the potential GHG emissions has been undertaken.<br><br>This has been based on current, high-level understanding of the |

| Assessment scope: Impact of the development on climate (GHG emissions) | | | | |
|---|---|---|---|---|
| | | | | applications. The high-level assessment will be presented in Assessment of Likely Significant Effects & In-Combination Assessment. |

18.38 **Table 18.11** provides details of scoped in and scoped out lifecycle stages for quantitative assessment for the construction and operation phases (Scenario 2a and 2b) of the Application 5 plots.

***Table 18.11:*** *Scenarios 2a and 2b GHG emissions assessment – scope of the quantitative assessment undertaken by the WSP Carbon Management Team*

| Lifecycle stage and source of GHG emissions | Scoped in | Scoped out | Justification | Assessment methodology |
|---|---|---|---|---|
| **Construction phase – (A1-A5)** | | | | |
| Product stage (manufacture and transport of raw materials to suppliers) A1-A3 | ✓ | | Raw materials required for Application 5 will result in embodied emissions and have the potential to be significant. | For Application 5, the cost plans for NT02-NT04 plots were available which provided the material quantities. However, only broad material types were provided rather than detailed specifications. Therefore, WSP took the approach of modelling one representative block for embodied carbon assessment. NT02 Block 1 was modelled in the OneClick software as this block is the largest, has the most material types detailed, and also has the amenity space (clubhouse) located within its plot. Inputs used to inform the software were based on the cost plan provided by Arcadis, floor area provided, and material assumptions. |
| Transport of materials to site A4 | ✓ | | Construction stage emissions from fuel / energy consumption due to the delivery of material to the Site have the potential to be significant. | The OneClick model provides estimates for A4 stage based on standard assumptions for transport. These were used for calculating the impact of A4 stage. |

| Lifecycle stage and source of GHG emissions | Scoped in | Scoped out | Justification | Assessment methodology |
|---|---|---|---|---|
| Plant and equipment use during construction A5 | ✓ | | Fuel / energy consumption of plant and equipment used during construction would generate GHG emissions. | The OneClick model provides estimates for A5 stage based on standard assumptions for equipment use during construction. These were used for calculating the impact of A5 stage. |
| Disposal of waste A5 | | ✓ | Emissions from the disposal of waste are unlikely to be significant, due to a large proportion of construction waste being inert. This includes the waste from the demolition of existing assets. | n/a |
| **Operational Phase (B1-B9)** | | | | |
| In-use Emissions B1 | | ✓ | B1 refers to Carbon emissions released from building elements and the impact of potential carbon absorption. This is not anticipated to be a significant emission source. | n/a |
| Maintenance B2 | | ✓ | Maintenance associated with Application 5 is not considered to be a significant emissions source, by comparison with that which already takes place within the region. | n/a |
| Repair B3 | | ✓ | Application 5 is designed to be maintained rather than repaired, therefore subsequent repair emissions sources are | n/a |

| Lifecycle stage and source of GHG emissions | Scoped in | Scoped out | Justification | Assessment methodology |
|---|---|---|---|---|
| | | | not considered to be material to the assessment. | |
| Replacement B4 | ✓ | | Replacement and refurbishment activities on Application 5 would release a potentially significant magnitude of emissions | This was based on the number of replacement cycles for different elements, materials and assets over the 60-year life span of the scheme. This will account for the carbon emissions associated with the production of the replacement items, transport of the items to the Site and exported waste emissions to landfill. |
| Refurbishment B5 | ✓ | | Replacement and refurbishment activities on Application 5 would release a potentially significant magnitude of emissions | This was based on the frequency of refurbishment for different elements, materials and assets over the 60-year life span of the scheme. This will account for the carbon emissions associated with the production of the items to be refurbished, transport of those items to the Site and exported waste emissions to landfill. |
| Operational Energy Use B6 | | ✓ | Due to the nature of scenario 1b it is considered that there will be no operational energy consumption under scenario 1b. | n/a |
| Operational Water use B7 | | ✓ | Due to the nature of scenario 1b it is considered that there will be no operational water consumption under scenario 1b. | n/a |
| End-user emissions (regional traffic flows) – Traffic B9 | ✓ | | Changes to regional traffic flows are expected and this has the potential to result in a significant adverse | The number of trips per vehicle / transport mode, and the average trip distance, have been multiplied by emissions factors for each key vehicle type for the Application 5. The data |

| Lifecycle stage and source of GHG emissions | Scoped in | Scoped out | Justification | Assessment methodology |
|---|---|---|---|---|
| | | | effect on GHG emissions. | required has been taken from the Transport Assessment undertaken by WSP for Application 5. |
| **Decommissioning phase (C1-C4)** | | | | |
| End of life emissions | ✓ | | Emissions are likely to arise from decommissioning, stripping out, disassembly, deconstruction, and demolition operations as well as from transport, processing, and disposal of materials at the end of life of the Proposed Scheme. | The OneClick model provides estimates for C1-C4 stage based on standard assumptions for end-of-life scenario. These were used for calculating the impact of C stage. |

### Identification of Sensitive Receptors

18.39 The sensitive receptor relevant to this assessment is the global climate, as impacted by the generation and release of GHG emissions.

## Assumptions/Limitations

18.40 The assumptions made in the assessment and the potential limitations include:

18.41 The operational phase of the Proposed Development is expected to vary across the various plots. The expected lifespan of the Development has, however, been assumed to be 60 years in line with best practice.

18.42 The assessment of operational building emissions takes into consideration national grid decarbonisation to 2050. This is because the Proposed Development has followed an all-electric approach to benefit from the decarbonisation of the electricity grid, and therefore reduce its operational building emissions over time (even where energy consumption remains the same). To account for this benefit, but whilst also applying a conservative approach, the electricity emission factor used in this assessment is the average of the electricity emission factors for the period 2028-2087, based on the emissions factors published by UK Government.

18.43 Future improvements to vehicle fuel efficiency and electrification have not been considered in the assessment, as the data is not available at this stage. It is anticipated that future technological development and changes in trip numbers are likely to result in reduced emissions in contrast to those used in the assessment.

18.44 The significance of effects determined in this GHG assessment are based on the current design and carbon emission estimates, as compared to industry benchmarks. The design has the potential to change at a subsequent stage and appropriate mitigation measures for reducing carbon emissions from the Proposed Development should be considered at further design stages.

18.45 The assessment will not consider any specific Committed Developments in addition to the Proposed Development because - as GHGs are not spatially contained - the assessment already considers the cumulative effect of all GHGs that could contribute to climate change. Therefore, the cumulative effect of GHGs emitted due to the Proposed Development is included with and contextualised against the UK Carbon Budgets and RIBA 2030 Climate Change targets. For this reason, this ES Chapter will not consider a standalone quantitative cumulative scenario, i.e., Application 4 and Application 5: Scenario 1c, 1d, 2c and 2d; in-Combination Effects of Applications 4 and 5: Scenario 3c; and in-Combination of Applications 4 and 5 and SRF: Scenario 4c.

## Consultation

18.46 No specific consultation has been undertaken with regards to the Greenhouse Gas assessment.

18.47 The assessment methodology was presented in the EIA Scoping Report. No specific comments were received regarding this assessment in the Scoping Opinion and therefore the assessment has proceeded as proposed.

# Red Bank (Outline Application 4)

## Baseline Conditions (Outline Application 4)

18.48 The baseline ("do-minimum" approach) is the reference point against which the impacts and effects of Application 4 can be compared and assessed. The existing and future GHG emissions, in the absence of Application 4, represent the current and future baseline ("do-minimum" approach). In this circumstance, it is assumed that no construction activity would take place associated with Application 4 but the enabling works associated with the HIF works would be completed.

18.49 Since Application 4 is not a greenfield development, the existing baseline will have operational emissions (from, but not limited, to heating, cooling, lighting, and electricity) and transport related emissions from the existing buildings at the Site. However, due to lack of available data in this regard, it has not, at this stage, been possible to include operational energy and transport carbon emissions in the existing baseline. To this end, professional judgement has been used to assert that the emissions from existing operational energy and transport emissions are not likely to have any significant influence on the baseline. Additionally, the once the HIF works are implemented the majority of the Site would be un-used and therefore not contributing to baseline emissions.

## Embedded Mitigation (Outline Application 4)

18.50 This section sets out the measures that have been incorporated into, or proposed, for inclusion within the scheme design to avoid, or minimise, potential effects on the climate.

### Demolition and Construction

18.51 Application 4 has been designed to avoid and minimise the impacts and effects of climate change through the design-development and by embedding mitigation measures into the design.

18.52 The overarching principles for management of carbon emissions follows the process outlined in the IEMA guidance[11], summarised in **Table 18.12**. Mitigation follows a hierarchy whereby if GHG emissions cannot be avoided, the assessment should aim to reduce the residual significance of a project's emissions at all stages – design, construction, operation and end of life - and substitute GHG intensive approaches where possible. Compensation should only be considered when these first three steps are exhausted.

[11] Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022) 'Assessing Greenhouse Gas Emissions and Evaluating their Significance'. Available at: https://www.iema.net/resources/reading-room/2022/02/24/iema-guide-assessing-greenhouse-gas-emissions-and-evaluating-their-significance

***Table 18.12**: IEMA's GHG Emissions Mitigation Hierarchy*

| Step | Strategy |
|---|---|
| **Eliminate** | Within all major development decisions, investigate and deploy options to eliminate GHG emissions. |
| **Reduce** | Ensure that construction and operational activities will deliver efficient use of energy and resources. |
| **Substitute** | Commit to renewables and low carbon materials, methods, and technologies in place of more carbon intensive sources. |
| **Compensate** | Develop a strategy to compensate residual or 'unavoidable' emissions. |

### The Completed and Operational Development

18.53 Application 4 has been designed, as far as possible, to avoid and minimise impacts and effects relating to GHG emissions.

## Assessment of Likely Significant Effects (Outline Application 4)

18.54 The significance of effects of the proposed Application 4 development has been assessed using the methodology set out in this chapter.

18.55 It should be noted that where the effects are assessed as moderate, application of mitigation methods will reduce the significance of effects to a lower level.

### Demolition and Construction (Scenario 1a)

#### Embodied Carbon Emissions (Stage A1 to A5)

18.56 Activities during the construction phase would generate GHG emissions, particularly from the manufacture of construction materials, but also from transport to the Site and from on-site works.

18.57 The proposed Application 4 development includes up to 3,250 residential units (1 Bed, 2 Bed and 3 Bed) and non-domestic uses like the clubhouse, health care facility and primary school. **Table 18-13** shows the whole life embodied carbon emissions from the proposed Application 4 development for demolition and construction phase i.e. Scenario 1a.

***Table 18.13**: Embodied and transport carbon emissions during construction phase (domestic and non-domestic)*

| Lifecycle stage | Embodied carbon of Application 4 ($tCO_2e$) |
|---|---|
| Emissions related to A1-A5- Domestic | 123,749 |
| Emissions related to A1-A5- Non- Domestic | 3,406 |

| Lifecycle stage | Embodied carbon of Application 4 ($tCO_2e$) |
|---|---|
| **Total A1 to A5** | **127,155** |

18.58 The total whole life embodied carbon emissions for the proposed Application 4 development for stage A1 to A5 are estimated to be **127,155 $tCO_2e$**. Of this, **123,749 $tCO_2e$** are from domestic use and **3,406 $tCO_2e$** are from non-domestic uses.

## The Completed and Operational Development (Scenario 1b)

### Embodied Carbon Emissions (Stage B1 to B5)

18.59 Activities during the operational phase would generate GHG emissions, particularly from the replacement and/or refurbishment of building elements.

18.60 The calculations for the embodied carbon emissions generated during the operational phase are provided in **Table 18.4.**

***Table 18.14**: Calculations for the embodied carbon emissions during operation (Domestic + non-Domestic)*

| Lifecycle stage | Embodied carbon of Application 4 ($tCO_2e$) |
|---|---|
| Emissions related to B1-5 – Use Stage – Domestic | 24,750 |
| Emissions related to B1-5 – Use Stage – non-Domestic | 888 |
| **Total B1-5** | **25,638** |

18.61 The total whole life embodied carbon emissions for the proposed Application 4 development for stage B1 to B5 are estimated to be **25,638 $tCO_2e$**. Of this, **24,750 $tCO_2e$** are from domestic use and **888 $tCO_2e$** are from non-domestic uses.

### Operational Energy Emissions

18.62 The proposed Application 4 development comprises domestic as well as non-domestic areas (such as clubhouse, health care and primary school uses).

18.63 It should be noted that the operational carbon emissions from energy use are shown only to provide context at this stage and the consumption will change in the future design stages.

18.64 Carbon emissions from operational energy use are assessed over the whole expected life (60 years) of the proposed Application 4 development. While calculating the carbon emissions from operational energy use, the decarbonisation of grid electricity has been considered. This has been done by using the average predicted annual carbon factors for grid electricity, based on data published by the UK Government. These emission factors for grid electricity consider grid decarbonisation, and therefore the carbon emissions from grid electricity continue to remain consistent from 2050 until 2100.

18.65 **Table 18.15** provides the details of the total operational energy consumption for the proposed Application 4 development.

***Table 18.15**: Annual operational energy use estimate for the proposed Application 4 development*

| Building use | Energy Consumption (kWh/m$^2$/yr) | GIA of Application 4 (m$^2$) | Total annual operational energy for Application 4 (kWh/yr) |
|---|---|---|---|
| Residential – 1 Bed | 60 | 47,880 | 2,872,800 |
| Residential – 2 Bed | 60 | 164,640 | 9,878,400 |
| Residential – 3 Bed | 60 | 41,370 | 2,482,200 |
| Clubhouse | 75 | 3,600 | 270,000 |
| Health centre | 75 | 3,600 | 270,000 |
| Primary school | 75 | 3,000 | 225,000 |
| **Total Energy Consumption (kWh/yr)** | | | **15,998,400 kWh/yr** |

18.66 The total annual energy consumption from energy use for the domestic part of the proposed Application 4 development is estimated as **15,233,400 kWh/yr.** For the non-domestic part of the development, the total annual energy use is estimated as **765,000 kWh/yr**. The overall total annual energy consumption of the proposed Application 4 development is estimated to be **15,998,400 kWh/yr**. The total operational energy use over the 60-year expected life of the proposed Application 4 development is estimated to be **959,904 MWh**.

18.67 The total tonnes of operational carbon emissions predicted to be generated by the proposed Application 4 development due to energy use are therefore estimated to be **9,496 $tCO_2e$.**

## Operational Transport Emissions

18.68 To calculate the operational traffic associated with the Application 4 development, the number of trips per vehicle / transport mode, and the average trip distance, have been multiplied by emissions factors for each key vehicle type. The data required has been taken from the Transport Assessment undertaken by WSP for the proposed Application 4 development (**ES Volume 3: Appendices - Appendix 11.1**).

18.69 WSP provided the total trip numbers for Application 4 plots and the mode share for each vehicle type. This was then converted into the total number of trips per vehicle.

18.70 The calculation for annual transport emissions from various modes of transport during the operational phase of the proposed Application 4 development are provided in **Table 18.16.**

***Table 18.16**: Transport emissions during operational phase*

| Metric | Unit | Train | Bus | Car (petrol) | Car (EV) | Bicycle | Walk | Taxi |
|---|---|---|---|---|---|---|---|---|
| Total distance | km/year | - | 13,532,711 | 11,070,766 | 6,690,917 | 971,097 | 4,009,692 | 845,794 |
| Total vehicle trips | vehicle trips/yr | 0 | 1,752,216 | 849,448 | 513,387 | 194,691 | 3,115,050 | 64,897 |
| Average Trip length | km/trip | 0.0 | 7.7 | 13.0 | 13.0 | 5.0 | 1.3 | 13.0 |
| Emissions factor description | per passenger /km | National rail, per passenger. km | Average local bus, per passenger. km | Average car, unknown fuel, per km | Average car, battery electric vehicle, per km | Conventional bike, per passenger km | On foot | Regular taxi per passenger .km |
| Emissions factor value | $kgCO_2e/km$ | 0.0000 | 0.1023 | 0.1715 | 0.0503 | 0.0049* | 0.0098* | 0.1488 |
| **Total $kgCO_2e$** | | **-** | **1,383,990** | **1,898,415** | **336,620** | **4,758** | **39,295** | **125,820** |

* Source for bicycle and walking carbon factor: https://www.nature.com/articles/s41598-020-66170-y. These are estimated emissions per kilometre travelled for walking and cycling from energy intake required to compensate for increased energy expenditure, and data on food-related GHG emissions. We assume that persons who shift from passive modes of transport (e.g. driving) have increased energy expenditure that may be compensated with increased food consumption.

18.71 The total annual transport carbon emissions for the proposed Application 4 development equates to **3,789 $tCO_2e/yr$** and **227,334 $tCO_2e$** in total over the period of 60 years.

## End Of Life Phase

### Embodied Carbon Emissions (Stage C1 to C4)

18.72 Activities during the end-of-life phase of the proposed Application 4 development would generate GHG emissions, particularly from the demolition, waste processing and the disposal of building elements.

18.73 The calculations for the embodied carbon emissions generated during the end-of-life phase are provided in **Table 18.17.**

***Table 18.17**: Embodied carbon emissions during end of life*

| Lifecycle stage | Embodied carbon of Application 4 ($tCO_2e$) |
|---|---|
| Emissions related to C1-4 End of life - Domestic | 6,187 |
| Emissions related to C1-4 End of life - non-Domestic | 250 |
| **Total C1-4** | **6,438** |

18.74 The total whole life embodied carbon emissions for the proposed Application 4 development for stage C1 to C4 are estimated to be **6,438 $tCO_2e$**. Of this, **6,187 $tCO_2e$** are from domestic use and **250 $tCO_2e$** are from non-domestic uses.

## Likely Significant Effects Summary for the Broader GHG Emission Categories

### Whole life embodied carbon emissions

18.75 The whole life embodied carbon emissions estimated to be generated by the domestic and non-domestic part of the proposed Application 4 development is **603 $kgCO_2e/m^2$** on average (**614.89 $kgCO_2e/m^2$ for domestic and 445.54 $kgCO_2e/m^2$ for non-domestic)**. This figure does not exceed the RIBA 2030 target (<625 $kgCO_2e/m^2$). Therefore, as per the criteria mentioned in **Table 18.4,** embodied carbon emissions for domestic and non-domestic spaces are considered likely to have a **Negligible adverse (not significant)** effect on climate. However, these results, as stated in the methodology for calculations, are based on the Carbon Designer outputs and not the actual project data and hence should be considered as indicative rather than the actual impact of the Application 4. Operational carbon emissions (energy)

18.76 In the absence of the required project specific energy consumption information at this early design stage, the operational energy consumption for the domestic and non-domestic typologies for the Application 4 plots are referenced from RIBA 2030 Climate Change Targets. The RIBA 2025 target of **<60 $kWh/m^2/yr$** for domestic and **<75 $kWh/m^2/yr$** for non-domestic typologies was assumed for the calculations.

18.77 In accordance, the annual energy consumption of the domestic part of the proposed Application 4 development is **60 $kWh/m^2/yr$** which complies with the RIBA 2025 target (<60 kWh/m2/y). Considering this, and as per the criteria mentioned in **Table 18.4**, the operational energy emissions for the domestic part of the proposed Application 4 development are likely to be **Minor adverse (not significant).**

18.78 For non-domestic, the annual energy consumption is expected to be **75 $kWh/m^2/yr$** which meets the RIBA 2025 target for operational energy (<75 kWh/m2/yr). Therefore, as per the criteria mentioned in **Table 18.4**, the operational energy emissions for the non-domestic typology are likely to be **Minor adverse (not significant)**.

### Operational Transport emissions

18.79 The annual operational transport emissions of the proposed Application 4 development are estimated to be **3,789 $tCO_2e$**. There is no method to assess the significance of the transport carbon emissions of the proposed Application 4 development. However, based on the magnitude of carbon emissions from transport being a slightly higher contributor (58%) (when compared to embodied carbon and energy use for the overall carbon emissions from the Application 4 development), the operational transport carbon emissions are assessed as **Moderate adverse (significant)**.

### Total Carbon Emission Summary

18.80 **Table 18.18** summarises the total whole life embodied carbon, operational carbon (energy) and transport emissions during the expected whole 60-year life of the proposed Application 4 development.

***Table 18.18**: Total Carbon Emission Summary for Application 4*

| GHG Emission Category | Value | Unit |
|---|---|---|
| Whole life embodied carbon emissions (A1-C4, excluding B6 and B7) | 159,231 | $tCO_2e$ |
| Operational carbon emissions (energy use) (with grid decarbonisation) | 9,496 | $tCO_2e$ |
| Operational Transport emissions | 227,334 | $tCO_2e$ |
| **Total** | **396,060** | **$tCO_2e$** |

18.81 As shown in **Figure 18.3**, the transport carbon emissions during the operation phase of the proposed Application 4 development are estimated to have the highest carbon impact of all sources, constituting some 58% of the total carbon emissions. This is followed by the whole life embodied carbon emissions i.e., carbon emissions from the construction, use, repair and maintenance, and end-of-life of the buildings on the proposed Application 4 development site (40%). Carbon emissions from operational energy use are estimated to constitute only 2% of the total carbon emissions from the proposed Application 4 development.

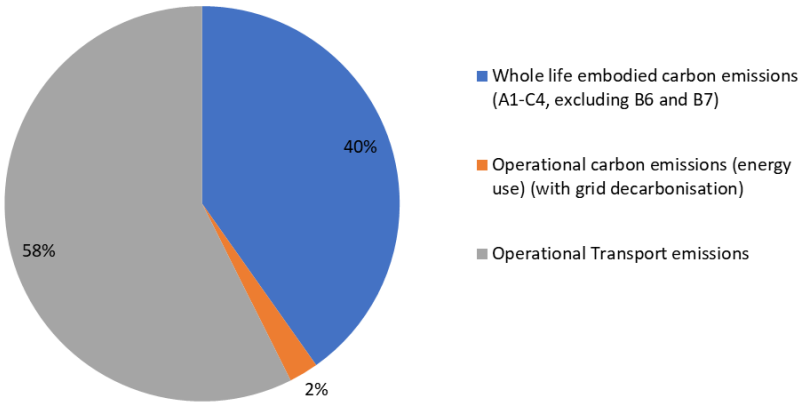



***Figure 18.3:** Breakdown of total carbon Emissions from the development over the lifetime of the scheme (60 years)*

## UK Carbon Budget Effect

18.82 In order to contextualise the GHG emissions generated by the proposed Application 4 development during the operation phase, the results on the assessment of potential effects have been compared against the UK Carbon Budgets.

18.83 The total emissions budget for the Sixth UK Carbon Budget period is presented in **Table 18.19.** The result shows that the proposed Application 4 development is not significant in its impact upon the carbon budget. It is not

expected to influence the achievement of national carbon budgets in a way that is material or significant, throughout its construction, operation, and end of life phases. Overall, these emissions were considered unlikely to impact (negligible effect) the UK Government's ability to meet the relevant UK Carbon Budget.

***Table 18.19:*** *Proposed Development impact on Sixth UK Carbon Budget*

| GHG Carbon Budget Period | UK Carbon Budget ($MtCO_2e$) | Carbon Emissions from Application 4 ($MtCO_2e$) | % Share from GM Carbon Budget |
|---|---|---|---|
| Sixth: 2033-2037 | 965 | 0.026404 | 0.00274% |

## Additional Mitigation / Enhancement Measures (Outline Application 4)

18.84 The effect of the Application 4 plots is **Negligible or Minor adverse** for embodied carbon and operational energy at this stage, however, as described in the previous section the lack of data and associated assumptions and estimates mean the impact might increase once actual data is available. The effect is **Moderate adverse** for operational transport and in this scenario, the following good practice mitigation measures could be taken into consideration. In this context, their adoption should be based on further feasibility assessment by the design teams and instruction from FEC.

18.85 These good practice mitigation measures are also applicable to the Application 5 plots as well.

### Demolition and Construction

#### Whole Life Embodied Carbon Emissions

18.86 A Site Waste Management Plan would be prepared for Application 4 and would set out management / control measures to ensure that waste generated from carrying out the Works is kept to a minimum.

18.87 To minimise carbon impacts (and hence avoid significant adverse effects) the performance management of whole life embodied carbon reduction of Application 4 should be organised along the industry recognised categories of sub-structure, superstructure, finishes, mechanical services, and facades. Measures including optimising material usage, use of low carbon materials, reducing construction waste, integrating circular economy principles, and using fewer finish materials (for wall, floor, ceiling, façade) must be incorporated at the appropriate RIBA stage. These measures are mentioned in Sustainability Strategy and Environmental Standards Statement and should be followed thoroughly. Additionally, some of the measures around low carbon materials and reduction of construction waste can be included in the specification documents and tender documents.

18.88 Consideration must also be given to the robustness and durability of materials and assets and their lifetime replacement cycles. For example, consideration during later design stages must be made in accordance with the Circular Economy principles recommended by GLA in the Circular Economy Statement Guidance (2022), which are presented in **Table 18.20.** To avoid significant effects, the proposed Application 4 development must commit to applying these principles, and quantifying any benefits achieved.

***Table 18.20**: Circular Economy Principles recommended by GLA in Circular Economy Statement Guidance (2022)*

| Principle | Develop commitments to… | |
|---|---|---|
| **1.** Conserve resources, increase efficiency and source sustainably | 1.1. | Minimise the quantities of materials used |
| | 1.2. | Minimise the quantities of other resources used |
| | 1.3. | Specify and source materials and other resources responsibly and sustainably |
| **2.** Design to eliminate waste (and for ease of maintenance) | 1.4. | Design for longevity, adaptability or flexibility and reusability or recoverability |
| | 1.5. | Design out construction, demolition, excavation, and municipal waste arising |
| **3.** Manage waste sustainably and at the highest value | 1.6. | Manage demolition waste |
| | 1.7. | Manage excavation waste |
| | 1.8. | Manage construction waste |
| | 1.9. | Manage municipal waste (and industrial waste, if applicable) |

18.89 The next design stages of the Application 4 development should also seek align with the Whole Life Carbon reduction principles, as recommended by GLA in the Whole Life Carbon Assessment Guidance (2022), presented in **Table 18.21.** To avoid significant effects, the Application 4 development must commit to establish where these principles can be applied, and quantifying any benefits achieved. Undertaking a Whole Life Carbon Assessment under the next stage of planning application can ensure the measures are imposed.

18.90 When they become applicable, based on the build out phasing, FEC has committed to meet the Future Homes buildings standards. Therein, and prior to implementation, a range of energy efficiency and sustainability measures will be assessed for suitability, technical review, installation costs, running costs, payback periods and plant space availability. Similarly, the materials demand for Application 4 will be practicably reduced by maximising the use of reclaimed and recycled materials, throughout the procurement and construction processes. These measures will be considered in the early detailed design stages and written into the building specifications. The demand upon the development for the provision of recycling and waste storage will be addressed in the early detailed design stages and when detailed discussions can be held with prospective operators regarding the specific operations of the proposed units.

***Table 18.21:** Principles for reducing WLC emissions recommended by GLA in the Whole Life Carbon Assessment Guidance (2022)*

| WLC reduction principles | | Key benefits |
|---|---|---|
| 1 | **Reuse and retrofit of existing buildings** | Significant retention and reuse of structures is carbon efficient and reduces construction costs. |
| 2 | **Use recycled or repurposed material** | Reduces carbon emissions and reduces waste. |
| 3 | **Material selection** | Appropriate material choice is the key to carbon reduction. Ensuring that there is synchronicity between materials selected and planned life expectancy |

| WLC reduction principles | | Key benefits |
|---|---|---|
| | | of the building reduces waste and the need for replacement, thus reducing in use costs. |
| **4** | **Minimise operational energy use** | A 'fabric first' approach should be prioritised to minimise energy demand and reduce carbon and in-use costs. |
| **5** | **Minimise operational water use** | Choice of materials and durability of systems, to avoid leakage and subsequent building damage, contribute to reducing the carbon cost of water use. |
| **6** | **Disassembly and reuse** | Designing for future disassembly ensures that products do not become future waste and maintain their environmental and economic value. |
| **7** | **Building shape and form** | Compact efficient shapes help minimise both operational and embodied carbon emissions for a given floor area. This means a more efficient building overall resulting in lower construction and in use costs. |
| **8** | **Regenerative design** | Removing $CO_2$ from the atmosphere through materials and systems absorbing it makes a direct positive contribution to carbon reduction. |
| **9** | **Designing for durability and flexibility** | Durability means that repair and replacement is reduced which in turn helps reduce lifetime building costs. A building designed for flexibility can respond with minimum environmental impact to future changing requirements and a changing climate, thus avoiding obsolescence which also underwrites future building value. |
| **10** | **Optimisation of the relationship between operational and embodied carbon** | Optimising the operational/embodied carbon relationship contributes directly to resource efficiency and overall cost reduction. |
| **11** | **Building life expectancy** | Defining building life expectancy gives guidance to project teams as to the most efficient choices for materials and products. This aids overall resource efficiency, including cost efficiency and helps future proof asset value. |
| **12** | **Local sourcing** | Sourcing local materials reduces transport distances and supply chain lengths and has associated local social and economic benefits. |
| **13** | **Minimising waste** | Waste represents an unnecessary and avoidable carbon cost. Buildings should be designed to minimise fabrication and construction waste, and to ease repair and replacement with minimum waste, which helps reduce initial and in-use costs. |
| **14** | **Efficient fabrication** | Efficient construction methods (e.g. modular systems, precision manufacturing and modern methods of construction) contribute to better build quality, reduce construction phase waste and reduce the need for repairs during post completion and the defects period (snagging). |
| **15** | **Lightweight construction** | Lightweight construction uses less material which reduces the carbon footprint of the building as there is less material to source, fabricate and deliver to the Site. |

### Construction Transport Emissions

18.91 A Construction Environment Management Plan (CEMP) and Construction Traffic Management Plan (CTMP) is committed to be implemented for Application 4. Some of the measures in the CEMP and CTMP would comprise of following:

- Sourcing of local materials should be pursued to reduce transport distances, while providing additional local social and economic benefits.

- Traffic management measures should be implemented, monitored, and managed to restrict construction vehicles in certain locations and routes at certain times of the day.
- Contractors also should sign up to sustainable construction principles or a sustainability charter before commencement and be encouraged to actively submit solutions aimed at reducing trips to the Site and construction traffic. Considerate construction best practices (such as wheel washing) should be adopted.
- It is advised that the concrete existing on-site be crushed and re-mixed on-site where chemically and structurally viable, to reduce the need for off-site transportation and / or disposal.

### The Completed and Operational Development

#### Operational Building Emissions

18.92 The highest energy efficiency standards should be aimed for and addressed (budget permitting) at the earliest stages of design and designing for expected performance used as a cornerstone of sustainability principles. Solutions should focus on maximising the electrical efficiency (lighting), designing in passive measures (passive ventilation and natural daylight maximisation), and facilitating the use of low carbon plant by end users through futureproofing. These measures are mentioned in Sustainability Strategy, Environmental Standards Statement and Energy Statement and should be followed thoroughly. Additionally, some of the measures around efficient lighting can be included in the specification documents and tender documents.

#### Operational Transport Emissions

18.93 A Travel Plan covering all uses within Application 4, setting out measures and enhancements to use non-car modes. This will be based upon the Framework Travel Plan submitted for the planning application.

18.94 Electric Vehicle parking provided for residents and visitors, in line with relevant local and national standards and the aspirations within the SRF.

## Likely Residual Effects of the Development and their Significance (Outline Application 4)

18.95 The effects from whole life embodied emissions (including construction transport) and operational building are already **Minor or negligible** adverse (not significant) and hence the assessment of likely residual effects will remain the same as reported in the sections above. The effects from operational transport emissions are moderate adverse, however, the effect will be **Minor adverse (not significant)** after implementation of mitigation measures mentioned in the additional mitigation section. **Table 18.22** provides the residual effects summary for Application 4.

18.96 It is, however, recommended to consider the good practice measures in the further design stages, to help reduce the risk of new significant adverse effects being identified as schemed data becomes more granular.

***Table 18.22**: Residual Effects Summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Embodied carbon emissions: Emissions associated with manufacturing, transport, replacement, and disposal of existing and proposed building elements.<br>Consideration should also be given to the robustness and durability of components, minimising material waste and using fewer finish materials (for wall, floor, ceiling, façade) | The sensitivity of embodied carbon emissions in the construction phase is Negligible, and the magnitude of change is also ne. Therefore, there is likely to be a Moderate adverse effect on the embodied carbon during the construction phase (not significant) | Additional mitigation measures around the construction-transport emissions comprise of the following:<br>A Construction Environment Management Plan (CEMP) and Construction Traffic Management Plan (CTMP) prepared for Application 4 and implementation of mitigation measures mentioned in it. | There is likely to be a **Negligible adverse** residual effect on climate (**Not significant**) |
| ***Completed Development*** | | | |
| Replacement/refurbishment of building parts | The sensitivity of embodied carbon emissions in the operational phase is negligible, and the magnitude of change is negligible. Therefore, there is likely to be a negligible adverse effect on the embodied carbon during the operational phase (not significant) | For the reduction of embodied carbon emissions and achievement of RIBA 2030 targets, additional mitigation measures will need to be identified through all the life cycle stages of Application 4. Consideration should also be given to the robustness and durability of components, minimising material waste and using fewer finish materials (for wall, floor, ceiling, façade). | There is likely to be a **Negligible adverse** residual effect on climate **(Not significant)** |
| Building emissions associated with buildings energy use | The sensitivity of building emissions during the operational phase is minor, and the magnitude of change is minor. Therefore, there is likely to be a Minor adverse effect on the building during the | For Proposed additional mitigation measures comprise of the following:<br>• Robust monitoring of energy consumption (i.e., smart metering); and | There is likely to be a **Minor to Negligible adverse** residual effect on climate **(Not significant)** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| | operational phase (not significant) | • Procurement of energy efficient equipment | |
| Transport emissions - Transport emissions such as vehicle numbers and distance by building users.<br>Increased journeys associated with the development have potential to impact upon the existing highways network. | The sensitivity of transport emissions during the operational phase is medium, and the magnitude of change is also medium. Therefore, there is likely to be a Moderate adverse effect on the transport emission during the operational phase (Significant) | Proposed additional mitigation measures includes the initiatives proposed in the Transport Assessment submitted in support of the planning application and the additional measures mentioned in this assessment. | There is likely to be a **Minor adverse** residual effect on climate **(Not significant)** |

## Conclusions (Outline Application 4)

18.97 The assessment of the impact of Application 4 on climate (GHG emissions assessment) quantitatively assessed the potential GHG emissions from scenarios 1a and 1b. The assessment concluded that the demolition and construction phase would result in estimated net GHG emissions of **159,231 $tCO_2e$**, and the completed and operational phase would result in estimated net GHG emissions of **236,829 $tCO_2e$** over the lifetime of the Application 4 development. Overall, these emissions were considered unlikely to impact the UK Government's ability to meet the relevant UK Carbon Budget.

## Cumulative Effects with Identified Committed Schemes (Outline Application 4)

18.98 Cumulative effects with committed schemes have not been assessed for the proposed Application 4 development, as GHG emissions are assessed in the context of the global climate being the main receptor.

## Cumulative Effects with Identified Committed Schemes and SRF (Outline Application 4)

18.99 Cumulative effects with committed schemes and the SRF have not been assessed for the proposed Application 4 development, as GHG emissions are assessed in the context of the global climate being the main receptor.

# NT02-NT04 (Full Application 5)

## Baseline Conditions (Full Application 5)

18.100 The baseline ("do-minimum" approach) is the reference point against which the impact of the proposed Application 5 development can be compared and assessed. The existing and future GHG emissions, without implementing the proposed Application 5 development, represent the current and future baseline ("do-minimum" approach). In this circumstance, it is assumed that no construction activity would take place and the area would continue to operate in its current state and configuration.

18.101 The proposed Application 5 development is not a greenfield development, however, there is one existing warehouse building on the Site currently which will be scoped out of consideration for this assessment for embodied carbon impact. Furthermore, the emissions from existing operational energy and transport emissions are not likely to have any significant influence on the baseline.

## Embedded Mitigation (Full Application 5)

18.102 This section sets out the measures that have been incorporated into, or proposed, for inclusion within the scheme design to avoid or minimise potential effects on the climate.

### Demolition and Construction

18.103 Application 5 has been designed, as far as possible, to avoid and minimise the impacts and effects of climate change through the process of design-development and by embedding mitigation measures into the design.

### The Completed and Operational Development

18.104 In addition to the fabric first passive design measures, active building services are to be designed to minimise direct energy consumption and $CO_2$ emissions, with particular emphasis on the following;

- Increased Hot Water Generating Efficiencies;
- Reduced Standing Losses from Pipes and Cylinders;
- Energy Efficient LED Lighting;
- Improved Lighting Controls;
- Low Energy Motors in Pumps and Fans;
- Efficient Heat Recovery in relevant systems and,
- Enhanced heating controls – Wi-Fi enabled,
- Combined natural and mechanical ventilation systems

18.105 The carbon emissions of the proposed Application 5 development have been calculated to be compliant with the 15% reduction below Part L 2010 which is therefore in line with the local Manchester energy policy (Supplementary Planning Document 2009).

18.106 Then in addition to the carbon calculations completed under the current Part L (2021) Building Regulations, an assessment has been undertaken to check compliance with the current 2021 Building Regulations.

18.107 All internal lighting installations will make use of low energy technologies combined with presence and absence detection in conjunction with timed setbacks. 100% low energy lighting provision will be included within the development. Photo switching and automatic dimming will be specified to the communal areas of the building in order to improve the efficiency of the lighting system.

18.108 All fans, motors and pumps shall be specified to incorporate ECA accredited technology and appropriate controls.

## Assessment of Likely Significant Effects (Full Application 5)

18.109 The significance of effects has been assessed using the methodology set out in this chapter.

18.110 It should be noted that where the effects are assessed as moderate, application of mitigation methods will reduce the significance of effects to lower level.

### Demolition and Construction (Scenario 2a)

#### Embodied Carbon Emissions (Stage A1 to A5)

18.111 Activities during the construction phase would generate GHG emissions, particularly from the manufacture of construction materials, but also from transport to the Site and from on-site works.

18.112 The proposed Application 5 development includes 1,551 residential units (1 Bed, 2 Bed and 3 Bed) and non-domestic uses like clubhouse. As mentioned in the methodology in **Table 18.11**, WSP took the approach of modelling one representative block for embodied carbon assessment. NT02 Block 1 was modelled in the OneClick software as this block is the largest, has the most material types detailed, and also has the amenity space (clubhouse) located within its plot. Inputs used to inform the software were based on the cost plan provided by Arcadis, floor area provided, and material assumptions. **Table 18.23** shows the whole life embodied carbon emissions from the proposed Application 5 development for NT02 Block 1 for demolition and construction phase i.e., Scenario 2a. The Total Carbon emission summary section provides the overall emission numbers for the entire Application 5.

***Table 18.23**: Embodied and transport carbon emissions during construction phase (domestic and non-domestic)- NT02 Block 1*

| Lifecycle stage | Embodied carbon of Application 5 ($tCO_2e$) |
|---|---|
| Emissions related to A1-A5- Domestic | 9,973 |

| Lifecycle stage | Embodied carbon of Application 5 ($tCO_2e$) |
|---|---|
| Emissions related to A1-A5- Non- Domestic | 689 |
| **Total A1 to A5** | **10,663** |

18.113 The total whole life embodied carbon emissions for NT02 Block 1 for stage A1 to A5 are estimated to be **10,663 $tCO_2e$**. Of this, **9,973 $tCO_2e$** are from domestic use and **689 $tCO_2e$** are from non-domestic uses.

## The Completed and Operational Development (Scenario 2b)

### Embodied Carbon Emissions (Stage B1 to B5)

18.114 Activities during the operational phase would generate GHG emissions, particularly from the replacement and/or refurbishment of building elements.

18.115 The calculations for the embodied carbon emissions generated during the operational phase for NT02 Block 1 are provided in **Table 18.24**. The Total Carbon emission summary section provides the overall emission numbers for the entire Application 5.

***Table 18.24:*** *Calculations for the embodied carbon emissions during operation NT02 Block 1 (Domestic + non-Domestic)*

| Lifecycle stage | Embodied carbon of the Proposed Development ($tCO_2e$) |
|---|---|
| Emissions related to B1-5 - Use Stage - Domestic | 3,416 |
| Emissions related to B1-5 - Use Stage - Non- Domestic | 5 |
| **Total B1-5** | **3,421** |

18.116 The total whole life embodied carbon emissions for the proposed Application 5 development for stage B1 to B5 are estimated to be **3,421 $tCO_2e$**. Of this, **3,416 $tCO_2e$** are from domestic use and **5 $tCO_2e$** are from non-domestic uses.

### Operational Energy Emissions

18.117 The proposed Application 5 development comprises of domestic as well as non-domestic areas (clubhouse).

18.118 To determine the operational energy emissions for the domestic building typologies, the energy consumption of typical floorplates in $kWh/m^2/yr$ provided in the Energy Statement by Futureserv has been used.

18.119 In the absence of the required project specific energy consumption information for non-domestic typology, the operational energy consumption is referenced from RIBA 2030 Climate Change Targets. The RIBA 2025 target of <75 $kWh/m^2/yr$ for non-domestic typology was assumed for the calculations.

18.120 Carbon emissions from operational energy use are assessed over the whole expected life (60 years) of the proposed Application 5 development. While calculating the carbon emissions from operational energy use, the

decarbonisation of grid electricity has been considered. This has been done by using the average predicted annual carbon factors for grid electricity, based on data published by the UK Government. These emission factors for grid electricity consider grid decarbonisation, and therefore the carbon emissions from grid electricity continue to remain consistent from 2050 until 2100.

18.121 **Table 18.25** provides the details of the total operational energy consumption for the proposed Application 5 development.

***Table 18.25**: Annual operational energy use estimate for Application 5*

| Building use | Energy Consumption (kWh/m$^2$/yr) | GIA of Application 5 (m$^2$) | Total annual operational energy for the Proposed Development (kWh/yr) |
|---|---|---|---|
| Residential – 1 Bed (NT 03,04) | 52 | 34,442 | 1,800,738 |
| Residential – 2 Bed (NT 03,04) | 55 | 59,025 | 3,256,892 |
| Residential – 3 Bed NT03 | 42 | 8,505 | 356,700 |
| Clubhouse | 75 | 2,257 | 169,275 |
| **Total Energy Consumption (kWh/yr)** | | | **5,583,605 kWh/yr** |

18.122 The total annual energy consumption from energy use for domestic part of the proposed Application 5 development is estimated as **5,414,330 kWh/yr.** For the non-domestic part of the development, the total annual energy use is estimated as **169,275 kWh/yr**. The overall total annual energy consumption of the proposed Application 5 development is estimated to be **5,583,605 kWh/yr**. The total operational energy use over the 60-year expected life of the proposed Application 5 development is estimated to be **335,016 MWh**.

18.123 The total tonnes of operational carbon emissions predicted to be generated by the proposed Application 5 development due to energy use are therefore estimated to be about **3,198 tCO$_2$e.**

## Operational Transport Emissions

18.124 To calculate the operational traffic associated with the proposed Application 5 development, the number of trips per vehicle / transport mode, and the average trip distance, have been multiplied by emissions factors for each key vehicle type. The data required has been taken from the Transport Assessment undertaken by WSP for the proposed Application 5 development.

18.125 WSP provided the total trip numbers for the Application 5 plots and the mode share for each vehicle type. This was then converted into the total number of trips per vehicle.

18.126 The calculation for annual transport emissions from various modes of transport during the operational phase of the proposed Application 5 development are provided in **Table 18.26.**

***Table 18.26:*** *Transport emissions during operational phase*

| Metric | Unit | Train | Bus | Car (petrol) | Car (EV) | Bicycle | Walk | Taxi |
|---|---|---|---|---|---|---|---|---|
| Total distance | km/year | - | 6,175,481 | 5,052,004 | 3,053,315 | 443,148 | 1,829,772 | 385,968 |
| Total vehicle trips | vehicle trips/yr | 0 | 799,601 | 387,635 | 234,278 | 88,845 | 1,421,514 | 29,615 |
| Average Trip length | km/trip | 0.0 | 7.7 | 13.0 | 13.0 | 5.0 | 1.3 | 13.03 |
| Emissions factor description | per passenger /km | National rail, per passenger. km | Average local bus, per passenger. km | Average car, unknown fuel, per km | Average car, battery electric vehicle, per km | Conventional bike, per passenger km | On foot | Regular taxi per passenger .km |
| Emissions factor value | $kgCO_2e/km$ | 0.0355 | 0.1023 | 0.1715 | 0.0503 | 0.0049 | 0.0098 | 0.1488 |
| **Total $kgCO_2e$** | | **-** | **631,566** | **866,318** | **153,612** | **2,171** | **17,932** | **57,417** |

* Source for bicycle and walking carbon factor: https://www.nature.com/articles/s41598-020-66170-y. These are estimated emissions per kilometre travelled for walking and cycling from energy intake required to compensate for increased energy expenditure, and data on food-related GHG emissions. We assume that persons who shift from passive modes of transport (e.g. driving) have increased energy expenditure that may be compensated with increased food consumption.

18.127 The total annual transport carbon emissions for the proposed Application 5 development equates to **1,729 $tCO_2e/yr$** and **103,741 $tCO_2e$** in total over the period of 60 years.

## End Of Life Phase

### Embodied Carbon Emissions (Stage C1 to C4)

18.128 Activities during the end-of-life phase of the proposed Application 5 development would generate GHG emissions, particularly from the demolition, waste processing and the disposal of building elements.

18.129 The calculations for the embodied carbon emissions generated during the end-of-life phase are provided in **Table 18.27**. The Total Carbon emission summary section provides the overall emission numbers for the entire Application 5.

***Table 18.27:*** *Embodied carbon emissions during end of life for NT02 Block 1*

| Lifecycle stage | Embodied carbon of Application 5 ($tCO_2e$) |
|---|---|
| Emissions related to C1-4 End of life - Domestic | 273 |
| Emissions related to C1-4 End of life - non-Domestic | 43 |
| **Total C1-4** | **316** |

18.130 The total whole life embodied carbon emissions for the proposed Application 5 development for stage C1 to C4 are estimated to be **316 $tCO_2e$**. Of this, **273 $tCO_2e$** are from domestic use and **43 $tCO_2e$** are from non-domestic uses.

## Likely significant effects summary for the broader GHG emission categories

### Whole life embodied carbon emissions

18.131 The whole life embodied carbon emissions estimated to be generated by the domestic and non-domestic part of the proposed Application 5 development is **481 $kgCO_2e/m^2$** on average (**493 $kgCO_2e/m^2$ for domestic and 326 $kgCO_2e/m^2$ for non-domestic)**. This figure does not exceed the RIBA 2030 target (<625 $kgCO_2e/m^2$). Therefore, as per the criteria mentioned in **Table 18.4,** embodied carbon emissions for domestic and non-domestic spaces could be considered as likely to have a **Negligible adverse (not significant)** effect on climate. These results, as stated in the methodology for calculations, are based on the areas for the representative block, NT02 Block 1. The material specifications at this stage are assumed from previous similar project experience as exact specifications were not available for the Application 5 plots at this stage. To ensure the Negligible adverse impact is maintained, or at least Minor Adverse impact for as built design is achieved, good practice mitigation measures be considered for further design stages.

### Operational carbon emissions (energy)

18.132 The average annual energy consumption of the domestic part of the proposed Application 5 development are assumed to be **50 $kWh/m^2/yr$** which complies with the RIBA 2025 target (<60 kWh/m2/y). Considering this, and as per the criteria mentioned in **Table 18.4.**, the operational energy emissions for the domestic part of the proposed Application 5 development are likely to be **Minor adverse (not significant).**

18.133 For non-domestic, the annual energy consumption is expected to be **75 $kWh/m^2/yr$** which meets the RIBA 2025 target for operational energy (<75 kWh/m2/yr). Therefore, as per the criteria mentioned in **Table 18.4**, the operational energy emissions for the non-domestic typology are likely to be **Minor adverse (not significant)**.

### Operational Transport Emissions

18.134 The annual operational transport emissions of the proposed Application 5 development are estimated to be **1,729 $tCO_2e$**. There is no method to assess the significance of transport carbon emissions of the proposed Application 5 development. However, based on the magnitude of carbon emissions from transport, and it being the slightly higher contributor **(66%)** compared to embodied carbon and energy use for the overall carbon emissions from the proposed Application 5 development, the operational transport carbon emissions are expected to be **Moderate adverse (significant)**.

## Total Carbon Emission Summary

18.135 **Table 18.28** summarises the total whole life embodied carbon, operational carbon (energy) and transport emissions during the whole 60-year expected life of the proposed Application 5 development.

18.136 Although the whole life embodied carbon modelling was undertaken for NT02 Block 1, the impact in $kgCO_2e/m^2$ was then multiplied by area of all Application 5 plots, and emissions were calculated for the entire proposed Application 5 development. Thus, the whole life embodied carbon emissions shown in the **Table 18-28** includes the impact of **1,551** residential units.

***Table 18.28:*** *Total carbon emission summary for Application 5*

| GHG Emission Category | Value | Unit |
|---|---|---|
| Whole life embodied carbon emissions (A1-C4, excluding B6 and B7) | 51,078 | $tCO_2e$ |
| Operational carbon emissions (energy use) (with grid decarbonisation) | 3,196 | $tCO_2e$ |
| Operational Transport emissions | 103,741 | $tCO_2e$ |
| **Total** | **158,018** | **$tCO_2e$** |

18.137 The transport carbon emissions during the operation phase of the proposed Application 5 development are estimated to have the highest carbon impact of all sources, constituting some 66% of the total carbon emissions. This is followed by the whole life embodied carbon emissions i.e., carbon emissions from the construction, use, repair and maintenance, and end-of-life of the buildings on the proposed Application 5 development site (32%). Carbon emissions from operational energy use are estimated to constitute only 2% of the total carbon emissions from the proposed Application 5 development as shown in **Figure 18.4.**

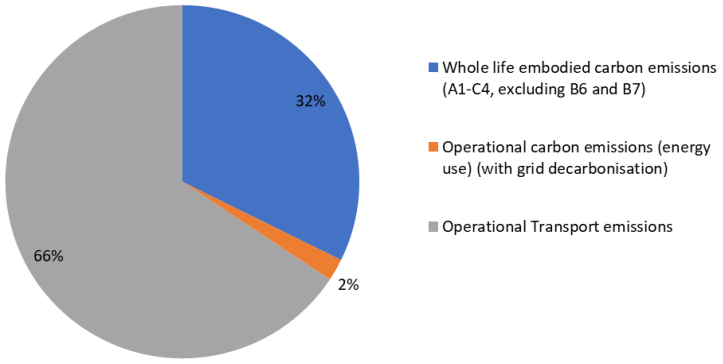



***Figure 18.3:*** *Breakdown of total carbon Emissions from the development over the lifetime of the scheme (60 years)*

## UK Carbon Budget Effect

18.138 In order to contextualise the GHG emissions generated by the proposed Application 5 development during the operation phase, the results on the assessment of potential effects have been compared against the UK Carbon Budgets.

18.139 The total emission during Sixth UK Carbon Budget is presented in **Table 18.29.** The result shows that the proposed Application 5 development is not expected to influence the achievement of national carbon budgets in a way that

is material or significant, throughout its construction, operation, and end of life phases. Overall, these emissions were considered unlikely to impact (negligible effect) the UK Government's ability to meet the relevant UK Carbon Budget.

***Table 18.29:*** *Proposed Development impact on Sixth UK Carbon Budget*

| GHG Carbon Budget Period | UK Carbon Budget ($MtCO_2e$) | Carbon Emissions from Application 5 ($MtCO_2e$) | % Share from GM Carbon Budget |
|---|---|---|---|
| Sixth: 2033-2037 | 965 | 0.010535 | 0.00109% |

## Additional Mitigation / Enhancement Measures (Full Application 5)

18.140 The additional mitigation measures suggested in the Application 4 are applicable for Application 5 as well.

## Likely Residual Effects of the Development and their Significance (Full Application 5)

18.141 The effects from whole life embodied emissions (including construction transport) and operational building are already Minor or negligible adverse (not significant) and hence the assessment of likely residual effects will still remain the same as reported in the sections above. the effects from operational transport emissions are moderate adverse, however, will be Minor adverse (not significant) after implementation of mitigation measures mentioned in additional mitigation section. **Table 18.30** provides residual effects summary for Application 5.

18.142 It is, however, recommended to consider the good practice measures in the further design stages, to help reduce the risk of new significant adverse effects being identified as schemed data becomes more granular.

***Table 18.30****: Residual Effects Summary (Application 5)*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| Embodied carbon emissions: Emissions associated with manufacturing, transport, replacement, and disposal of existing and proposed building elements.<br>Consideration should also be given to the robustness and durability of components, minimising material waste and using fewer finish materials (for wall, floor, ceiling, façade) | The sensitivity of embodied carbon emissions in the construction phase is Negligible, and the magnitude of change is also ne. Therefore, there is likely to be a Moderate adverse effect on the embodied carbon during the construction phase (not significant) | Additional mitigation measures around the construction-transport emissions comprise of the following:<br>A Construction Environment Management Plan (CEMP) and Construction Traffic Management Plan (CTMP) prepared for Application 5 and implementation of | There is likely to be a **Negligible adverse** residual effect on climate **(Not significant)** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| | | mitigation measures mentioned in it. | |
| ***Completed Development*** | | | |
| Replacement/refurbishment of building parts | The sensitivity of embodied carbon emissions in the operational phase is negligible, and the magnitude of change is negligible. Therefore, there is likely to be a negligible adverse effect on the embodied carbon during the operational phase (not significant) | For the reduction of embodied carbon emissions and achievement of RIBA 2030 targets, additional mitigation measures will need to be identified through all the life cycle stages of Application 5. Consideration should also be given to the robustness and durability of components, minimising material waste and using fewer finish materials (for wall, floor, ceiling, façade). | There is likely to be a **Negligible adverse** residual effect on climate **(Not significant)** |
| Building emissions associated with buildings energy use | The sensitivity of building emissions during the operational phase is minor, and the magnitude of change is minor. Therefore, there is likely to be a Minor adverse effect on the building during the operational phase (not significant) | For Proposed additional mitigation measures comprise of the following:<br>• Robust monitoring of energy consumption (i.e., smart metering); and<br>• Procurement of energy efficient equipment | There is likely to be a **Minor to Negligible adverse** residual effect on climate **(Not significant)** |
| Transport emissions- Transport emissions such as vehicle numbers and distance by building users.<br>Increased journeys associated with the development have potential to impact upon the existing highways network. | The sensitivity of transport emissions during the operational phase is medium, and the magnitude of change is also medium. Therefore, there is likely to be a Moderate adverse effect on the transport emission during the operational phase (Significant) | Proposed additional mitigation measures includes the initiatives proposed in the Transport Assessment submitted in support of the planning application and the additional measures mentioned in this assessment. | There is likely to be a **Minor adverse** residual effect on climate **(Not significant)** |

## Conclusions (Full Application 5)

18.143 The assessment of the impact of the proposed Application 5 development on climate (GHG emissions assessment) quantitatively assessed the potential GHG emissions from scenarios 2a and 2b. The assessment concluded that the demolition and construction phase would result in estimated net GHG emissions of **51,034 $tCO_2e$**, and the completed and operational phase would result in estimated net GHG emissions of **106,937 $tCO_2e$** over the lifetime of the proposed Application 5 development. Overall, these emissions were considered unlikely to impact (negligible effect) the UK Government's ability to meet the relevant UK Carbon Budget.

## Cumulative Effects with Identified Committed Schemes (Full Application 5)

18.144 Cumulative effects have not been assessed for the proposed Application 5 development as committed developments have not been considered. This is because the GHG emissions are assessed taking global climate as the receptor.

## Cumulative Effects with Identified Committed Schemes and the SRF (Full Application 5)

18.145 Cumulative effects have not been assessed for the proposed Application 5 development as committed developments have not been considered. This is because the GHG emissions are assessed taking global climate as the receptor.

# In Combination Effects of The Proposed Development (Applications 4 and 5)

18.146 Information relating to the baseline conditions and embedded mitigation for Applications 4 and 5 has been set out previously in this chapter.

## Assessment of Likely Significant Effects (Applications 4 and 5)

### Demolition and Construction (Scenario 3a)

#### Embodied Carbon Emissions (Stage A1 to A5)

18.147 Activities during the construction phase would generate GHG emissions, particularly from the manufacture of construction materials, but also from transport to the Site and from on-site works.

18.148 The Proposed Development includes 4,799 residential units (1 Bed, 2 Bed and 3 Bed) and non-domestic uses like clubhouse (Applications 4 and 5), healthcare and Primary school (Application 4 only). **Table 18.31** shows the whole life embodied carbon emissions from the Proposed Development for Application 4 and 5 together for demolition and construction phase i.e., Scenario 3a.

***Table 18.31****: Embodied and transport carbon emissions during construction phase (domestic and non-domestic)- Application 4 and 5*

| Lifecycle stage | Embodied carbon of the Proposed Development ($tCO_2e$) |
|---|---|
| Emissions related to A1-A5- Domestic | 133,722 |
| Emissions related to A1-A5- Non- Domestic | 4,096 |
| **Total A1 to A5** | **137,818** |

18.149 The total whole life embodied carbon emissions for the Proposed Development for stage A1 to A5 are estimated to be **137,818 $tCO_2e$**. Of this, **133,722 $tCO_2e$** are from domestic use and **4,096 $tCO_2e$** are from non-domestic uses

### The Completed and Operational Development (Scenario 3b)

#### Embodied Carbon Emissions (Stage B1 to B5)

18.150 Activities during the operational phase would generate GHG emissions, particularly from the replacement and/or refurbishment of building elements.

18.151 The calculations for the embodied carbon emissions generated during the operational phase for Application 4 and 5 are provided in **Table 18.32.**

***Table 18.32:*** *Calculations for the embodied carbon emissions during operation Application 4 and 5 (Domestic + non-Domestic)*

| Lifecycle stage | Embodied carbon of the Proposed Development ($tCO_2e$) |
|---|---|
| Emissions related to B1-5 - Use Stage - Domestic | 28,165 |
| Emissions related to B1-5 - Use Stage - Non- Domestic | 893 |
| **Total B1-5** | **29,058** |

18.152 The total whole life embodied carbon emissions for the Proposed Development for stage B1 to B5 are estimated to be **29,058 $tCO_2e$**. Of this, **28,165 $tCO_2e$** are from domestic use and **893 $tCO_2e$** are from non-domestic uses.

## Operational Energy Emissions

18.153 The Proposed Development comprises of domestic as well as non-domestic areas (clubhouse, health care and primary school).

18.154 To determine the operational energy emissions for the domestic and non-domestic building typologies, the methodology described in previous sections has been used.

18.155 **Table 18.33** provides the details of the total operational energy consumption for the Proposed Development.

***Table 18.33****: Annual operational energy use estimate for the Proposed Development*

| Building use | Energy Consumption ($kWh/m^2/yr$) | GIA of the Proposed Development ($m^2$) | Total annual operational energy for the Proposed Development (kWh/yr) |
|---|---|---|---|
| Domestic | 55 | 355,862 | 19,526,365 |
| Non-domestic | 75 | 12,457 | 934,275 |
| **Total Energy Consumption (kWh/yr)** | | | **20,460,640 kWh/yr** |

18.156 The total annual energy consumption from energy use for domestic part of the Proposed Development is estimated as **19,526,365 kWh/yr.** For the non-domestic part of the development, the total annual energy use is estimated as **934,275 kWh/yr**. The overall total annual energy consumption of the Proposed Development is estimated to be **20,460,640 kWh/yr**. The total operational energy use over the 60-year expected life of the Proposed Development is estimated to be **1,227,638 MWh**.

18.157 The total tonnes of operational carbon emissions predicted to be generated by the Proposed Development due to energy use are therefore estimated to be about **12,144 $tCO_2e$.**

## Operational Transport Emissions

18.158 To calculate the operational traffic associated with the Proposed Development, the number of trips per vehicle / transport mode, and the average trip distance, have been multiplied by emissions factors for each key vehicle type.

The data required has been taken from the Transport Assessment undertaken by WSP for the Proposed Development.

18.159 WSP provided the total trip numbers for the Application 4 and Application 5 plots and the mode share for each vehicle type. This was then converted into the total number of trips per vehicle.

18.160 The calculation for annual transport emissions from various modes of transport during the operational phase of the Proposed Development are provided in **Table 18.34.**

***Table 18.34****: Transport emissions during operational phase for Applications 4 and 5*

| Metric | Unit | Train | Bus | Car (petrol) | Car (EV) | Bicycle | Walk | Taxi |
|---|---|---|---|---|---|---|---|---|
| Total distance | km/year | - | 19,708,193 | 16,122,770 | 9,744,233 | 1,414,245 | 5,839,464 | 1,231,762 |
| Total vehicle trips | vehicle trips/yr | 0 | 2,551,817 | 1,237,082 | 747,664 | 283,535 | 4,536,563 | 94,512 |
| Average Trip length | km/trip | 0.0 | 7.7 | 13.0 | 13.0 | 5.0 | 1.3 | 13.03 |
| Emissions factor description | per passenger/km | National rail, per passenger.km | Average local bus, per passenger.km | Average car, unknown fuel, per km | Average car, battery electric vehicle, per km | Conventional bike, per passenger km | On foot | Regular taxi per passenger. km |
| Emissions factor value | $kgCO_2e$/km | 0.0355 | 0.1023 | 0.1715 | 0.0503 | 0.0049 | 0.0098 | 0.1488 |
| **Total $kgCO_2e$** | | **-** | **2,015,557** | **2,764,733** | **490,232** | **6,930** | **57,227** | **183,237** |

* Source for bicycle and walking carbon factor: https://www.nature.com/articles/s41598-020-66170-y. These are estimated emissions per kilometre travelled for walking and cycling from energy intake required to compensate for increased energy expenditure, and data on food-related GHG emissions. We assume that persons who shift from passive modes of transport (e.g. driving) have increased energy expenditure that may be compensated with increased food consumption.

18.161 The total annual transport carbon emissions for the Proposed Development equates to **5,518 $tCO_2e$/yr** and **10,3741 $tCO_2e$** in total over the period of 60 years.

## End Of Life Phase

### Embodied Carbon Emissions (Stage C1 to C4)

18.162 Activities during the end-of-life phase of the Proposed Development would generate GHG emissions, particularly from the demolition, waste processing and the disposal of building elements.

18.163 The calculations for the embodied carbon emissions generated during the end-of-life phase are provided in **Table 18.35.**

***Table 18.35**: Embodied carbon emissions during end of life for Applications 4 and 5*

| Lifecycle stage | Embodied carbon of the Proposed Development ($tCO_2e$) |
|---|---|
| Emissions related to C1-4 End of life - Domestic | 6,461 |
| Emissions related to C1-4 End of life - non-Domestic | 6,230 |
| **Total C1-4** | **12,691** |

18.164 The total whole life embodied carbon emissions for the Proposed Development for stage C1 to C4 are estimated to be **12,691 $tCO_2e$**. Of this, **6,461 $tCO_2e$** are from domestic use and **6,230 $tCO_2e$** are from non-domestic uses.

## Likely significant effects summary for the broader GHG emission categories

### Whole life embodied carbon emissions

18.165 The whole life embodied carbon emissions estimated to be generated by the domestic and non-domestic part of the Proposed Development is **542 $kgCO_2e/m^2$** on average (**554 $kgCO_2e/m^2$ for domestic and 386 $kgCO_2e/m^2$ for non-domestic)**. This figure does not exceed the RIBA 2030 target (<625 $kgCO_2e/m^2$). Therefore, as per the criteria mentioned in **Table 18.4**, embodied carbon emissions for domestic and non-domestic spaces could be considered as likely to have a Negligible adverse (not significant) effect on climate. It is recommended that to maintain the Negligible adverse impact or achieve at least Minor Adverse impact for as built design, the proposed good practice mitigation measures be considered for further design stages.

### Operational carbon emissions (energy)

18.166 The average annual energy consumption of the domestic part of the Proposed Development is **55 $kWh/m^2/yr$** which complies with the RIBA 2025 target (<60 kWh/m2/y). Considering this, and as per the criteria mentioned in **Table 18.4**, the operational energy emissions for the domestic part of the Proposed Development are likely to be **Minor adverse (not significant).**

18.167 For non-domestic, the annual energy consumption is expected to be **75 $kWh/m^2/yr$** which meets the RIBA 2025 target for operational energy (<75 kWh/m2/yr). Therefore, as per the criteria mentioned in **Table 18.4**, the operational energy emissions for the non-domestic typology are likely to be **Minor adverse (not significant)**.

### Operational Transport emissions

18.168 The annual operational transport emissions of the Proposed Development in combination are estimated to be **5,518 $tCO_2e$**. There is no standard guidance which provides an accepted emissions intensity value, or total emissions value, for assessing the significance of transport carbon emissions of the Proposed Development. However, based on professional judgement and using the proportion of the total carbon emissions from transport **(60%)**, it can be identified as the largest contributor when compared to embodied carbon and operational energy emissions from the Proposed Development. The operational transport carbon emissions are therefore expected to be **Moderate adverse (significant)**.

## Total Carbon Emission Summary

18.169 **Table 18.36** summarises the total whole life embodied carbon, operational carbon (energy) and transport emissions during the whole 60-year expected life of the Proposed Development.

***Table 18.36**: Total carbon emission summary for Applications 4 and 5*

| GHG Emission Category | Value | Unit |
|---|---|---|
| Whole life embodied carbon emissions (A1-C4, excluding B6 and B7) | 210,264 | $tCO_2e$ |
| Operational carbon emissions (energy use) (with grid decarbonisation) | 12,691 | $tCO_2e$ |
| Operational Transport emissions | 331,075 | $tCO_2e$ |
| **Total** | **554,030** | **$tCO_2e$** |

18.170 The transport carbon emissions during the operation phase of the Proposed Development are estimated to have the highest carbon impact of all sources, constituting some 60% of the total carbon emissions. This is followed by the whole life embodied carbon emissions i.e., carbon emissions from the construction, use, repair and maintenance, and end-of-life of the buildings on the Proposed Development site (38%). Carbon emissions from operational energy use are estimated to constitute only 2% of the total carbon emissions from the Proposed Development as shown **Figure 18.5**.

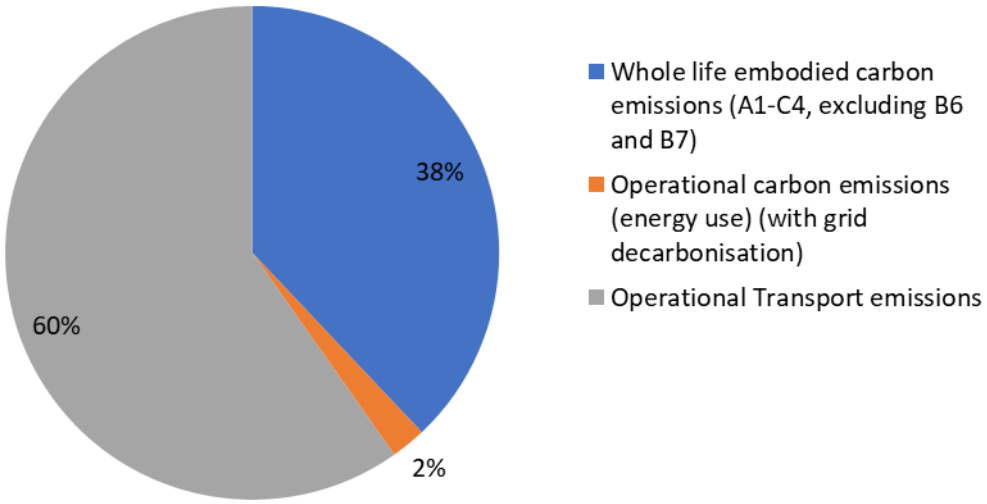



***Figure 18.4:** Breakdown of total carbon Emissions from the development over the lifetime of the scheme (60 years)*

## UK Carbon Budget Effect

18.171 In order to contextualise the GHG emissions generated by the Proposed Development during the operation phase, the results on the assessment of potential effects have been compared against the UK Carbon Budgets.

18.172 The total emission during Sixth UK Carbon Budget is presented in **Table 18.37**. The result shows that the Proposed Development is not expected to influence the achievement of national carbon budgets in a way that is material or significant, throughout its construction, operation, and end of life phases.

***Table 18.37**: Proposed Development impact on Sixth UK Carbon Budget*

| GHG Carbon Budget Period | UK Carbon Budget ($MtCO_2e$) | Carbon Emissions from the Proposed Development ($MtCO_2e$) | % Share from GM Carbon Budget |
|---|---|---|---|
| Sixth: 2033-2037 | 965 | 1.594772 | 0.16526% |

## Phasing Effects (Applications 4 and 5)

18.173 The phasing is considered for calculating the carbon impact for 60-year time period for operational energy emissions. Since the operational year for Applications 4 and 5 is different, and the 60-year impact is tied with the decarbonisation of grid electricity, the start year is critical.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5)

18.174 The additional mitigation measures suggested in Application 4, and applicable for Application 5, are also applicable for the in-combination scenario. No further mitigation measures are required in the In Combination Assessment scenario.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5)

18.175 The likely residual effects of the development and their significance is same as mentioned in Application 4 and 5.

## Conclusions (Applications 4 and 5)

18.176 The assessment of the impact of the Proposed Development on climate (GHG emissions assessment) quantitatively assessed the potential GHG emissions from scenarios 3a and 3b. The assessment concluded that the demolition and construction phase would result in estimated net GHG emissions of **210,264 $tCO_2e$**, and the completed and operational phase would result in estimated net GHG emissions of **343,766 $tCO_2e$** over the lifetime of the Proposed Development. Overall, these emissions were considered unlikely to impact (negligible effect) the UK Government's ability to meet the relevant UK Carbon Budget.

## Cumulative Effects with Identified Committed Schemes (Applications 4 and 5)

18.177 Cumulative effects have not been assessed for the Proposed Development as committed developments have not been considered. This is because the GHG emissions are assessed taking global climate as the receptor.

# In Combination Effects of Applications 4 and 5 and SRF

18.178 For the purposes of this assessment, an "in-combination" assessment is taken to mean a qualitative appraisal of the potential impact of the development as a whole (i.e., Applications 4-5 and the wider SRF).

***Table 18.38**: In-combination assessment and SRF*

| Assessment scenario | In-Combination Assessment |
|---|---|
| **4a** | **Scenario 4a In-Combination conclusion** - Applications 4 and 5 will result in GHG emissions during demolition and construction phases. In line with IEMA guidance, however, the effects assessed at the time of publication are not significant.<br><br>**The Wider SRF** - Indicative quantum of development set out in Chapter 2: Approach indicates that construction works will be required for the wider SRF. Therefore, it is assumed that there are likely to be GHG emissions due to materials and energy required for the construction. In line with IEMA guidance it is not possible to determine whether this could result in a significant effect at this stage. |
| **4b** | **Scenario 4b In-Combination conclusion** - Applications 4 and 5 will result in GHG emissions during operational phases. In line with IEMA guidance, however, the effects assessed at the time of publication are not significant.<br><br>**The Wider SRF** - Indicative quantum of development set out in Chapter 2: Approach indicates there is likely to be operational activity associated with energy consumption, maintenance and refurbishment and vehicles using the infrastructure and therefore operational GHG emissions in wider SRF. In line with IEMA guidance it is not possible to determine whether this could result in a significant effect at this stage. |
| **4c** | Cumulative effects have not been assessed for the Proposed Development as committed developments have not been considered. This is because the GHG emissions are assessed taking global climate as the receptor. |

# PART B - CLIMATE RESILIENCE

## Introduction

18.179 This chapter assesses the Climate Resilience of Application 4 and 5 (the Proposed Development). In particular, it considers effects that may arise as a result of climate change on the Proposed Development.

18.180 The chapter describes the methods used to assess the likely significant effects; the baseline climate conditions considering historic and current climate; and future climate projections for the Proposed Development. The potential effects on the Proposed Development arising in terms of climate resilience considerations are assessed and mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects are detailed. The climate resilience chapter has been written by WSP.

## Assessment Methodology and Significance Criteria

18.181 The Scoping Report (**ES Volume 3: Appendix 2.1**) identified the receptors (relevant components of the Proposed Development) that are vulnerable to climate change. The construction stage was scoped out of further assessment on the basis that measures would be included within a Construction Environmental Management Plan (CEMP) to ensure that the construction site, compound, and any associated storage areas are prepared for extreme weather events and resilient to climate hazards. The significance of effects of changes in the (scoped in) climate variables on receptors has been considered in this assessment for the operation phase.

18.182 This assessment has been undertaken using an approach based on the guidance identified below, and professional judgement.

18.183 The following guidance documents have been used during the preparation of this chapter:

- DMRB LA 114 Climate[12]: This document establishes the requirements for assessing and reporting the effects of climate on highways. While this project is not a highways scheme, the significance criteria assessment in Section 3 of LA114 provides a useful methodology which has been adopted within this assessment.
- IEMA EIA Guide to Climate Change Resilience and Adaptation[13]: This guide sets out how to consider climate change resilience and adaptation in EIA reporting.

[12] Standards for Highways. (2021). DMRB LA 114. Available at: https://www.standardsforhighways.co.uk/dmrb/search/d1ec82f3-834b-4d5f-89c6-d7d7d299dce0 [Accessed: 26/01/2023]

[13] IEMA (2020) EIA Guide to: Climate Change Resilience and Adaptation. Available at: https://www.iema.net/resources/reading-room/2020/06/26/iema-eia-guide-to-climate-change-resilience-and-adaptation-2020 [Accessed: 26/01/2023]

- ISO 14091:2021 Adaptation to climate change — Guidelines on vulnerability, impacts and risk assessment[14]: This document suggests how to assess the risks associated with the potential impacts of climate change.

18.184 The IEMA EIA Guide to Climate Change Resilience and Adaptation[14] identifies the need for the baseline to consider:

- The current climate baseline (defined by historic climate conditions) to provide an indication of past vulnerability; and
- The future climate baseline (short-term extremes and long-term variation) to assess a project's future vulnerability to climate change.

18.185 The consequence and likelihood of potential impacts (that would result from the occurrence of changes in climate variables), are used to determine the significance of effects on the receptors. The determination of consequence is based on the Proposed Development design, including any embedded mitigation. The determination of likelihood is based on the future climate projections, as identified in the baseline. Consequence and likelihood are qualitatively assessed using the descriptions in **Table 18.39** and **Table 18.40**. These descriptions have been developed using professional judgement, informed by relevant guidance. Committed design measures and embedded mitigation are identified through review of planning documents for approval.

***Table 18.39**: Consequence Definitions[14]*

| Measure of consequence | Description |
|---|---|
| Negligible | No damage to receptors, minimal adverse effects on health, safety and the environment or financial loss. Little change to service and disruption lasting less than 1 day. |
| Minor adverse | Localised receptor disruption or loss of service. No permanent damage, minor restoration work required: disruption lasting less than 1 day. Small financial losses and/or slight adverse health or environmental effects. |
| Moderate adverse | Limited receptor damage and/or loss of service with damage recoverable by maintenance or minor repair. Disruption lasting more than 1 day but less than 1 week. Moderate financial losses. Adverse effects on health and/or the environment. |
| Large adverse | Extensive receptor damage and/or severe loss of service. Disruption lasting more than 1 week. Early renewal of infrastructure 50-90%. Permanent physical injuries and/or fatalities. Major financial loss. Significant effect on the environment, requiring remediation. |
| Very large adverse | Permanent damage and/or complete loss of service. Disruption lasting more than 1 week. Early renewal of infrastructure >90%. Severe health effects and/or fatalities. Extreme financial loss. Very significant loss to the environment requiring remediation and restoration. |

***Table 18.40**: Likelihood Definitions[14]*

| Measure of likelihood | Description |
|---|---|
| Very high | The event occurs multiple times during the lifetime of the project<br>e.g. approximately annually. |

[14] ISO (2021). ISO 14091:2021 Adaptation to climate change — Guidelines on vulnerability, impacts and risk assessment. Available at: https://www.iso.org/standard/68508.html [Accessed: 26/01/2023]

| Measure of likelihood | Description |
|---|---|
| High | The event occurs several times during the lifetime of the project e.g. approximately once every five years. |
| Medium | The event occurs limited times during the lifetime of the project e.g. approximately once every 15 years. |
| Low | The event occurs occasionally during the lifetime of the project e.g. once in 60 years. |
| Very low | The event may occur once during the lifetime of the project. |

## Significance Criteria

18.186 This assessment differs from the standard EIA significance criteria. The standard significance criteria uses a magnitude and sensitivity matrix to assess the impact of the Proposed Development on a particular receptor. However, in the case of the climate resilience assessment, the receptor is the Proposed Development, and the impact is caused by the changes in future climate. Therefore, for the Climate Resilience assessment, the likelihood and consequence are combined to assess the significance of effects on the affected receptors, as shown in **Table 18.41.** The assessment is qualitative and determined through professional judgement, utilising knowledge of similar proposed developments, engagement with the wider Project Team and a review of relevant literature.

***Table 18.41****: Significance Rating Matrix*

| Likelihood | Consequence of hazard occurring | | | | |
|---|---|---|---|---|---|
| | **Negligible** | **Minor adverse** | **Moderate adverse** | **Large adverse** | **Very large adverse** |
| **Very high** | Not Significant | Significant | Significant | Significant | Significant |
| **High** | Not significant | Significant | Significant | Significant | Significant |
| **Medium** | Not significant | Not significant | Significant | Significant | Significant |
| **Low** | Not significant | Not significant | Not significant | Significant | Significant |
| **Very low** | Not significant | Not significant | Not significant | Not Significant | Significant |

## Characterisation of Effect

18.187 As seen in **Table 18.39**, **Table 18.40** and **Table 18.41**, the effects are assessed in a significance matrix, based on the likelihood and consequence of potential impacts (that would result from the occurrence of changes in climate variables), which determine the significance of effects on the receptors. Consequence is measured in levels of adversity, ranging from negligible to very large adverse, inclusive of embedded mitigation. Likelihood is measured from very low to very high, dependent on the future climate projections, as identified in the baseline. Likelihood takes into consideration the design life, and the projection time slices: 2030s, 2050s, 2080s. The effects are measured within the extent of the study area, identified in Paragraph 18.189. The receptors to be assessed are identified by the Proposed Development design.

# Red Bank Methodology (Outline Application 4)

## Study Area

18.188 The Study Area for the climate resilience assessment is the land within the Application 4 site boundary only.

18.189 Potential in-combination climate impacts (ICCI) have been identified by the environmental topics and the related assessment and findings have been outlined in the respective chapters by topic specialists. Topics included are: Ecology, Health and Wellbeing, Wind and Ground Conditions. The purpose of the ICCI is to identify how the resilience of identified receptors in the surrounding receiving environment is affected by future climate change conditions. Therefore, the area immediately adjacent to the Application 4 site boundary is considered by the ICCI assessments and not within this climate resilience chapter.

## Survey and Data Sources

18.190 Baseline data has been identified through a desk-based study and the assessment has been informed by information on existing and projected change in climate variables derived from the following sources:

- State of the UK Climate (2021)[15] (existing baseline);
- Met Office Regional Climate Profile for the North West England[16] (existing baseline);
- Met Office Local Weather Station Data for Rochdale[17] (existing baseline);
- Met Office Regional Weather data for England North West and Wales North[18] (existing baseline);
- UK Climate Projections 2018[18] (UKCP18) (future baseline); and
- The Climate Risk Indicators (CRI)[19] (future baseline).

18.191 No site visits or surveys were required for this assessment.

## Operational Phase

18.192 The receptors scoped into the assessment of the proposed Application 4 development comprise:

[15] Met Office. (2021). State of the UK Climate. Available at: https://www.metoffice.gov.uk/research/climate/maps-and-data/about/state-of-climate [Accessed: 26/01/2023]

[16] Met Office. (2016). North-West England: Climate. Available at: (https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/regional-climates/north-west-england--isle-of-man_-climate---met-office.pdf) [Accessed: 26/01/2023]

[17] Met Office. (2010). UK Climate Averages. Available at https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gcw2ymd6s [Accessed: 26/01/2023]

[18] Met Office. (2018). UKCP Data. Available at: https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/data/index [Accessed: 26/01/2023]

[19] Nigel Arnell. (2021). The Climate Risk Indicators. Available at: https://uk-cri.org/ [Accessed: 26/01/2023]

Operation period (approx. 60-100 years), consisting of:

- Buildings: including residential led mixed use development across severable plots comprising residential (Use Classes C3 and C2), non-residential floorspace comprising commercial, business, service and community uses (Use Classes E, F and Sui Generis), residents amenity space including within clubhouse buildings, health centre (Use Class E), land for a primary school (Use Class F);
- Public Realm: including cycling and walking routes, open green space/park and vegetation;
- Infrastructure: including electric car charging, car parking, roads and utilities; and
- End users of the proposed Application 4 development.

18.193 Operational receptors to be assessed, as identified in the Scoping Report, are presented in **Table 18.42.**

***Table 18.42**: Scoped in Receptors for Application 4*

| Climate Variable | | Receptor | | | |
|---|---|---|---|---|---|
| | | **Buildings** | **Public Realm** | **Infrastructure** | **End Users** |
| **Precipitation** | Change in annual average rainfall | X | X | X | |
| | Drought | | X | X | X |
| | Extreme Rainfall Events | X | X | X | X |
| | Snow and Ice | | | | |
| **Temperature** | Change in annual average | X | X | | |
| | Extreme temperature events (including heatwaves and cold snaps) | X | X | X | X |
| **Wind** | Gales and extreme wind events | X | X | X | X |
| | Storms (snow, lightning, hail) | X | X | X | X |
| **Relative Humidity** | Changes In annual average | X | | | X |
| | Evaporation | X | | | X |

## NT02 – NT04 Methodology (Full Application 5)

18.194 The methodology for Application 5 is the same as reported above for Application 4 apart from where stated below.

### Operational Phase

18.195 The receptors scoped into the detailed assessment comprise:

Operation period (approx. 60-100 years), consisting of:

- Buildings: including residential development up to 1,551 new apartments and a clubhouse building;
- Public Realm: including cycling and walking routes, and vegetation;
- Infrastructure: including basement and on-road parking, cycle parking, roads and utilities infrastructure; and

- End users of the proposed Application 5 development.

18.196 Operational receptors to be assessed, as identified in the Scoping Report, are presented in **Table 18.43.**

***Table 18.43**: Scoped in receptors for Application 5*

| Climate Variable | | Receptor | | | |
|---|---|---|---|---|---|
| | | **Buildings** | **Public Realm** | **Infrastructure** | **End Users** |
| **Precipitation** | Change in annual average rainfall | X | X | X | |
| | Drought | | X | X | X |
| | Extreme Rainfall Events | X | X | X | X |
| | Snow and Ice | | | | |
| **Temperature** | Change in annual average | X | X | | |
| | Extreme temperature events (including heatwaves and cold snaps) | X | X | X | X |
| **Wind** | Gales and extreme wind events | X | X | X | X |
| | Storms (snow, lightning, hail) | X | X | X | X |
| **Relative Humidity** | Changes In annual average | X | | | X |
| | Evaporation | X | | | X |

## Assumptions/Limitations

18.197 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- There is currently no agreed industry methodology that should be applied for assessing the vulnerability of major proposed developments under the EIA Regulations. Therefore, an approach has been developed and applied in this assessment based on existing best practice and our extensive project experience.
- The UKCP18 projections have been used to infer future changes in a range of climate variables that may affect the vulnerability of the Proposed Development to climate change. At the time of writing, these represent the most up-to-date representation of future climate in the UK.
- The Climate Risk Indicators, developed as part of the UK Climate Resilience Programme, has been used to infer this assessment. As such there are inherited limitations and uncertainties within the data. Further information on the methodology used to produce this data can be found in Arnell et al. (2021)[20] .
- There are inherent uncertainties associated with climate projections and they are not predictions of the future. It is possible that future climate will differ from the future baseline climate against which the resilience of the Proposed Development has been assessed, depending on global emissions over the next century. A 'high' emissions scenario (RCP 8.5) using the 2080s time slice (2070–2099, the longest temporal scale available

[20] Arnell, et al., (2021) Changing climate risk in the UK: a multi-sectoral analysis using policy-relevant indicators. Climate Risk Management 31, 100265 10.1016/j.crm.2020.100265

through UKCP18) has been used to develop the baseline against which resilience has been assessed. This is consistent with the precautionary principle (i.e., 'worst case' scenario).

- Any further research, analysis or decision-making should take account of the accuracies and uncertainties associated with climate projections. It is also important to note that the analysis is based on selected observational data, the results of climate model ensembles and a selected range of existing climate change research and literature available at the time of assessment. Any future decision-making based on this analysis should consider the range of literature, evidence and research available at that time and any changes to this.
- The MEP design is at Stage 2 Level of Detail (LOD) and will be further developed as the design progresses. RIBA Stage 2 LOD is a concept design, therefore early in the design process. The embedded mitigation provided by the design engineers is based on the Stage 2 design of the Proposed Development.
- The Application 4 assessment has assumed, based on the information provided by designers, that slope and soil erosion control measures have been incorporated on the Site as part of the Housing Infrastructure Fund application.

## Consultation

18.198 The Scoping Opinion received from Manchester City Council noted that the Climate Change Scoping Report was acceptable. No further consultation has been required or undertaken to date in relation to climate resilience as the methodology aligns with good practice guidance and data to inform the assessment is publicly available. No consultation is proposed at this stage to support the ES. Consultation undertaken in relation to flood risk has been identified in **Chapter 10: Flood Risk and Drainage.**

# Red Bank (Outline Application 4)

## Baseline Conditions (Outline Application 4)

18.199 The Application 4 development is in the Met Office Regional climate profile of North West England[16]. The range of topography and altitude in North West England provides a variety of different climates. Rochdale Weather Station is located approximately 15km northeast of the Application 4 site and therefore has been chosen as representative of the local climate. This has been assessed under the baseline period of 1981-2010.

### Precipitation – Rainfall

18.200 North West England is exposed to westerly maritime air masses and the presence of extensive areas of high ground mean that the region has some of the wettest places in the UK; such as the Peak District, eastwards of the proposed Application 4 development.

18.201 Average seasonal rainfall at Rochdale Weather station, North West England, and the UK for the period 1981–2010 is presented in **Table 18.44.** It shows that the region and weather station is wetter than the UK average for Summer, though the rainfall in the area of the weather station is lower than the average of the region. However, the local area (the weather station) is drier than the UK average in Winter.

***Table 18.44:*** *Long term average seasonal rainfall (mm) (1981–2010) for the North West England and Rochdale Weather Station, in comparison to the rest of the UK*

| Long Term Average Seasonal Rainfall (1981-2010s) (mm) | | | |
|---|---|---|---|
| **Season** | Rochdale Weather Station | North West England | UK |
| **Summer (June, July, August)** | 249 | 275 | 238 |
| **Winter (January, February, December)** | 317 | 375 | 328 |

18.202 Some notable extreme rainfall events for the region include:

- February 2022: Following Storm Eunice, heavy rainfall continued to affect North West England. The Met Office issued a yellow weather alert for the 20th and the 21st of February, warning of heavy rain[21]. Homes, businesses and travel routes across the country were flooded as a result[22].

[21] Rochdale online (19th Feb 2022) Heavy rain after storm Eunice. Available at: Rochdale News | News Headlines | Heavy rain after Storm Eunice - Rochdale Online. [Accessed 26/01/23].
[22] The Guardian (2022) Storm Franklin Flooding and Property Damage – in pictures. Available at: https://www.theguardian.com/uk-news/gallery/2022/feb/21/storm-franklin-flooding-and-property-damage-in-pictures-uk-weather. [Accessed 26/01/23].

- July 2021: Urgent flood warnings were issued as torrential rainfall swept across Northern England. Heavy rain led to chaos across Greater Manchester, resulting in road closures across the network[23].
- February 2020: Arriving one week after storm Ciara, storm Dennis brought heavy and persistent rain across much of the UK – especially Wales and North West England, with an amber warning in place for Manchester[24]. The flooding also caused major travel disruption with roads blocked, damaged railway lines and hundreds of flights cancelled[25]. Homes in Radcliffe and Redvales, 7 miles north of the Application 4 site, were evacuated with firefighters rescuing some residents trapped by the rising waters[26].

### Precipitation – Snow and Ice

18.203 Snowfall is closely linked with temperature, with falls rarely occurring if the temperature is higher than 4°C. In North West England, snowfall is normally confined to the months from November to April. The region most recently experienced a snow event in:

- December 2022: Early December saw a week of cold temperatures and snow. The 12th December was the coldest day in the UK since December 2010, according to provisional data from the Met Office[27]. Heavy snow forced Manchester Airport to close both of its runways, and drivers were told to take caution due to collisions on the M58, M61 and M62[28]. A Level 3 Cold Weather Alert was issued from 9th-16th December by the UK Health Security Agency (UKHSA), with concerns for serious health consequence, particularly for the elderly and those with heart or lung conditions[29]. There were reports of frozen and burst pipes in the Manchester area, leaving residents without heating and water[30].
- February 2021: The UK experienced a week of severe winter weather from 7th to 13th February, with easterly winds drawing a bitterly cold airflow from eastern Europe[31]. Resulting in widespread travel disruption. An

[23] Manchester Evening News (2021) Heavy rain causes flooding on roads and motorways across Greater Manchester. Available at: Heavy rain causes flooding on roads and motorways across Greater Manchester - Manchester Evening News [Accessed 26/01/23].
[24] ITV News (2020) Storm Dennis: North West Prepares as Amber Warning Issued. Available at: https://www.itv.com/news/granada/2020-02-14/storm-dennis-north-west-prepares-as-amber-warnings-issued [Accessed 26/01/23]
[25] Met Office (2020) Storm Denis. Available at: 2020_03_storm_dennis.pdf (metoffice.gov.uk) [Accessed 26/01/23].
[26] Manchester Evening News (2020) Day of Chaos as Storm Ciara hammers Greater Manchester with hurricane force winds. Available at: https://www.manchestereveningnews.co.uk/news/greater-manchester-news/day-chaos-storm-ciara-hammers-17717978 [Accessed 26/01/2023]
[27] Manchester Evening News (2022) Temperatures have plummeted to -7C in Greater Manchester but the cold snap is coming to an end. Available at: https://www.manchestereveningnews.co.uk/news/greater-manchester-news/temperatures-plummeted-7c-greater-manchester-25746741 [Accessed 26/01/23]
[28] BBC News (2022) UK Weather: Snow, Ice and Freezing Fog cause travel disruption. Available at: https://www.bbc.co.uk/news/uk-63926328 [Accessed 26/01/23]
[29] Manchester Evening News (2022) Ice-hit Greater Manchester braces for more snow as temperature set to plunge to -3C. Available at: https://www.manchestereveningnews.co.uk/news/greater-manchester-news/ice-hit-greater-manchester-braces-25716801 [Accessed 26/01/23]
[30] Manchester Evening News (2022) Gran feared 'freezing to death' in -8C temperatures after bungalow pip bursts. Available at: https://www.manchestereveningnews.co.uk/news/greater-manchester-news/gran-feared-freezing-death-8c-25762006 [Accessed 26/02/23]
[31] Met Office, Press Office (Feb 2021) Snow moving in for many – February 2021. Available at: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/interesting/2018/snow-and-low-temperatures-february-to-march-2018---met-office.pdf.

amber weather warning for snow came into force for Greater Manchester, with 3cm-8cm snow across North West England, with 10cm to 15cm possible in areas above 200 metres[32].

- February to March 2018: the most significant spell of snow and low temperatures for the UK overall since December 2010. The snow and ice resulted in road closures, people becoming stranded, trains and flights cancelled, school closures, and power cuts[33]. The spell also led to many instances of broken heating or frozen pipes, which led to buildings flooding.[34]

## Temperature

18.204 **Table 18.45** shows the long-term average seasonal mean temperature for North West England and Rochdale Weather Station between 1981 and 2010. It shows that the Application 4 site area is slightly warmer than the region and UK average.

***Table 18.45**: Long-term average mean seasonal temperature for the North West England and Rochdale Weather Station, in comparison to the rest of the UK*

| Long Term Average Seasonal Temperature (1981-2010s) (ºC) | | | |
|---|---|---|---|
| **Season** | Rochdale Weather Station | North West England | UK |
| **Summer (June, July, August)** | 15 | 14.4 | 14.4 |
| **Winter (January, February, December)** | 3.9 | 3.85 | 3.7 |

18.205 Average maximum temperature for 1981-2010 measured 19 °C in summer and 6.7 °C in winter. For the 30-year period of 1991-2020 average maximum temperatures measured 20 °C in summer and 7 °C in winter. With single years exceeding these averages. Some noteworthy extreme temperature events were:

- July 2022: The UK experienced a brief but unprecedented extreme heatwave from 16 to 19 July 2022, as hot air moved north from the near continent, with extreme temperatures recorded on both 18th and 19th. This heatwave marked a milestone in UK climate history, with 40°C being recorded for the first time in the UK, with a large part of England exceeding 37°C[35]. Nationally, the heat brought challenging conditions for the NHS with a spike in 999 calls, and care services supporting the elderly and vulnerable were put under increased stress. Many schools remained open but ran a shorter day in parts of the country. There were several fatalities

[32] ITV (2021) Travel disruption as heavy snow hits parts of northern England. Available at: Travel disruption as heavy snow hits parts of northern England | ITV News [Accessed 26/01/23].
[33] Met Office (2018) Snow and low temperatures February to March 2018. Available at: snow-and-low-temperatures-february-to-march-2018---met-office.pdf (metoffice.gov.uk) [Accessed 26/01/23].
[34] The Independent (2018) Storm Emma as it happened. Available at: https://www.independent.co.uk/news/uk/home-news/uk-weather-live-updates-storm-emma-snow-ice-forecast-flights-airports-roads-traffic-freezing-met-office-a8236006.html?page=3&jw_start=%7Bseek_to_second_number%7D [Accessed 26/01/23].
[35] Met Office (2022) Unprecedented extreme heatwave, July 2022. Available at: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/interesting/2022/2022_03_july_heatwave.pdf [Accessed 26/01/23].

associated with open water swimming, including one fatality in the water in Salford Quays on 16th July; two other drowning-related incidents were reported during the July heatwave in this area[36]. Several fire services declared major incidents after multiple fires broke out. The UKHSA published analysis of deaths during heat-periods in 2022 and which suggests that the 5-heat periods in the summer of 2022 resulted in a total of 2,803 excess deaths (excl. COVID-19) in people aged 65 and over across England as a whole[37].

- March to April 2021: The UK experienced a brief spell of unusual warmth at the end of March with temperatures across England and Wales widely reaching 20 to 22°C. Many long-running stations recorded their warmest March Day on record. The warmth of late March was followed by a cold plunge in early April as a brisk northerly airstream brought a cold Arctic Maritime airmass across the UK, accompanied by wintry showers[38].
- Summer 2018: The weather was warm, dry, and sunny with the UK under the influence of high pressure, particularly during June and July. This was the UK's warmest summer since 2006, the driest since 2003 and the sunniest since 1995[39]. Higher temperatures posed a health risk to some people, and there were record A&E numbers over the summer[40].

## Humidity

18.206 The relative annual average humidity in the location of Application 4 is 76 to 78% and slightly higher in the surrounding areas (78 to 80%)[41]. This is because the Application 4 site is in Manchester City Centre, and cities often have lower humidity due to reduced evapotranspiration from vegetation and increased run-off of precipitation[42].

## Wind

18.207 North West England is amongst the more exposed parts of the UK, being relatively close to the Atlantic and containing large upland areas. The strongest winds are associated with the passage of deep areas of low pressure close to or across the UK. The frequency and strength of these depressions is greatest in the winter half of the year, especially from December to February, and this is when mean speeds and gusts (short duration peak values) are strongest. Noteworthy wind events include:

[36] The Guardian (2022) 'Frivolity can turn to fatality': UK heatwave brings rise in teenage drownings. Available at: https://www.theguardian.com/uk-news/2022/jul/19/distinct-risk-pattern-uk-heatwave-toll-drowned-teenage-boys [Accessed 26/01/23]
[37] Manchester City Council (2022) Governance Report. Available at: https://democracy.manchester.gov.uk/documents/s37243/Heatwaves%20and%20Health%20Report.pdf [Accessed 26/01/23]
[38] Met Office (2021) Extremes of temperature, March and April 2021. Available at: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/interesting/2021/2021_03_high_temperatures.pdf [Accessed 26/01/23]
[39] Met Office (2020) Summer 2018. Available at: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/interesting/2018/summer-2018---met-office.pdf. [Accessed 26/01/23].
[40] BBC News (2018) Heatwave blamed for record A&E attendances in England. Available at: https://www.bbc.co.uk/news/health-45118513 [Accessed 26/01/23]
[41] Met Office (2020) UK climate averages, Average maps. Available https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gcw2ymd6s [Accessed 26/01/23].

[42] Brittanica (N.D.) Urban Climate. Available at: https://www.britannica.com/science/urban-climate [Accessed 13/09/2022]

- February 2022: The most recent notable gale affecting the region was in February 2022, Storm Eunice. Wind speeds reached around 50mph in the area of Application 4 with transport disrupted due to fallen lorries and trees[43]. Fallen trees also damaged buildings, and the storm caused damage to roofs on buildings such as homes and religious buildings, including a fallen tower on a mosque in Manchester[44].
- December 2021: Storm Barra brought strong winds and heavy rain across the UK from 7 to 8 December 2021[45]. A section of the roof of the 'Chill Factor' building on the outskirts of Manchester City Centre blew off during this storm[46].
- November 2021: Storm Arwen brought severe winds across the UK overnight for the 26 to 27th November, with the Met Office issuing a red weather warning[47]. The storm brought high winds and chaos on roads and motorways, with tree falls and house toppling being reported[48].

## Sea Level

18.208 The Application 4 site is located approximately 30 miles east from the Irish Sea. As the Site is a considerable distance from the major UK water bodies, variables associated with sea level and sea temperature are not considered relevant and have been scoped out of this assessment. However, some of the Application 4 site is located in Flood Zones 2 and 3, due to the River Irk running through the Site. This is not expected to be impacted by sea level rise.

## Future Baseline

18.209 The UKCP18[18] provide data on projected change in climate variables for the UK. The UKCP18 are the most up-to-date projections of climate change for the UK, providing projections until the end of the twenty-first century. The Climate Risk Indicators (CRI)[19] developed by Nigel Arnell et al., as part of the UK Climate Resilience Programme has been used to inform this assessment. The CRI utilises the UKCP18 projections and allows for a range of climate

[43] Met Office (2022) Storms Dudley, Eunice and Franklin, February 2022. Available at: Microsoft Word - 2022_02_storms_dudley_eunice_franklin.docx (metoffice.gov.uk) [Accessed 26/01/23].

[44] Manchester Evening News (2022) Trains suspended, roads blocked and buildings battered - Storm Eunice brings day of chaos to Greater Manchester. Available at: https://www.manchestereveningnews.co.uk/news/greater-manchester-news/trains-suspended-roads-blocked-buildings-23152208 [Accessed 26/01/23]

[46] Manchester Evening News (2021) Storm Barra LIVE: Latest weather and travel updates in Greater Manchester as wind batters our region - and 'roof goes' on Chill Factore. Available at: https://www.manchestereveningnews.co.uk/news/greater-manchester-news/storm-barra-live-latest-weather-22384054 [Accessed 26/01/23]

[46] Manchester Evening News (2021) Storm Barra LIVE: Latest weather and travel updates in Greater Manchester as wind batters our region - and 'roof goes' on Chill Factore. Available at: https://www.manchestereveningnews.co.uk/news/greater-manchester-news/storm-barra-live-latest-weather-22384054 [Accessed 26/01/23]

[47] Met Office (2021) Storm Arwen, 26 to 27 November 2021. Available at: Microsoft Word - 2021_07_storm_arwen.docx (metoffice.gov.uk) [Accessed 26/01/23].

[48] Manchester Evening news (2021) Storm Arwen hits Greater Manchester covering back gardens, roads and beauty spots in snow. Available at: Storm Arwen hits Greater Manchester covering back gardens, roads and beauty spots in snow - Manchester Evening News [Accessed 26/01/23].

related indicators (including but not limited to, Met Office Heatwaves and heat stress). The CRI data for the Manchester City Council region has been used to inform this assessment.

18.210 UKCP18 includes probabilistic projections of a range of climate variables for different emissions scenarios, termed representative concentration pathways (RCPs) and for a range of time slices to the end of the century. To address the full range of climate model uncertainty the results are provided as 50$^{th}$ (10$^{th}$ to 90$^{th}$) percentiles and estimate projections are presented against baseline levels of 1981-2010s (based on model data).

18.211 The RCP8.5 scenario has been used to infer this assessment. RCP8.5 is a high emissions' scenario which combines assumptions about high population and relatively slow income growth with modest rates of technological change and energy intensity improvements.

18.212 The future baseline has been presented for the 2030s (2020-2049), the 2050s (2040-2069) and 2080s (2070-2099) to identify the anticipated climate conditions over the construction period and design life of the proposed Application 4 development's key components (refer to the scope of assessment below).

## Precipitation – Rainfall

18.213 Climate change is projected to lead to wetter winters and drier summers although natural variation, including extreme events such as storms, heavy downpours and heatwaves, will continue to punctuate these trends. The projected changes to average summer and winter rainfall for the 2030s, 2050s and 2080s are summarised in **Table 18.46.**

***Table 18.46:*** *Projected change in average summer and winter precipitation (%) for the 2030s, 2050s and 2080s, RCP8.5. The results are shown as 50th (10th-90th) percentile*

| Season | 2030s | 2050s | 2080s |
|---|---|---|---|
| **Summer (June, July, August)** | -9.8 (-24.2 to +5.7) | -19 (-36.8 to +1.3) | -29.4 (-48.7 to -6) |
| **Winter (January, February, December)** | +2.2 (-4.5 to +9) | +6.7 (-1.8 to +15.5) | +12.7 (+0.6 to +26.12) |

18.214 The projected change in the number of months per year at least as wet as the baseline period (1981-2010) under RCP8.5 are summarised in **Table 18.47**. In the baseline scenario for the projections, the record-breaking wettest month occurred on average 0.03 months per year. The central estimate (50th percentile) indicates that this will have increased by two-thirds by the 2050s (0.05 months per year) and be over six times more common by the 2080s (0.2 months per year).

***Table 18.47**: Number of months per year at least as wet as the wettest month between 1981-2010, for the 2030s, 2050s and 2080s, RCP8.5*

| Percentile | 2030s | 2050s | 2080s |
|---|---|---|---|
| **10th** | 0.02 | 0.01 | 0.02 |
| **50th** | 0.05 | 0.05 | 0.08 |
| **90th** | 0.12 | 0.13 | 0.2 |

## Precipitation – Snow and Ice

18.215 With regards to future changes, rising winter temperatures are likely to reduce the amount of precipitation that falls as snow in winter. Snowfall data is unavailable for the probabilistic projections (25km), however both the regional (12km) and the local (2.2km) show a decrease in both falling and lying snow across the UK for the period of 2061-2080 relative to the 1981-2000 baseline[49].

## Temperature

18.216 In general, UKCP18 projects that climate change will lead to hotter summers and warmer winters. **Table 18.48** summarises the UKCP18 projections for changes in mean temperature for the Application 4 location in the 2030s, 2050s and 2080s under RCP 8.5. For example, an increase in +1.2˚C Summer temperatures in the 2030s at Rochdale Weather Station would equate to an average summer temperature increase from 15°C to 16.2˚C. This would equate to an average summer temperature increase from 15˚C to 19.4°C in the 2080s.

***Table 18.48:** Projected change in mean summer and winter temperature (°C) for the 2030s, 2050s and 2080s RCP8.5.*

| Season | 2030s | 2050s | 2080s |
|---|---|---|---|
| **Summer (June, July, August)** | +1.2 (+0.5 to +1.9) | +2.2 (+0.9 to +3.5) | +4.4 (+2 to +6.8) |
| **Winter (January, February, December)** | +0.9 (+0.1 to +1.8) | +1.6 (+0.6 to +2.8) | +3.0 (+1.3 to +4.9) |

18.217 Maximum Summer temperatures are expected to reach 37.4˚C by the 2050s, and 41.8˚C in the 2080s. Maximum winter temperatures are expected to reach 18.1˚C by the 2050s and 20.2˚C by the 2080s.

18.218 A heatwave is an extended period of hot weather relative to the expected conditions of the area at that time of year. A UK heatwave is defined as the maximum temperature above a region-specific threshold for at least three

[49] Met Office (2019) UKCP18 Factsheet: Snow. Available at: ukcp18-factsheet-snow.pdf (metoffice.gov.uk) [Accessed 26/01/23].

days. The present-day heatwave threshold for the area of the Application 4 site is 25°C[50]. The intensity, frequency and duration of heatwaves are projected to increase under future warming.

18.219 The projected number of present-day heatwave events per year for the Application 4 site is 1.7 (1.3 to 2.4) in the 2030s, 2.6 (1.5 to 4.3) in the 2050s and 4.6 (2.5 to 6) in the 2080s. Long periods of hot weather can pose threats to people, buildings and infrastructure. The public realm space is made up of pedestrianised areas and car parking which can overheat and melt during heatwave events. In the UK, road melt occurs where temperatures exceed 25°C. The risk of road melt in days per year for the area of the Application 4 site is 14.3 (10.7 to 19.6) in the 2030s, 21.3 (12.5 to 37) in the 2050s and 45.9 (20.5 to 76.9) in the 2080s.

18.220 Hot weather can lead to serious health consequences such as heat stress. Heat stress is defined as the amount of evaporation (or perspiration) required as related to the maximum ability of the average person to perspire (or evaporate fluids from the body to cool themselves). As temperatures are projected to increase, the risk of heat stress in outdoor workplaces are projected to increase[51]. In this case, wet bulb global temperature (combining temperature and humidity) exceeding threshold of 25°C is used as a proxy for heat stress[52]. For the area of the Application 4 site, the projected heat stress in days per year are 0.2 (0.1 to 0.3) in the 2030s, 0.5 (0.1 to 2) in the 2050s and 3.7 (0.5 to 11.7) in the 2080s.

### Humidity

18.221 Projections for relative humidity anticipate an average decrease of approximately 1.2% (-2.6% to -0.9 %) in the 2030s, and a decrease of 2% in the 2050s (-3.5% to -1.4%).

### Wind

18.222 UKCP18 depicts a wide spread of future changes in mean surface wind speed, however, there is large uncertainty in projected changes in circulation over the UK and natural climate variability contributes much of this uncertainty[53]. It is therefore difficult to represent regional extreme winds and gusts within regional climate models[54].

18.223 Central estimates of change in mean wind speed for the 2050s are small in all ensembles runs (<0.2ms-1). A wind speed of 0.2ms-1 (approximately 0.4 knots) is small compared with the typical magnitude of summer mean wind

[50] Met Office (2021) What is a heatwave, Available at: https://www.metoffice.gov.uk/weather/learn-about/weather/types-of-weather/temperature/heatwave [Accessed 26/01/23].
[51] Nassiri, P., Monazzam, M. R., Golbabaei, F., Farhang Dehghan, S., Shamsipour, A., Ghanadzadeh, M. J., & Asghari, M. (2020). Modeling heat stress changes based on wet-bulb globe temperature in respect to global warming. Journal of environmental health science & engineering, 18(2), 441–450. Available at: https://doi.org/10.1007/s40201-020-00472-1 [Accessed 26/01/23].
[52] Arnell, N. W., Freeman, A., Kay, A. L., Rudd, A. C., & Lowe, J. A. (2021). Indicators of climate risk in the UK at different levels of warming. Environmental Research Communications, 3(9), 095005
[53] Brown, S., Boorman, P., McDonald, R., and Murphy. J. (2012) Interpretation for use of surface wind speed projections from the 11-member Met Office Regional Climate Model ensemble. Post-launch technical documentation for UKCP09. Met Office Hadley Centre, Exeter, UK. Crown copyright.
[54] Bengtsson, L., K. Hodges, and E. Roeckner, 2006: Storm tracks and climate change. Journal of Climate, 19, 3518-3543.

speed of about 3.6–5.1ms-1 (7 – 10 knots) over much of England[55]. Seasonal changes at individual locations across the UK lie within the range of –15% to +10%.

18.224 In terms of storms, the analysis presented here is a summary of expected changes in storm patterns under a changing climate. A storm is defined by the Met Office as a wind event measuring 10 or higher on the Beaufort scale (equivalent to a wind speed of 24.5m/s or 55mph).

18.225 Studies[56] relating to future projections of storms suggest that climate driven storm changes are less distinct in the northern than southern hemisphere. However, such is the wide range of inter-model variation, robust projections of changes in storm track are not yet possible and there is low confidence in the direction of future changes in the frequency, duration or intensity of storms affecting the UK.

### Sea Level

18.226 Sea level rise has been scoped out of the assessment due to the distance of the Application 4 site from the coast or tidal rivers.

## Embedded Mitigation (Outline Application 4)

### The Completed and Operational Development

18.227 **Table 18.49** sets out the embedded mitigation measures that address climate risks.

***Table 18.49**: Embedded Mitigation Table (Application 4)*

| Climate Hazard | Associated Hazard | Receptor Affected | Potential Impact | Embedded Mitigation |
|---|---|---|---|---|
| Precipitation<br><br>2050s projections for decreases in summer precipitation are -19% (drier)<br><br>2080s projections for decreases in summer | Changes in annual average | Infrastructure<br><br>Buildings<br><br>Public Realm | Damage to infrastructure, building and public realm components from increased run off.<br><br>Damage to electric car charging facilities and utilities infrastructure from flooding.<br><br>Existing drainage infrastructure overwhelmed leading to | A maintenance plan for the drainage system is provided to ensure proper operation of network and minimise chances of failure.<br><br>An assessment of sustainable drainage systems (SudS) and methods has been undertaken and included as part of the planning submission. The capture of rainwater and diversion into planting is part of the SuDS strategy. |

[55] Jenkins, G.J., Perry, M.C., and Prior, M.J. (2008). The climate of the United Kingdom and recent trends. Met Office Hadley Centre, Exeter, UK.

[56] Belcher, S., Slingo, J., Scaife, A., McCarthy, M., Saulter, A., McBeath, K., . . . Parry, S. (2014). The recent storms and floods in the UK. *Met Office* , 29

| Climate Hazard | Associated Hazard | Receptor Affected | Potential Impact | Embedded Mitigation |
|---|---|---|---|---|
| precipitation are -29.4% (drier)<br><br>2050s projections for increase of winter precipitation are +6.4% (wetter)<br><br>2080s projections for increase of winter precipitation are +12.7% (wetter) | Extreme precipitation events | Infrastructure<br><br>Buildings<br><br>Public Realm<br><br>End Users | surface water flooding and siltation.<br><br>Flooding (pluvial or fluvial) may lead footways being impassable and causing dangerous active travel conditions.<br><br>Flooding may cause damage to buildings, resulting from deterioration of materials and requiring increased maintenance.<br><br>Flooding may impact car and cycle parking, posing an access/egress risk to end users and could potentially damage to end users vehicles.<br><br>Flooding may occur in buildings, posing an access risk to end users.<br><br>Flooding may also cause damage to the public realm, resulting from deterioration of materials and resulting in increased maintenance requirements.<br><br>Extreme rainfall events may also lead to destabilisation of soils and earthworks<br><br>Damp buildings can lead to mould growth resulting in health issues for end users. | An exceedance flow route strategy has been produced to ensure water is being directed away from property during a flooding event.<br><br>The risk of flooding by the River has been assessed in a Flood Risk Assessment that is in Appendix 10.1. Dry safe egress zones for pedestrians and vehicles have been accommodated adjacent to development plots above the anticipated worse case scenario flood. The architects have acknowledged that certain plots will be floodable at Ground Floor level and the uses will respond to this in the parameter plans as a constraint.<br><br>The proposed flood strategy for ground floor level usages and FFL's is as follows:<br><br>▪ All vulnerable uses including commercial located above the design flood level.<br>▪ The only uses below the design flood level will be carparking, cycle parking and a temporary outdoor market use.<br>▪ Minimum FFL's being proposed for the Application 4 do not include the full 300mm allowance for freeboard above the design flood level.<br>▪ Flood resistance / resilience measures to be provided to minimum 600mm above estimated flood levels.<br>▪ Where residential lobbies are indicated below the design flood level they will be provided with alternative means of escape (above the design flood level).<br><br>It should be noted that safe access and egress is available for all of these plots in the event of a design flood.<br>Public realm hard and soft materials will be specified that are robust that are robust should areas be flooded and easily cleaned. |
| | Drought | Infrastructure | Prolonged dry periods may lead to drying out and cracking of earthworks and soils, | |

| Climate Hazard | Associated Hazard | Receptor Affected | Potential Impact | Embedded Mitigation |
|---|---|---|---|---|
| | | Public Realm<br><br>End Users | subsidence and greater amounts of dust.<br><br>Vegetation can become damaged and destabilised, posing a risk to infrastructure and end users.<br><br>Drought can reduce the ability of particular infrastructure, such as water utilities, to function correctly<br><br>Lower humidity can damage the wood, siding or paint in buildings.<br><br>Lower humidity can cause health problems for end users, such as catching a cold or infection. | A 40% allowance for climate change has been added to precipitation to inform the design.<br><br>The above is evidenced in the Flood Risk Assessment.<br><br>Materials have been implemented within the design to withstand heavy rainfall. Stable and robust material will be used that does not become loose or wash away during heavy rainfall.<br><br>Consultations have been held with both Manchester LLFA and United Utilities, the drainage statutory undertaker, to agree drainage strategy and also agree principles around safe access and egress during a flood event. |
| <u>Temperature</u><br><br>2050s projections for maximum summer temperature are 37.4°C.<br><br>2080s projections for maximum summer temperature are 41.8°C. | Extreme temperature events | Infrastructure<br><br>Buildings<br><br>Public Realm<br><br>End Users | Overheating of buildings and ancillary components, such as electricals.<br><br>Extreme cold events can cause slippery surfaces and deterioration of road surfaces (from freeze-thaw action), which poses a safety risk to end users.<br><br>Faster rate of deterioration of materials from increase in UV radiation (for example, brittleness and fading). | Heating will be provided to all areas to meet the requirements of the CIBSE Winter Design Temperature of -5°C and there is currently no requirement to provide cooling to the developments other than amenity spaces that shall be mechanically cooled in line with the CIBSE summertime design temperature of +29°C. All residential spaces will be naturally ventilated and an overheating study is being developed using CIBSE Design Summer Year 1 (DSY1) to ensure the spaces can be regulated in terms of overheating.<br><br>Materials have been implemented which can withstand:<br><br>• thermal expansion and contraction. Hard materials will be specified that are stable and resilient to thermal expansion. |
| 2050s projections for maximum winter temperature are 18.1°C.<br><br>2080s projections for maximum | Change in annual average | Buildings<br><br>Public Realm | Increase in thermal expansion of structure joints compromising structural integrity leading to increased maintenance. | |

| Climate Hazard | Associated Hazard | Receptor Affected | Potential Impact | Embedded Mitigation |
|---|---|---|---|---|
| winter temperature are 20.2°C. | | | Shrinking and cracking of soils; this reduces soil stability.<br><br>Increased risk of fire.<br><br>High temperatures may cause damage to footways and cycleways, including potential melting and deformation.<br><br>High temperatures can cause discomfort for end users, alongside impacting concentration and productivity in workspaces.<br><br>Vegetation in the public realm can dry out. | • extreme temperatures. Hard materials will be specified that are stable and resilient to extreme temperatures.<br><br>• UV degradation. Hard materials and furniture will be specified that are stable and resilient to UV degradation.<br><br>For earthworks, embankments and cuttings, the topsoil specification will be based on BS 3882 and therefore will be suitable for planting.<br><br>Natural shading will be utilised as trees will be placed in the sunny areas that provide natural shade to buildings and the end users.<br><br>All materials will be chosen on durability and robustness to the extremes of temperature.<br><br>The public realm design includes a strong green infrastructure concept with significant areas of new planting and trees. |
| <u>Wind</u><br><br>Seasonal changes at individual locations across the UK for wind speeds lie within the range of –15% to +10%. | Gales and extreme wind events | Infrastructure<br><br>Buildings<br><br>Public Realm<br><br>End Users | Damage from high winds and rain infiltration into buildings and infrastructure components.<br><br>Lightning strikes causing fires and damage to assets and pose health and safety risks to end users.<br><br>High winds and storms can affect the stability of above-ground infrastructure and hasten material degradation due to wind-driven rain infiltration. | All surface materials, furniture and lighting will be well anchored to the ground.<br><br>All soft and hard materials relating to the public realm will be specified that are stable and resilient to wind and climate change.<br><br>The strategic placement of large trees will help mitigate against high winds. |
| | Storms (snow, lightening, hail) | Infrastructure | | |

| Climate Hazard | Associated Hazard | Receptor Affected | Potential Impact | Embedded Mitigation |
|---|---|---|---|---|
| | | Buildings<br><br>Public Realm<br><br>End Users | Windborne dust and debris causing clogging drainage and requiring clearing.<br><br>Road and footway users may also be sensitive to high winds and associated infrastructure such as signage or signals could also be damaged by high winds or lightning strike.<br><br>Vegetation can become damaged and destabilised. | |

## Assessment of Likely Significant Effects (Outline Application 4)

### The Completed and Operational Development

18.228 **Table 18.50** assesses the effects of potential climate impacts on the Application 4 receptors.

***Table 18.50**: Assessment of effects during the operation phase of Application 4*

| Receptor | Potential Impact | Likelihood | Consequence | Significance |
|---|---|---|---|---|
| **Buildings** | Flooding of buildings. This may cause damage, resulting from deterioration of materials and resulting in increased maintenance requirements. | Medium | Minor adverse | Not significant |
| | Damage to structure or components from increased run off. | Medium | Negligible | Not significant |
| | Damp buildings can lead to mould growth. | Medium | Moderate adverse | **Significant** |
| | Vegetation can become damaged and destabilised, posing a risk to buildings. | Medium | Moderate adverse | **Significant** |
| | Prolonged dry periods may lead to subsidence. | High | Large adverse | **Significant** |
| | Overheating of buildings. | High | Minor adverse | **Significant** |
| | Faster rate of deterioration of materials from increase in UV radiation (for example, brittleness and fading). | High | Negligible | Not significant |

| Receptor | Potential Impact | Likelihood | Consequence | Significance |
|---|---|---|---|---|
| | Increase in thermal expansion of structure joints compromising structural integrity leading to increased maintenance. | High | Negligible | Not significant |
| | Increased risk of fire. | Medium | Large adverse | **Significant** |
| | Damage from high winds and rain infiltration into buildings. | Medium | Minor adverse | Not significant |
| | Lightning strikes causing fires and damage to assets. | Medium | Large adverse | **Significant** |
| | Lower humidity can damage the wood, siding or paint in buildings. | Low | Minor adverse | Not significant |
| | Prolonged dry periods may lead to drying out and cracking of earthworks and soils, subsidence, and greater amounts of dust. | High | Minor adverse | **Significant** |
| **Infrastructure** | Damage to infrastructure from increased run off. | Medium | Negligible | Not significant |
| | Flooding may cause damage to car parking, resulting from deterioration of materials and requiring increased maintenance. | Medium | Minor adverse | Not significant |
| | Damage to electric car charging facilities and utilities infrastructure from flooding. | Medium | Minor adverse | Not significant |
| | Existing drainage infrastructure overwhelmed leading to surface water flooding and siltation. | Medium | Negligible | Not significant |
| | Vegetation can become damaged and destabilised, posing a risk to infrastructure. | Medium | Moderate adverse | **Significant** |
| | Drought can reduce the ability of infrastructure, such as water utilities, to function correctly. | Medium | Moderate adverse | **Significant** |
| | Overheating of ancillary components, such as electricals. | High | Moderate adverse | **Significant** |
| | Extreme cold events can cause slippery surfaces and deterioration of road surfaces. | Low | Minor adverse | Not significant |
| | Faster rate of deterioration of materials from increase in UV radiation (for example, brittleness and fading). | High | Negligible | Not significant |
| | Increased risk of fire. | Medium | Large adverse | **Significant** |
| | Damage from high winds and rain infiltration into infrastructure components. | Medium | Moderate adverse | **Significant** |
| | Lightning strikes causing fires and damage to assets. | Medium | Large adverse | **Significant** |

| Receptor | Potential Impact | Likelihood | Consequence | Significance |
|---|---|---|---|---|
| | High winds and storms can affect the stability of above-ground infrastructure and hasten material degradation due to wind-driven rain infiltration. | High | Moderate adverse | **Significant** |
| | Windborne dust and debris causing clogging drainage and requiring clearing. | High | Negligible | Not significant |
| | Infrastructure such as signage or signals could also be damaged by high winds or lightning strike. | High | Minor adverse | **Significant** |
| **Public realm** | Flooding of the public realm. This may cause damage, resulting from deterioration of materials and resulting in increased maintenance requirements. | Medium | Negligible | Not significant |
| | Damage to components from increased run off. | Medium | Negligible | Not significant |
| | Flooding (pluvial or fluvial) may lead footways being impassable and causing dangerous active travel conditions. | Medium | Negligible | Not significant |
| | Extreme rainfall events may lead to destabilisation of soils and earthworks | Medium | Negligible | Not significant |
| | Vegetation can become damaged and destabilised. | Medium | Moderate adverse | **Significant** |
| | Prolonged dry periods may lead to drying out and cracking of earthworks and soils, subsidence, and greater amounts of dust. | High | Large adverse | **Significant** |
| | Shrinking and cracking of soils; this reduces soil stability. | High | Minor adverse | **Significant** |
| | Increased risk of fire. | Medium | Large adverse | **Significant** |
| | High temperatures may cause damage to footways and cycleways, including potential melting and deformation. | High | Negligible | Not significant |
| | Vegetation in the public realm can dry out and die. | High | Moderate adverse | **Significant** |
| | Lightning strikes causing fires and damage to the public realm | High | Large adverse | **Significant** |
| | Roadway and Cycleway Infrastructure such as signage or signals could also be damaged by high winds or lightning strike. | High | Minor adverse | **Significant** |
| **End Users** | Damp buildings can lead to mould growth resulting in health issues for end users | Medium | Moderate adverse | **Significant** |
| | Flooding may impact car and cycle parking, posing an access/egress risk to end users and potential damage to end user's vehicles. | Medium | Moderate adverse | **Significant** |

| Receptor | Potential Impact | Likelihood | Consequence | Significance |
|---|---|---|---|---|
| | Flooding may occur in buildings, posing an access risk to end users. | Medium | Moderate adverse | **Significant** |
| | Vegetation can become damaged and destabilised, posing a risk to end users. | Medium | Moderate adverse | **Significant** |
| | Extreme cold events can cause slippery surfaces and deterioration of road surfaces (from freeze-thaw action), which poses a safety risk to end users | Low | Minor adverse | Not significant |
| | High temperatures can cause discomfort for end users, alongside impacting concentration and productivity in workspaces. | High | Minor adverse | **Significant** |
| | Increased risk of fire. | Medium | Large adverse | **Significant** |
| | Lightning strikes causing fires and damage to assets and pose health and safety risks to end users. | High | Large adverse | **Significant** |
| | Road and footway users may also be sensitive to high winds. | High | Minor adverse | **Significant** |
| | Lower humidity can cause health problems for end users, such as catching a cold or infection. | Low | Moderate adverse | **Significant** |

## Additional Mitigation / Enhancement Measures (Outline Application 4)

### The Completed and Operational Development

18.229 Following the identification of the embedded mitigation measures in **Table 18.49** and the assessment of significance in **Table 18.50,** the following additional mitigation measures are deemed necessary. These will be considered in future detailed planning applications:

#### Precipitation

18.230 The following should be considered in relation to potential impacts of precipitation on the project, to reduce potential significant effects:

- Ensure subsidence risks at detailed design stage take account of changes in precipitation (summer decrease and winter increase) which may impact ground stability.
- Following dry periods, buildings and the grounds should be inspected for cracking and subsidence as part of a site operational maintenance programme, as part of the scheduled maintenance and inspection programme.
- Inclusion of measures to ensure that slope erosion due to heavy rainfall will be sufficiently captured by channels and discharge to public sewer.

- Implementation of drought management measures to allow infrastructure to function correctly, such as water efficiency measures (low flow taps, greywater recycling and so forth).
- Implementation of irrigation and a maintenance plan during dry periods to ensure that planting does not die.
- Ensure that the design is sufficient to prevent flooding of the car park taking into account the climate projections for precipitation (12.7% increase in Winter precipitation). The Scheme design must be sufficient to ensure that the potential for flooding which impedes access of the car park to end users, their vehicles and emergency services is mitigated against.
- Ensure that the design is sufficient to prevent flooding of the residential lobbies taking into account the climate projections for precipitation (12.7% increase in Winter precipitation). The Scheme design must be sufficient to ensure that the potential for flooding which impedes access of the lobbies to end users is mitigated against.

### Temperature

18.231 The following should be considered in future detailed planning applications in relation to potential impacts of temperature on the project, to reduce potential significant effects:

- Ensuring that natural ventilation in residential spaces is sufficient to regulate overheating for future climate projections and considering more frequent and intense heatwaves, or provision of a cooling system will need to be included in the design. Maximum Summer temperatures are expected to reach 37.4°C by the 2050s, and 41.8°C in the 2080s, with heatwave events occurring 4.6 times per year; currently there are 1.1 events per year.
- Electrical equipment is located in shaded areas or provided with cooling to minimise risk of overheating.
- Development and implementation of fire management and evacuation plans.
- Implementation of irrigation and a maintenance plan during extreme temperatures to ensure that planting does not die.

### Wind

18.232 The following should be considered in future detailed planning applications in relation to potential impacts of wind on the project, to reduce potential significant effects:

- The consideration of wind forces and rain infiltration in the durability of design and material choices.
- Wind loading/action impacts on buildings, infrastructure and public realm elements.
- Lightning protection measures are included at detailed design.
- Maintenance plans following storm events which include assessing the condition of street furniture and the condition of the public realm and vegetation. Maintenance plans to remove debris from public realm areas and drainage.
- The inclusion of wind tunnel prevention measures to ensure wind tunnels will not exist or impact on public realm spaces.

- The operational Site Maintenance and Inspection programme should include site debris clearance and drainage clearance.
- Implementation of a landscape management plan to ensure planting is resilient to higher wind speeds. The management plan will include maintenance measures to ensure the health of the planting and reduce the risk of destabilised vegetation posing a risk to buildings, infrastructure, the public realm and end users.

### Humidity

18.233 The following should be considered in future detailed planning applications in relation to potential impacts of humidity on the project, in order to reduce potential significant effects:

- The consideration of (de-)humidification systems incorporated into buildings to sufficiently humidify or de-humidify buildings.
- The consideration of (de-)humidification systems designed into the heating and cooling systems.
- The consideration of particular sealant methods implemented for areas where high humidity may cause mould growth issues.
- A maintenance plan to be put in place to ensure humidity is appropriately regulated and damage resolved.

## Likely Residual Effects of the Development and their Significance (Outline Application 4)

18.234 **Table 18.51** summarises the potential effects, mitigation, and subsequent residual effects. This residual risk assessment is made on the basis that the additional mitigation proposed is fully implemented.

***Table 18.51****: Residual Effects Summary (Application 4)*

| Receptor | Potential effect | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Buildings End Users*** | Damp buildings can lead to mould growth. | -The consideration of (de-)humidification systems incorporated into buildings to sufficiently humidify or de-humidify buildings.<br>-The consideration of (de-)humidification systems designed into the heating and cooling systems.<br>-The consideration of particular sealant methods implemented for areas where high humidity may cause mould growth issues<br>-A maintenance plan to be put in place to ensure humidity is appropriately regulated and damage resolved. | **Not significant** |

| Receptor | Potential effect | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Buildings Public Realm*** | Prolonged dry periods may lead to subsidence. This can be caused by the drying out and cracking of earthworks and soils. | -Following dry periods, buildings and the grounds should be inspected for cracking and subsidence, as part of the scheduled maintenance and inspection programme.<br>-Ensure subsidence risks at detailed design take account of changes in precipitation (summer decrease and winter increase) which may impact ground stability. | **Not significant** |
| ***Buildings Infrastructure*** | Overheating of buildings and ancillary components, such as electricals. | - Ensuring that natural ventilation in residential spaces is sufficient to regulate overheating for future climate projection and considering more frequent and intense heatwaves, or provision of a cooling system will need to be included in the design. Maximum Summer temperatures are expected to reach 37.4°C by the 2050s, and 41.8°C in the 2080s, with heatwave events occurring 4.6 times per year; currently there are 1.1 events per year.<br>-Electrical equipment is located in shaded areas or provided with cooling to minimise risk of overheating. | **Not significant** |
| ***Buildings Infrastructure Public Realm End Users*** | Increased risk of fire. | -Development and implementation of fire management and evacuation plans. | **Not significant** |
| ***Buildings Infrastructure Public Realm*** | Lightning strikes causing fires and damage to assets, the public realm, and pose health and safety risks to end users. | -Development and implementation of fire management and evacuation plans.<br>-Lightning protection measures are included at detailed design. | **Not significant** |
| ***Infrastructure*** | Drought can reduce the ability of infrastructure, such as water utilities, to function correctly | -Implementation of drought management measures to allow infrastructure to function correctly. | **Not significant** |
| ***Infrastructure*** | Damage from high winds and rain infiltration into infrastructure components. | -The consideration of wind forces and rain infiltration in the durability of design and material choices.<br>-Wind loading/action impacts on buildings and public realm elements.<br>-Inclusion of measures to ensure that slope erosion due to heavy rainfall will be sufficiently captured by channels and discharge to public sewer. | **Not significant** |

| Receptor | Potential effect | Mitigation | Residual Effect including significance |
|---|---|---|---|
| | | - The operational Site Maintenance and Inspection programme should include site debris clearance and drainage clearance. | |
| ***Infrastructure*** | High winds and storms can affect the stability of above-ground infrastructure and hasten material degradation due to wind-driven rain infiltration. | -The consideration of wind forces and rain infiltration in the durability of design and material choices.<br>-Wind loading/action impacts on buildings and public realm elements. | **Not significant** |
| ***Buildings***<br>***Infrastructure***<br>***Public Realm***<br>***End Users*** | Vegetation can become damaged and destabilised. | - Implementation of a landscape management plan to ensure planting is resilient to higher wind speeds. The management plan will include maintenance measures to ensure the health of the planting and reduce the risk of destabilised vegetation posing a risk to buildings, infrastructure, the public realm and end users.<br>-Maintenance plans following storm events which include assessing the condition of street furniture and the condition of the public realm and vegetation. Maintenance plans to remove debris from public realm areas and drainage. | **Not significant** |
| ***Infrastructure***<br>***Public Realm*** | Infrastructure such as signage or signals, or cycleway infrastructure, could also be damaged by high winds or lightning strike. | -Maintenance plans following storm events which include assessing the condition of street furniture and the condition of the public realm and vegetation. Maintenance plans to remove debris from public realm areas and drainage.<br>- Wind loading/action impacts on buildings and public realm elements. | **Not significant** |
| ***Public Realm*** | Vegetation in the public realm can dry out and die. | - Implementation of irrigation and a maintenance plan during dry / extreme temperature periods to ensure that planting does not die. | **Not significant** |
| ***End Users*** | Flooding may impact car and cycle parking, posing an access/egress risk to end users and potential damage to end users vehicles. | - Ensure that the design is sufficient to prevent flooding of the car park taking into account the climate projections for precipitation (12.7% increase in Winter precipitation). The Scheme design must be sufficient to ensure that the potential for flooding which impedes access of the car park | **Not significant** |

| Receptor | Potential effect | Mitigation | Residual Effect including significance |
|---|---|---|---|
| | | to end users, their vehicles and emergency services is mitigated against. | |
| ***End Users*** | Flooding may occur in buildings, posing an access risk to end users. | - Ensure that the design is sufficient to prevent flooding of the residential lobbies taking into account the climate projections for precipitation (12.7% increase in Winter precipitation). The Scheme design must be sufficient to ensure that the potential flooding which impedes access of the lobbies to end users is mitigated against. | **Not significant** |
| ***End Users*** | Road and footway users may be sensitive to high winds | - The inclusion of wind tunnel prevention measures to ensure wind tunnels will not exist or impact on public realm spaces. | **Not significant** |
| ***End Users*** | Lower humidity can cause health problems for end users, such as catching a cold or infection. | -The consideration of (de-)humidification systems incorporated into buildings to sufficiently humidify or de-humidify buildings.<br>-The consideration of (de-)humidification systems designed into the heating and cooling systems | **Not significant** |
| ***End Users*** | High temperatures can cause discomfort for end users, alongside impacting concentration and productivity in workspaces. | - Ensuring that natural ventilation in residential spaces is sufficient to regulate overheating for future climate projection and considering more frequent and intense heatwaves, or provision of a cooling system will need to be included in the design. Maximum Summer temperatures are expected to reach 37.4°C by the 2050s, and 41.8°C in the 2080s, with heatwave events occurring 4.6 times per year; currently there are 1.1 events per year. | **Not significant** |

## Conclusions (Outline Application 4)

18.235 This assessment established the existing and future baseline climate in the Application 4 location. The Application 4 site is in the Met Office Regional climate profile of North West England[16], with the nearest weather station being Rochdale, located approximately 15km to the northeast. Application 4's location is projected to become 29.4% drier in Summer and 12.7% wetter in Winter by the 2080s. Snow and Ice events also occur in the area, including as recently as December 2022. The Application 4 site location is projected to become 4.4°C warmer in Summer and 3°C warmer in Winter by the 2080s. The projected number of present-day heatwave events per year for the Application 4 Development is 1.7 in the 2030s, 2.6 in the 2050s and 4.6 in the 2080s. The risk of road melt in days

per year for the area of the Application 4 site is 14.3 in the 2030s, 21.3 in the 2050s and 45.9 in the 2080s. For the area of the Application 4 site, the projected heat stress in days per year are 0.2 in the 2030s, 0.5 in the 2050s and 3.7 in the 2080s. Projections for relative humidity anticipate an average decrease of approximately 1.2% in the 2030s, and a decrease of 2% by the 2060s. The region also experiences strong winds due to its proximity to the Atlantic, such as in February 2022. The proposed Application 4 development is not expected to be affected by sea level rise.

18.236 The assessment identified 16 significant effects across the four receptors: buildings, public realm, infrastructure, and end users. This included, for example, prolonged dry periods leading to subsidence, overheating of buildings, increased risk of fire, and windborne dust and debris clogging drainage and requiring clearing. Additional mitigation measures have been proposed to reduce these risks, such as inspecting buildings and the grounds for cracking and subsidence following dry periods, ensuring that natural ventilation in residential spaces is sufficient to regulate overheating during heatwaves, confirming fire management and evacuation plans, and putting maintenance plans in place following storm events to remove debris from public realm areas and drainage. As a result, the residual risks were identified as not significant.

## Assessment of Cumulative Effects with Identified Committed Schemes (Outline Application 4)

18.237 The resilience assessment looks at potential impacts of changes in climate on the Proposed Application 4 Development, rather than impacts of the Proposed Application 4 Development on climate or on other developments. Cumulative effects have been assessed in each topic area which will, where relevant, incorporate climate impacts.

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Outline Application 4)

18.238 The approach to the climate resilience assessment differs from other topics in that it looks at the potential impacts of environmental (climate) change on Application 4, rather than impacts of Application 4 on the environment: the receptor for the resilience assessment in Application 4. Therefore, no assessment of cumulative effects is undertaken, as there are no receptors in common with other assessments.

18.239 The SRF requires a design to consider sustainability, of which climate adaptation contributes to and has been undertaken by this assessment. This assessment ensures that Application 4 aligns with Policy EN8, the Manchester Strategy 2016-2025, and the core objectives of the SRF.

18.240 However, an assessment of In-Combination Climate Impacts (ICCI) should be assessed. ICCI is the potential for climate change to exacerbate or ameliorate the potential effects identified within each of the environmental topics. As such, potential ICCI with the environmental topics assessed within this EIA have been outlined in their respective chapters by topic specialists.

# NT02-NT04 (Full Application 5)

## Baseline Conditions (Full Application 5)

18.241 The baseline conditions for the Application 5 site are as reported above for the Application 4 site.

## Embedded Mitigation (Full Application 5)

### The Completed and Operational Development

18.242 **Table 18.52** sets out the embedded mitigation measures that address climate risks.

***Table 18.52**: Embedded Mitigation Table (Application 5)*

| Climate Hazard | Associated Hazard | Receptor Affected | Potential Impact | Embedded Mitigation |
|---|---|---|---|---|
| <u>Precipitation</u><br><br>2050s projections for decreases in summer precipitation are -19% (drier)<br><br>2080s projections for decreases in summer precipitation are -29.4% (drier)<br><br>2050s projections for increase of winter precipitation are +6.4% (wetter)<br><br>2080s projections for increase of winter precipitation are +12.7% (wetter) | Changes in annual average | Infrastructure<br><br>Buildings<br><br>Public Realm | Damage to infrastructure, building and public realm components from increased run off.<br><br>Existing drainage infrastructure overwhelmed leading to surface water flooding and siltation.<br><br>Flooding (pluvial or fluvial) may lead footways being impassable and causing dangerous active travel conditions.<br><br>Flooding may cause damage to buildings, resulting from deterioration of materials and requiring increased maintenance.<br><br>Flooding may impact commercial spaces, posing an access/financial risk to end users.<br><br>Flooding may also cause damage to the public realm, | An assessment of sustainable drainage systems (SudS) and methods has been undertaken and included as part of the planning submission. The capture of rainwater and diversion into planting is part of the SuDS strategy.<br><br>An exceedance flow route strategy has been produced to ensure water is being directed away from property during a flooding event.<br><br>A maintenance plan for the drainage system is provided to ensure proper operation of network and minimise chances of failure.<br><br>The risk of flooding by the river has been assessed in a Flood Risk Assessment that is in Appendix 10.1. Dry safe egress zones for pedestrians and vehicles have been accommodated adjacent to development plots above the anticipated worst-case scenario flood. The architects have acknowledged that certain plots will be floodable at Ground Floor level and the uses will respond to this in Application 5's parameter plans as a constraint.<br><br><u>Plot NT02:</u><br><br>• The FFL for plot NT02 is set above the design flood level.<br>• NT02 design Flood Level is 30.87m AOD.<br>• The finished floor level (FFL) of NT02 is 31.55m AOD which is more than 300mm above the design flood level |
| | Extreme precipitation events | Infrastructure<br><br>Buildings<br><br>Public Realm<br><br>End Users | | |

| Climate Hazard | Associated Hazard | Receptor Affected | Potential Impact | Embedded Mitigation |
|---|---|---|---|---|
| | | | resulting from deterioration of materials and resulting in increased maintenance requirements.<br><br>Dantzic Street may not be accessible during a flood event. A small number of parking spaces for visitors and non-visitors on the street will be managed and operated by Manchester City Council, in accordance with their procedures.<br><br>Extreme rainfall events may also lead to destabilisation of soils and earthworks<br><br>Damp buildings can lead to mould growth resulting in health issues for end users.<br><br>Vegetation can become damaged and destabilised, posing a risk to buildings and end users. | and is also above the 1000-year flood level which is 31.32m AOD.<br>• Flood resistance or resilience measures are therefore not considered to be required for NT02.<br><br><u>Plot NT03:</u><br><br>• The FFL for plot NT03 is split but all FFL's are set above the design flood level including an allowance for climate change.<br>• The FFL for the residential access of NT03 is 32.35m AOD and there are commercial FFL's set at 31.84m and 31.72m AOD.<br>• The design flood Level for NT03 is 31.43m AOD. The FFL of NT03 is therefore 290mm above the worst-case design flood level including and allowance for climate change and is also above the 1000-year flood level for NT03 which is 31.79m AOD.<br>• Flood resistance is not required for this plot.<br>• Flood resilience measures should be considered up to a minimum of the 1000-year flood level which is 31.79m AOD.<br><br><u>Plot NT04:</u><br><br>Plot NT04 is the only plot with a vulnerable (commercial) use across the masterplan with an FFL which is set below the design flood level.<br><br>• The design flood level including an allowance for climate change at Node 10 is 31.78m AOD.<br>• The FFL for the residential access of NT04 is 32.23m AOD which is more than 300mm above the design flood level and is also above the 1000-year flood level which is 31.79m AOD.<br>• The lowest FFL for plot NT04 is shown to be 30.955m AOD – this is associated with the less vulnerable commercial usages along Dantzic Street. |
| | Drought | Infrastructure<br><br>Public Realm<br><br>End Users | Prolonged dry periods may lead to drying out and cracking of earthworks and soils, subsidence and greater amounts of dust.<br><br>Vegetation can become damaged and destabilised, posing a risk to infrastructure and end users.<br><br>Drought can reduce the ability of particular infrastructure, such as water utilities, to function correctly | |

| Climate Hazard | Associated Hazard | Receptor Affected | Potential Impact | Embedded Mitigation |
|---|---|---|---|---|
| | | | Lower humidity can damage the wood, siding or paint in buildings.<br><br>Lower humidity can cause health problems for end users, such as catching a cold or infection. | • Safe access and egress for the commercial plots will be provided via a ramped corridor to the rear of the units which emerges along Dalton Street at a level of approximately 31.70m so roughly 270mm above design flood level.<br>• Safe access and egress for the residential parking will be provided via a ramped corridor to the rear of the units which emerges along Dalton Street at a level of approximately 31.70m so roughly 270mm above design flood level.<br>• Flood doors or retractable flood barriers will be provided at door thresholds to the design flood level (1 in 100 year flood level + climate change allowance).<br>• Flood resilience measures for the commercial use, such as plug socket heights, will be provided to the 1 in 1000 year flood level.<br>With respect to mitigation for the commercial usage with floor level below design flood level NT04, the proposals are that flood resistance in the form of an impermeable concrete upstand will be provided to 610mm above FFL which is 31.565m AOD, and that resilience measures up to 300mm above this level which is 31.865m AOD.<br><br>Public realm hard and soft materials have been specified that are robust should areas be flooded and easily cleaned.<br><br>Planting species and trees will be resilient to climate and precipitation change, identified in the Planting Strategy.<br><br>A 40% allowance for climate change has been added to precipitation to inform the design.<br><br>The above is evidenced in the Flood Risk Assessment.<br><br>Materials have been implemented within the design to withstand heavy rainfall. Stable and robust material will be used that does not become loose or wash away during heavy rainfall. |

| Climate Hazard | Associated Hazard | Receptor Affected | Potential Impact | Embedded Mitigation |
|---|---|---|---|---|
| | | | | Consultations are being held with both Manchester LLFA and United Utilities, the drainage statutory undertaker, to agree drainage strategy and also agree principles around safe access and egress during a flood event.<br><br>The buildings are not at risk from subsidence as they will have piled foundations with the piles socketed into the underlying bedrock.<br><br>Slope stabilisation in the form of geocells, stabilisation matts or similar will be included within soft landscape areas along Travis Square, as here the proposed landform slopes.<br><br>All rainwater run off (and therefore slope erosion) from public realm areas adjacent to sloped areas will be captured by a system of permeable paving, rain gardens and drainage channels/gullys which will ultimately discharge into the public sewer.<br><br>Humidity will be uncontrolled but user dependent in terms of occupancy pattern and operation. Apartments will be provided with electric space heaters with time and thermostatic control. Openings within the façade will be user controlled through manual operation of ventilation panels. MVHR systems will provide the occupant with manual boost facility above background mechanical trickle ventilation. All of these measures will mitigate against high humidity. |
| <u>Temperature</u><br><br>2050s projections for maximum summer temperature are 37.4°C.<br><br>2080s projections for maximum summer temperature are 41.8°C. | Extreme temperature events | Infrastructure<br><br>Buildings<br><br>Public Realm<br><br>End Users | Overheating of buildings and ancillary components, such as electricals.<br><br>Extreme cold events can cause slippery surfaces and deterioration of road surfaces (from freeze-thaw action), which poses a safety risk to end users.<br><br>Faster rate of deterioration of materials from increase in UV | Heating will be provided to all areas to meet the requirements of the CIBSE Winter Design Temperature of -5°C and there is currently no requirement to provide cooling to the developments other than amenity spaces that shall be mechanically cooled in line with the CIBSE summertime design temperature of +29°C. All residential spaces will be naturally ventilated, and an overheating study is being developed using CIBSE Design Summer Year 1 (DSY1) to ensure the spaces can be regulated in terms of overheating. |

| Climate Hazard | Associated Hazard | Receptor Affected | Potential Impact | Embedded Mitigation |
|---|---|---|---|---|
| 2050s projections for maximum winter temperature are 18.1°C.<br><br>2080s projections for maximum winter temperature are 20.2°C. | Change in annual average | Buildings<br><br>Public Realm | radiation (for example, brittleness and fading).<br><br>Increase in thermal expansion of structure joints compromising structural integrity leading to increased maintenance.<br><br>Shrinking and cracking of soils; this reduces soil stability.<br><br>Increased risk of fire.<br><br>High temperatures may cause damage to footways and cycleways, including potential melting and deformation.<br><br>High temperatures can cause discomfort for end users.<br><br>Vegetation in the public realm can dry out. | The building facades will be maximised to provide passive ventilation and cooling with natural openings to be a minimum of 5% of floor area within habitable rooms, with balcony doors and perforated ventilation panels with 90° manual inward opening doors.<br><br>Fixed equipment within apartments is typically located in utility cupboard enclosures, away from direct sunlight, ventilated as necessary. General building services / plant equipment is typically located in risers and basement areas, away from direct sunlight, ventilated as necessary. Active cooling may be provided to dedicated equipment rooms with maximum operating temperatures (e.g., main comms rooms) subject to specialist requirements and further detailed design.<br><br>Natural shading will be utilised as trees will be placed in the sunny areas that provide natural shade to buildings and the end users.<br><br>Materials have been implemented which can withstand:<br><br>• thermal expansion and contraction. Hard materials will be specified that are stable and resilient to thermal expansion.<br><br>• extreme temperatures. Hard materials will be specified that are stable and resilient to extreme temperatures.<br><br>• UV degradation. Hard materials and furniture will be specified that are stable and resilient to UV degradation.<br><br>For earthworks, embankments and cuttings, the topsoil specification will be based on BS 3882 and therefore will be suitable for planting. |

| Climate Hazard | Associated Hazard | Receptor Affected | Potential Impact | Embedded Mitigation |
|---|---|---|---|---|
| | | | | The buildings are not at risk from subsidence as they will have piled foundations with the piles socketed into the underlying bedrock.<br><br>Slope stabilisation in the form of geocells, stabilisation matts or similar will be included within soft landscape areas along Travis Square, as here the proposed landform slopes.<br><br>All materials will be chosen on durability and robustness to the extremes of temperature.<br><br>The public realm design includes a strong green infrastructure concept with significant areas of new planting and trees.<br><br>Hoare Lea are appointed as project fire engineer; they have consulted on the emerging design and their guidance and recommendations have shaped the proposals. Fire management and evacuation plans are in development. |
| <u>Wind</u><br><br>Seasonal changes at individual locations across the UK for wind speeds lie within the range of –15% to +10%. | Gales and extreme wind events | Infrastructure<br><br>Buildings<br><br>Public Realm<br><br>End Users | Damage from high winds and rain infiltration into buildings and infrastructure components.<br><br>Lightning strikes causing fires and damage to assets and pose health and safety risks to end users.<br><br>High winds and storms can affect the stability of above-ground infrastructure and hasten material degradation due to wind-driven rain infiltration.<br><br>Windborne dust and debris causing clogging drainage and requiring clearing. | All surface materials, furniture and lighting will be well anchored to the ground.<br><br>Design and materials have been selected for their durability and suitability for the given weather conditions, proposals have been developed with input from WSP façade engineers.<br><br>Wind studies impacting pedestrian safety and comfort have been undertaken by WSP, the results so far have shaped the design. Further wind tunnel testing is ongoing. RoC Consulting will also be undertaking studies of wind impact upon the structural design to ensure stability.<br><br>Vertical structures and perimeter screens are included within the podium courtyards to mitigate the impact of winds on safety and comfort. |
| | Storms (snow, lightening, hail) | Infrastructure<br><br>Buildings | | |

| Climate Hazard | Associated Hazard | Receptor Affected | Potential Impact | Embedded Mitigation |
|---|---|---|---|---|
| | | Public Realm<br><br>End Users | Road and footway users may also be sensitive to high winds and associated infrastructure such as signage or signals could also be damaged by high winds or lightning strike.<br><br>Vegetation can become damaged and destabilised, posing a risk to infrastructure and end users. | The buildings are not at risk from subsidence as they will have piled foundations with the piles socketed into the underlying bedrock.<br><br>Slope stabilisation in the form of geocells, stabilisation matts or similar will be included within soft landscape areas along Travis Square, as here the proposed landform slopes.<br><br>All soft and hard materials relating to the public realm will be specified that are stable and resilient to wind and climate change.<br><br>The strategic placement of large trees will help mitigate against high winds.<br><br>A lightning protection system (LPS) complying with BS EN 62305 shall be provided to each building. The systems shall comprise of air termination networks, down conductors, earth terminations and bonds to equipment etc necessary to complete the system. All metallic roof terminals for ventilation, plant, handrails, generator, lift rails, man safe system, metal drainage etc shall be bonded to the system.<br><br>A landscape access and maintenance strategy will be provided at Stage 4b. |

## Assessment of Likely Significant Effects (Full Application 5)

### The Completed and Operational Development

18.243 **Table 18.53** assesses the effects of potential climate impacts on the proposed Application 5 development's receptors.

***Table 18.53**: Assessment of effects during the operation phase of the proposed Application 5 development*

| Receptor | Potential Impact | Likelihood | Consequence | Significance |
|---|---|---|---|---|
| **Buildings** | Flooding of buildings. This may cause damage, resulting from deterioration of materials and | Medium | Negligible | Not significant |

| Receptor | Potential Impact | Likelihood | Consequence | Significance |
|---|---|---|---|---|
| | resulting in increased maintenance requirements. | | | |
| | Damage to structure or components from increased run off. | Medium | Negligible | Not significant |
| | Damp buildings can lead to mould growth. | Medium | Moderate adverse | Not significant |
| | Vegetation can become damaged and destabilised, posing a risk to buildings. | Medium | Negligible | **Significant** |
| | Prolonged dry periods may lead to subsidence. | High | Minor adverse | Not significant |
| | Overheating of buildings. | High | Negligible | **Significant** |
| | Faster rate of deterioration of materials from increase in UV radiation (for example, brittleness and fading). | High | Negligible | Not significant |
| | Increase in thermal expansion of structure joints compromising structural integrity leading to increased maintenance. | High | Negligible | Not significant |
| | Increased risk of fire. | Medium | Minor adverse | Not significant |
| | Damage from high winds and rain infiltration into buildings. | Medium | Negligible | Not significant |
| | Lightning strikes causing fires and damage to assets. | Medium | Minor adverse | Not significant |
| | Lower humidity can damage the wood, siding or paint in buildings. | Low | | Not significant |
| | Prolonged dry periods may lead to drying out and cracking of earthworks and soils, subsidence, and greater amounts of dust. | High | Minor adverse | **Significant** |
| **Infrastructure** | Damage to infrastructure from increased run off. | Medium | Negligible | Not significant |
| | Existing drainage infrastructure overwhelmed leading to surface water flooding and siltation. | Medium | Negligible | Not significant |
| | Vegetation can become damaged and destabilised from drought or wind, posing a risk to infrastructure. | Medium | Moderate adverse | **Significant** |
| | Drought can reduce the ability of infrastructure, such as water utilities, to function correctly. | Medium | Moderate adverse | **Significant** |

| Receptor | Potential Impact | Likelihood | Consequence | Significance |
|---|---|---|---|---|
| | Overheating of ancillary components, such as electricals. | High | Negligible | Not significant |
| | Extreme cold events can cause slippery surfaces and deterioration of road surfaces. | Low | Minor adverse | Not significant |
| | Faster rate of deterioration of materials from increase in UV radiation (for example, brittleness and fading). | High | Negligible | Not significant |
| | Increased risk of fire. | Medium | Negligible | Not significant |
| | Damage from high winds and rain infiltration into infrastructure components. | Medium | Moderate adverse | **Significant** |
| | Lightning strikes causing fires and damage to assets. | Medium | Negligible | Not significant |
| | High winds and storms can affect the stability of above-ground infrastructure and hasten material degradation due to wind-driven rain infiltration. | High | Moderate adverse | **Significant** |
| | Windborne dust and debris causing clogging drainage and requiring clearing. | High | Negligible | Not significant |
| | Infrastructure such as signage or signals could also be damaged by high winds or lightning strike. | High | Negligible | Not significant |
| **Public realm** | Flooding of the public realm. This may cause damage, resulting from deterioration of materials and resulting in increased maintenance requirements. | Medium | Negligible | Not significant |
| | Damage to components from increased run off. | Medium | Negligible | Not significant |
| | Flooding (pluvial or fluvial) may lead footways being impassable and causing dangerous active travel conditions. | Medium | Negligible | Not significant |
| | Extreme rainfall events may lead to destabilisation of soils and earthworks | Medium | Negligible | Not significant |
| | Vegetation can become damaged and destabilised. | Medium | Negligible | Not significant |
| | Prolonged dry periods may lead to drying out and cracking of earthworks and soils, subsidence, and greater amounts of dust. | High | Minor adverse | **Significant** |

| Receptor | Potential Impact | Likelihood | Consequence | Significance |
|---|---|---|---|---|
| | Shrinking and cracking of soils; this reduces soil stability. | High | Negligible | Not significant |
| | Increased risk of fire. | Medium | Negligible | Not significant |
| | High temperatures may cause damage to footways and cycleways, including potential melting and deformation. | High | Negligible | Not significant |
| | Vegetation in the public realm can dry out and die. | High | Minor adverse | **Significant** |
| | Lightning strikes causing fires and damage to the public realm | High | Negligible | Not significant |
| | Roadway and Cycleway Infrastructure such as signage or signals could also be damaged by high winds or lightning strike. | High | Negligible | Not significant |
| **End Users** | Damp buildings can lead to mould growth resulting in health issues for end users | Medium | Negligible | Not significant |
| | Flooding may impact commercial spaces, posing an access/financial risk to end users. | Medium | Minor adverse | Not significant |
| | Dantzic Street may not be accessible during a flood event. A small number of parking spaces for visitors and non-visitors on the street will be managed and operated by Manchester City Council, in accordance with their procedures. | Medium | Minor adverse | Not significant |
| | Vegetation can become damaged and destabilised, posing a risk to end users. | Medium | Moderate adverse | **Significant** |
| | Extreme cold events can cause slippery surfaces and deterioration of road surfaces (from freeze-thaw action), which poses a safety risk to end users | Low | Minor adverse | Not significant |
| | High temperatures can cause discomfort for end users. | High | Minor adverse | **Significant** |
| | Increased risk of fire. | Medium | Negligible | Not significant |
| | Lightning strikes causing fires and damage to assets and pose health and safety risks to end users. | High | Negligible | Not significant |

| Receptor | Potential Impact | Likelihood | Consequence | Significance |
|---|---|---|---|---|
| | Road and footway users may also be sensitive to high winds. | High | Negligible | Not significant |
| | Lower humidity can cause health problems for end users, such as catching a cold or infection. | Low | Negligible | Not significant |

## Additional Mitigation / Enhancement Measures (Full Application 5)

### The Completed and Operational Development

18.244 Following the identification of the embedded mitigation measures in **Table 18.52** and the assessment of significance in **Table 18.53**, the following additional mitigation measures are deemed necessary:

#### Precipitation

18.245 The following should be considered in relation to potential impacts of precipitation on the project, to reduce potential significant effects:

- Ensure subsidence risks at detailed design stage take account of changes in precipitation (summer decrease and winter increase) which may impact ground stability.
- Following dry periods, buildings and the grounds should be inspected for cracking and subsidence, as part of the scheduled maintenance and inspection programme.
- Implementation of drought management measures to allow infrastructure to function correctly, such as water efficiency measures (low flow taps, greywater recycling and so forth).
- The Landscape Access and Maintenance Strategy provided at Stage 4b should include irrigation and a maintenance plan during dry / extreme temperature periods to ensure that planting does not die.

#### Temperature

18.246 The following should be considered in relation to potential impacts of temperature on the project, to reduce potential significant effects:

- Ensuring that natural ventilation in residential spaces is sufficient to regulate overheating for future climate projections and considering more frequent and intense heatwaves, or provision of a cooling system will need to be included in the design. Maximum Summer temperatures are expected to reach 37.4°C by the 2050s, and 41.8°C in the 2080s, with heatwave events occurring 4.6 times per year; currently there are 1.1 events per year.

#### Wind

18.247 The following should be considered in relation to potential impacts of wind on the project, to reduce potential significant effects:

- The Landscape Access and Maintenance Strategy provided at Stage 4b should include removing debris from infrastructure, such as drainage.
- The Landscape Access and Maintenance Strategy provided at Stage 4b should include assessing the condition of street furniture, infrastructure and buildings.
- The operational Site Maintenance and Inspection programme should include site debris clearance and drainage clearance.

## Likely Residual Effects of the Development and their Significance (Full Application 5)

18.248 **Table 18.54** summarises the potential effects, mitigation, and subsequent residual effects. This residual risk assessment is made on the basis that the additional mitigation proposed is fully implemented.

***Table 18.54**: Residual Effects Summary (Application 5)*

| Receptor | Potential effect | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Buildings*** ***Public Realm*** | Prolonged dry periods may lead to drying out and cracking of earthworks and soils, subsidence, and greater amounts of dust. | -Following dry periods, buildings and the grounds should be inspected for cracking and subsidence, as part of the scheduled maintenance and inspection programme. -Ensure subsidence risks at detailed design take account of changes in precipitation (summer decrease and winter increase) which may impact ground stability. | **Not significant** |
| ***Buildings*** ***Infrastructure*** | Overheating of buildings | - Ensuring that natural ventilation in residential spaces is sufficient to regulate overheating for future climate projection and considering more frequent and intense heatwaves, or provision of a cooling system will need to be included in the design. Maximum Summer temperatures are expected to reach 37.4°C by the 2050s, and 41.8°C in the 2080s, with heatwave events occurring 4.6 times per year; currently there are 1.1 events per year. | **Not significant** |
| ***Infrastructure*** | Drought can reduce the ability of infrastructure, such as water utilities, to function correctly | -Implementation of drought management measures to allow infrastructure to function correctly. | **Not significant** |
| ***Infrastructure*** | Damage from high winds and rain infiltration into | - The Landscape Access and Maintenance Strategy provided at Stage 4b should include removing debris from infrastructure, such as drainage. - The operational | **Not significant** |

| Receptor | Potential effect | Mitigation | Residual Effect including significance |
|---|---|---|---|
| | infrastructure components. | Site Maintenance and Inspection programme should include site debris clearance and drainage clearance. | |
| ***Infrastructure*** | High winds and storms can affect the stability of above-ground infrastructure and hasten material degradation due to wind-driven rain infiltration. | - The Landscape Access and Maintenance Strategy provided at Stage 4b should include assessing the condition of street furniture, infrastructure and buildings. | **Not significant** |
| ***Infrastructure*** ***End Users*** ***Buildings*** | Vegetation can become damaged and destabilised from drought or wind, posing a risk to infrastructure, end users, and buildings. | - The Landscape Access and Maintenance Strategy provided at Stage 4b should include assessing the condition of street furniture, infrastructure and buildings. | **Not significant** |
| ***Public Realm*** | Vegetation in the public realm can dry out and die. | - The Landscape Access and Maintenance Strategy provided at Stage 4b should include irrigation and a maintenance plan during dry / extreme temperature periods to ensure that planting does not die. | **Not significant** |
| ***End Users*** | High temperatures can cause discomfort for end users. | - Ensuring that natural ventilation in residential spaces is sufficient to regulate overheating for future climate projection and considering more frequent and intense heatwaves, or provision of a cooling system will need to be included in the design. | **Not significant** |

## Conclusions (Full Application 5)

18.249 This assessment established the existing and future baseline climate in the location of the Application 5 site. The Application 5 site is in the Met Office Regional climate profile of North West England[16], with the nearest weather station being Rochdale, located approximately 15km to the northeast. The Application 5 site location is projected to become 29.4% drier in Summer and 12.7% wetter in Winter by the 2080s. Snow and Ice events also occur in the area, including as recently as December 2022. The Application 5 site location is projected to become 4.4°C warmer in Summer and 3°C warmer in Winter by the 2080s. The projected number of present-day heatwave events per year for the proposed Application 5 development is 1.7 in the 2030s, 2.6 in the 2050s and 4.6 in the 2080s. The risk of road melt in days per year for the area of the proposed Application 5 development is 14.3 in the 2030s, 21.3 in the 2050s and 45.9 in the 2080s. For the area of the proposed Application 5 development, the projected heat

stress in days per year are 0.2 in the 2030s, 0.5 in the 2050s and 3.7 in the 2080s. Projections for relative humidity anticipate an average decrease of approximately 1.2% in the 2030s, and a decrease of 2% by the 2060s. The region also experiences strong winds due to its proximity to the Atlantic, such as in February 2022. The proposed Application 5 development is not expected to be affected by sea level rise.

18.250 The assessment identified 8 significant effects across the four receptors: buildings, public realm, infrastructure, and end users. This included, for example, overheating of buildings, flooding of car parking, and shrinking and cracking of soils. Additional mitigation measures have been proposed to reduce these risks, such as inspecting buildings and the grounds for cracking and subsidence following dry periods, ensuring that natural ventilation in residential spaces is sufficient to regulate overheating during heatwaves, and ensuring that the design is sufficient to prevent flooding of the car park taking into account the climate projections for precipitation during potential flood events. As a result, the residual risks were identified as not significant.

## Assessment of Cumulative Effects with Identified Committed Schemes (Full Application 5)

18.251 The resilience assessment looks at potential impacts of changes in climate on the proposed Application 5 development, rather than impacts of the proposed Application 5 development on climate or on other developments. Cumulative effects will be assessed in each topic area which will, where relevant, incorporate climate impacts.

## Assessment of Cumulative Effects with Identified Committed Schemes and the SRF (Full Application 5)

18.252 The approach to the climate resilience assessment differs from other topics in that it looks at the potential impacts of environmental (climate) change on Application 5, rather than impacts of Application 5 on the environment: the receptor for the resilience assessment in Application 5. Therefore, no assessment of combination effects is undertaken, as there are no receptors in common with other assessments.

18.253 The SRF requires a design to consider sustainability, of which climate adaptation contributes to and has been undertaken by this assessment. This assessment ensures that Application 5 aligns with Policy EN8, the Manchester Strategy 2016-2025, and the core objectives of the SRF.

18.254 However, an assessment of In-Combination Climate Impacts (ICCI) should be assessed. ICCI is the potential for climate change to exacerbate or ameliorate the potential effects identified within each of the environmental topics. As such, potential ICCI with the environmental topics assessed within this EIA have been outlined in their respective chapters by topic specialists.

# In Combination Effects of Applications 4 and 5

## Baseline Conditions (Applications 4 and 5)

18.255 The baseline conditions for the Applications 4 and 5 sites are as reported above for the Application 4 site.

## Embedded Mitigation (Applications 4 and 5)

18.256 No further embedded mitigation is identified for the Applications 4 and 5 sites than what is reported above within their respective sub-sections.

## Assessment of Likely Significant Effects (Applications 4 and 5)

18.257 No further likely significant effects are identified for the Applications 4 and 5 sites than what is reported above within their respective sub-sections.

## Phasing Effects (Applications 4 and 5)

18.258 There are no effects related to the proposed phasing strategy.

## Additional Mitigation / Enhancement Measures (Applications 4 and 5)

18.259 No further additional mitigation is required beyond what is reported above within the respective sub-section for Applications 4 and 5.

## Likely Residual Effects of the Development and their Significance (Applications 4 and 5)

18.260 No further likely residual effects are identified for the Applications 4 and 5 sites than what is reported above within their respective sub-sections.

## Conclusions (Applications 4 and 5)

18.261 The conclusion does not differ from what has been reported above within the respective sub-sections of the Applications 4 and 5 sites, as considering the Applications 4 and 5 as a single proposal does not alter the climate resilience assessment.

## Cumulative Effects with Identified Committed Schemes (Applications 4 and 5)

18.262 The approach to the climate resilience assessment differs from other topics in that it looks at the potential impacts of environmental (climate) change on the Proposed Development, rather than impacts of the Proposed Development on the environment: the receptor for the resilience assessment in the Proposed Development.

Therefore, no assessment of combination effects is undertaken, as there are no receptors in common with other assessments.

18.263 However, an assessment of In-Combination Climate Impacts (ICCI) should be assessed. ICCI is the potential for climate change to exacerbate or ameliorate the potential effects identified within each of the environmental topics. As such, potential ICCI with the environmental topics assessed within this EIA have been outlined in their respective chapters by topic specialists.

## In Combination Effects of Applications 4 and 5 and SRF

18.264 The approach to the climate resilience assessment differs from other topics in that it looks at the potential impacts of environmental (climate) change on the Proposed Development, rather than impacts of the Proposed Development on the environment: the receptor for the resilience assessment in the Proposed Development. Therefore, no assessment of combination effects is undertaken, as there are no receptors in common with other assessments.

18.265 The SRF requires a design to consider sustainability, of which climate adaptation contributes to and has been undertaken by this assessment. This assessment ensures that the Proposed Development aligns with Policy EN8, the Manchester Strategy 2016-2025, and the core objectives of the SRF.

18.266 However, an assessment of In-Combination Climate Impacts (ICCI) should be assessed. ICCI is the potential for climate change to exacerbate or ameliorate the potential effects identified within each of the environmental topics. As such, potential ICCI with the environmental topics assessed within this EIA have been outlined in their respective chapters by topic specialists.

# 19. Effect Interactions

## Introduction

19.1 This chapter presents an assessment of the likely significant effect interactions of the effects of Application 4 and Application 5 and of the Proposed Development (Applications 4 and Application 5 in combination); that is, the likely combination of significant environmental effects generated by the applications individually and the Proposed Development in isolation upon a particular receptor or group of receptors. An example of such an effect interaction would be an existing neighbouring residential receptor being adversely affected by noise and dust during the construction phase. Effect interactions were considered for the demolition and construction phase and the completed and operational Development.

19.2 This chapter, prepared by Avison Young, was informed by all assessments undertaken as part of the Environmental Impact Assessment (EIA) and subsequently reported in the Environmental Statement (ES). As such, this chapter draws from information contained in **Volume 2: Main Text, Chapters 6** to **18** inclusive.

19.3 It should be noted that effect interactions are commonly referred to as a type of 'cumulative effect'. However, as outlined in **Volume 2: Main Text, Chapter 2: Approach**, the likely cumulative effects of the Proposed Development with other Cumulative Schemes per environmental topic area scoped into the ES (different to 'effect interactions') are considered separately within **Volume 2: Main Text, Chapters 6** to **18** inclusive.

## Assessment Methodology and Significance Criteria

### Assessment Methodology

19.4 There are no established methodologies for assessing, qualifying or quantifying the interaction of effects from a particular project upon a receptor or group of receptors. However, the following method was employed, based upon professional judgement, experience and a review of other similar assessments undertaken to inform recently published ESs for outline planning applications:

- A review of **Volume 2: Main Text, Chapters 6** to **18** to establish:
    - The range of likely adverse / beneficial residual effects arising from the demolition and construction phase and the completed and operational Development in isolation.
    - The receptor or group of receptors affected by the identified likely adverse / beneficial residual effects of the demolition and construction phase and the completed and operational Development in isolation.
- Tabulation of the above, thereby allowing for the identification of receptors, or groups of receptors, that would experience multiple likely adverse / beneficial residual environmental effects.

19.5 Only likely minor adverse / beneficial residual effects and above were considered in this assessment. This is owing to the following:

- 'Negligible' or 'no effects' would have no potential to interact with any other likely residual effects.
- The reasonable assumption that all embedded and additional mitigation referred to in **Volume 2: Main Text, Chapters 6** to **18** inclusive would be implemented.

## Significance Criteria

19.6 The significance of each individual likely significant environmental effect was defined according to the methodologies outlined in **Volume 2: Main Text, Chapters 6** to **18** inclusive. However, once again, there are no accepted methodologies which allow for the establishment of the relative significance of effect interactions. This is partially due to the fact that the assessment of effect interactions does not compare 'like effects' with 'like effects'.

19.7 In view of the above, this assessment can only identity the range of likely residual environmental effects (and their significance as defined in **Volume 2: Main Text, Chapters 6** to **18** inclusive) upon a particular receptor or group of receptors. In order to undertake a worst-case scenario assessment, it was assumed that the combination of two or more residual effects from two or more environmental topics (i.e. **Volume 2: Main Text, Chapters 6** to **18** inclusive) upon a particular receptor or group of receptors could constitute a significant effect interaction.

# Red Bank (Outline Application 4)

## Likely Residual Effect Interactions of the Development and their Significance (Application 4)

### Demolition and Construction

19.7.1 **Table 19.1** summarises all likely adverse / beneficial residual effects associated with the demolition and construction phase of Application 4, as identified in **Volume 2: Main Text, Chapters 6** to **18** inclusive. **Table 19.1** also identifies the receptor or groups of receptors affected by the residual effects.

***Table 19.1**: Likely Residual Effects of the Demolition and Construction Phase (Application 4)*

| **Application 4 – Demolition and Construction Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| ***Townscape and Visual (TV)*** | | |
| TV01 – Impact to Townscape | **Major/moderate adverse** effects (**significant**) – **moderate/minor adverse** effects (**not significant**) | Townscape character areas |
| TV02 – Impact to the townscape and appearance of Conservation Areas | **Moderate/minor adverse** effects (**not significant**) | Ancoats, Shudehill, Cathedral, Smithfield Conservation Areas |
| TV03 – Impact to Viewpoints | **Major/moderate adverse** effects (**significant for 1 viewpoint**) –**minor neutral** effects (**not significant**) | Assessed viewpoints |
| ***Ecology and Nature Conservation (ECO)*** | | |
| ECO1 – Ruderal Invasive | **Minor beneficial** effect (**not significant**) | Habitats and flora - Ruderal Invasive |
| ECO2 - Semi-natural broadleaved woodland | **Minor beneficial** effect (**not significant**) | Habitats and flora - Semi-natural broadleaved woodland |
| ECO3 - Plantation Woodland | **Minor beneficial** effect (**not significant**) | Habitats and flora - Plantation Woodland |

| Application 4 – Demolition and Construction Phase | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| ECO4 – River Irk Corridor | **Minor beneficial** effect (**not significant**) | Habitats and flora - River Irk Corridor |
| ECO5 – Bats Foraging and Commuting | **Minor beneficial** effect (**not significant**) | Habitats and flora – Bats |
| ECO6 – Breeding Birds | **Minor beneficial** effect (**not significant**) | Habitats and flora – Breeding Birds |
| ***Cultural Heritage (AH)*** | | |
| No residual effects assigned as Minor or above | No residual effects assigned as Minor or above | No residual effects assigned as Minor or above |
| ***Ground Conditions (GC)*** | | |
| GC1 – Effects from contamination present at the site which is as a result of previous site activities. | **Minor adverse** effect (**not significant**) | Construction workers<br>Third Party Neighbours & On-site Users of Completed Adjacent Developments |
| GC2 – Effects from contamination present at the site which is as a result of previous site activities. | **Minor beneficial** effect (**not significant**) | Groundwater<br>River Irk |
| ***Flood Risk and Drainage (FRD)*** | | |
| FRD1 – Impact to water quality and | **Minor adverse** effect (**not significant**) | Rivers Irk and Irwell |

| **Application 4 – Demolition and Construction Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| hydromorphology by entrainment of materials | | |
| FRD2 – Impacts to water quality by spillage of pollutants | **Minor adverse** effect (**not significant**) | Rivers Irk and Irwell<br>Nitrate Vulnerable Zone |
| FRD3 – Impact to hydrological and hydromorphological processes | **Minor adverse** effect (**not significant**) | Rivers Irk and Irwell |
| FRD4 – Impact to Flood Risk | **Minor adverse** effect (**not significant**) | 'More vulnerable' land classes regarding flood risk (e.g. residential or school uses)<br>Construction workers |
| ***Transport and Access (TA)*** | | |
| No residual effects assigned as Minor or above | No residual effects assigned as Minor or above | No residual effects assigned as Minor or above |
| ***Air Quality (AQ)*** | | |
| No residual effects assigned as Minor or above | No residual effects assigned as Minor or above | No residual effects assigned as Minor or above |
| ***Noise and Vibration (NV)*** | | |
| NV1 - Construction noise from the Proposed | **Minor** to **Moderate adverse** effect (**not** | Noise sensitive receptors – NSR1 (residential |

| **Application 4 – Demolition and Construction Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| Development | **significant**) | receptors situated of the Fairholme Caravan Site), NSR8 (future residential receptors of The Gas Works development), NSR9 (future residential receptors of the Meadowside development), NSR10 (King of Kings School), NSR16 (future residential receptors of Phase 1 of the Proposed Development) and NSR17 (future residential receptors of Phase 2 of the Proposed Development) |
| | **Moderate adverse** effect (**significant**) | Noise sensitive receptors – NSR7 (future residential receptors of Victoria Riverside) |
| NV2 - Construction vibration from the Proposed Development | **Negligible** to **minor adverse** effect (**not significant**) | All noise sensitive receptors apart from NSR16 |
| | **Moderate adverse** effect (**significant**) | Noise sensitive receptor NSR16 (future residential receptors of Phase 1 of the Proposed Development) |
| NV3 - Changes in road traffic noise as a result of construction phase development generated traffic. | **Negligible** to **minor adverse** effect (**not significant**) | Noise sensitive receptors |
| ***Daylight, Sunlight and Overshadowing (DSO)*** | | |

| **Application 4 – Demolition and Construction Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Wind Microclimate (WM)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| **Socioeconomics (SE)** | | |
| SE1 – Direct employment generated | **Minor – moderate beneficial** effect (**not significant**)<br>**Minor beneficial** effect (**not significant**) | District / Regional Population |
| SE2 – GVA added by direct employment | **Minor beneficial** effect (**not significant**) | District / Regional Economy |
| **Health and Wellbeing (HW)** | | |
| HW1 – Access to work and training | **Moderate beneficial** effect (**significant**)<br>**Minor beneficial** effect (**not significant**) | District / Regional Population |
| HW2 – Minimising the use of resources | **Minor beneficial** effect (**not significant**) | Local amenity |
| **Climate Change (CC)** | | |

| Application 4 – Demolition and Construction Phase | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |

19.10 **Table 19.2** reorganises the results of **Table 19.1** so that the full range of likely residual environmental effects arising from the demolition and construction phase of Application 4 upon specific receptors or groups of receptors can be easily identified. As noted earlier in this chapter, the combination of two or more residual effects from two or more environmental topics upon a particular receptor or group of receptors was judged to have the potential to result in a significant effect interaction.

***Table 19.2**: Likely Effect Interactions of the Demolition and Construction Phase (Application 4)*

| Receptor / Group of Receptors Affected | Likely Residual Effects | Would Effect Interactions be Experienced? |
|---|---|---|
| Townscape character areas | TV01 | No |
| Ancoats, Shudehill, Cathedral, Smithfield Conservation Areas | TV02 | No |
| Visual receptors | TV03 | No |
| Ruderal Invasive Species | ECO1 | No |
| Semi-natural broadleaved woodland | ECO2 | No |
| Plantation Woodland | ECO3 | No |
| River Irk | ECO4, FRD1, FRD2, FRD3, GC2 | Yes |
| Bats | ECO5 | No |
| Breeding Birds | ECO6 | No |
| River Irwell | FRD1, FRD2, FRD3 | No |
| Nitrate Vulnerable Zone | FRD2 | No |
| Groundwater | GC2 | No |
| Future residential receptors on the site | GC1, FRD4, NV1, NV2 | Yes |
| Future school users | FRD4, NV1 | Yes |

| Receptor / Group of Receptors Affected | Likely Residual Effects | Would Effect Interactions be Experienced? |
|---|---|---|
| Construction workers | FRD4, GC1 | No |
| Existing off-site residential and sensitive receptors | GC1, NV1, NV2, NV3 | Yes |
| District / Regional Population | SE1, HW1 | No (similar effects) |
| District / Regional Economy | SE2 | No |

19.11 **Table 19.2** demonstrates that during the demolition and construction phase of Application 4 there is the potential for effect interactions to the River Irk. Some of these are beneficial, whilst others are adverse and result from enhancement to the habitat, removal of potential pollution sources from contaminated land, potential surface water pollution and geomorphology impacts. All effects are predicted to be minor and overall are not predicted to result in a significant effect interaction on the River Irk corridor. The future users of earlier completed phases of Application 4, and nearby off-site sensitive receptors (e.g. residential properties) may experience a combination of noise, vibration, contaminated land and flood risk effects however these would be localised and temporary and would be appropriately managed by the Construction Environmental Management Plan. As such these effect interactions are not predicted to be significant.

## The Completed and Operational Development

19.11.1 **Table 19.3** summarises all likely adverse / beneficial residual effects associated with the operational phase of the Proposed Application 4 Development, as identified in **ES Volume 2, Chapters 6** to **18** inclusive. **Table 19.3** also identifies the receptor or groups of receptors affected by the residual effects.

***Table 19.3**: Likely Residual Effects of the Operational Phase (Application 4)*

| **Application 4 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| ***Townscape and Visual (TV)*** | | |
| TV1 – Impact to Townscape | **Major / moderate beneficial** effects (**significant**) – **moderate / minor neutral** effects (**not significant**) | Townscape character areas |
| TV2 – Impact to the townscape and appearance of Conservation Areas | **Moderate / minor beneficial / neutral** effects (**not significant**) | Ancoats, Shudehill, Cathedral, Smithfield Conservation Areas |
| TV3 – Impact to Viewpoints | **Major / moderate adverse** effects (**significant for 1 viewpoint**) – **major / moderate beneficial** effects (**significant**) | Assessed viewpoints |
| ***Ecology and Nature Conservation (ECO)*** | | |
| ECO7 – Roosting Bats | **Minor beneficial** effect (**not significant**) | Habitats and flora – Bats |
| ECO8 – Breeding Birds | **Minor beneficial** effect (**not significant**) | Habitats and flora – Breeding Birds |
| ***Cultural Heritage (CH)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |

| **Application 4 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| ***Ground Conditions (GC)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Flood Risk and Drainage (FRD)*** | | |
| FRD5 – Impacts to water quality from site drainage | **Minor adverse** effect (**not significant**) | Rivers Irk and Irwell |
| FRD6 – Impacts to channel morphology from new structures within the channel / floodplain | **Minor beneficial** effect (**not significant**) | River Irk |
| FRD7 – Impact to Water Utilities Infrastructure Capacity | **Minor beneficial** effect (**not significant**) | Water Utilities Infrastructure |
| FRD8 –Impacts to Flood Risk | **Minor adverse** effect (**not significant**) | 'More vulnerable' land classes regarding flood risk (e.g. residential or school uses) |
| ***Transport and Access (TA)*** | | |
| TA1 - Severance | **Minor adverse** effect (**not significant**) | Vehicle users of the local highway network |

| **Application 4 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| TA2 - Driver Delay | **Minor adverse** effect (**not significant**) | Vehicle users of the local highway network |
| TA3 - Pedestrian Delay and Amenity | **Minor adverse** effect (**not significant**) | Pedestrian users of the local highway network |
| TA4 - Public Transport | **Negligible to Minor adverse** effect (**not significant**) | Users of public transport |
| TA5 – Accidents and Safety | **Minor adverse** effect (**not significant**) | Users of the local highway network |
| ***Air Quality (AQ)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Noise and Vibration (NV)*** | | |
| NV4 – Development-generated Road Traffic | **Negligible** to **Minor adverse** effect (**not significant**) | Noise sensitive receptors |
| ***Daylight, Sunlight and Overshadowing (DSO)*** | | |
| DSO1- Daylight impact to existing receptors | **Minor** to **Moderate adverse** effect **(significant)** | Surrounding residential properties, schools and student accommodations. |

| **Application 4 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| DSO2- Sunlight impact to existing receptors | **Minor** to **Moderate adverse** effect **(significant)** | Surrounding residential properties, schools and student accommodations. |
| DSO3 – Overshadowing | **Minor** to **Moderate adverse** effect **(significant)** | Surrounding open amenity spaces. |
| ***Wind Microclimate (WM)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| **Socioeconomics (SE)** | | |
| SE3 – Net Additional Employment Opportunities | **Minor – moderate beneficial** effect (**not significant**) | District / Regional Population |
| SE4 – Gross Value Added to the Economy | **Minor – moderate beneficial** effect (**not significant**) | District / Regional Economy |
| SE5 – Expenditure from Residents of the Completed and Operational Proposed Development | **Moderate – major beneficial** effect (**significant**)<br>**Minor – moderate beneficial** effect (**not significant**) | District / Regional Economy |
| SE6 – Additional Council Tax Receipts | **Moderate – major beneficial** effect (**significant**) | District Economy |

| **Application 4 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| SE7 – Contribution to Housing delivery | **Major beneficial** effect (**significant**) | District Population |
| SE8 – Contribution to Housing Delivery (Swing Plot Scenario) | **Major beneficial** effect (**significant**) | District Population |
| SE9 – Affordable Housing Delivery | **Moderate – major beneficial** effect (**significant**) | District Population |
| SE10 – Affordable Housing Delivery (Swing Plot Scenario) | **Moderate – major beneficial** effect (**significant**) | District Population |
| SE11 – Effect on Primary School Provision (with a primary school included within swing plot) | **Minor – moderate beneficial** effect (**not significant**) | District Population |
| SE12 – Effect on Open Space and Play Space Provision | **Minor – moderate beneficial** effect (**not significant**) | District Population |
| **Health and Wellbeing (HW)** | | |
| HW3 – Housing design and affordability | **Moderate beneficial** effect (**significant**) | Local and District Population |
| HW4 – Access to health and social care services and other social infrastructure - GP practices | **Minor beneficial** effect (**not significant**) | Local and District Population |

| **Application 4 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| HW5 – Access to health and social care services and other social infrastructure - Primary schools (if school is provided within swing plot) | **Minor beneficial** effect (**not significant**) | District Population |
| HW6 – Access to open space and nature | **Minor beneficial** effect (**not significant**) | District Population |
| HW7 – Accessibility and active travel | **Minor beneficial** effect (**not significant**) | District Population |
| HW8 – Crime reduction and community safety | **Minor beneficial** effect (**not significant**) | District Population |
| HW9 – Access to healthy food | **Minor beneficial** effect (**not significant**) | District Population |
| HW10 – Access to work and training | **Minor beneficial** effect (**not significant**) | District Population |
| HW11 – Social cohesion and inclusive design | **Minor beneficial** effect (**not significant**) | District Population |
| HW12 – Minimising the use of resources | **Minor beneficial** effect (**not significant**) | District Population |
| HW13 – Climate change | **Minor beneficial** effect (**not significant**) | District Population |
| HW14 - Access to health and social care services and other social infrastructure - dental | **Minor adverse** effect (**not significant**) | District Population |

| **Application 4 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| **Climate Change (CC)** | | |
| Building Greenhouse Gas Emissions associated with energy use | **Negligible to minor adverse** effect (**not significant**) | Global atmosphere |
| Transport related Greenhouse Gas Emissions | **Minor adverse** effect (**not significant**) | Global atmosphere |

19.14 **Table 19.4** reorganises the results of **Table 19.3** so that the full range of likely residual environmental effects arising from the operational phase upon specific receptors or groups of receptors can be easily identified. As noted earlier in this chapter, the combination of two or more residual effects from two or more environmental topics upon a particular receptor or group of receptors was judged to have the potential to result in a significant effect interaction.

***Table 19.4:*** *Likely Effect Interactions of the Operational Phase (Application 4)*

| Receptor / Group of Receptors Affected | Likely Residual Effects | Would Effect Interactions be Experienced? |
|---|---|---|
| Townscape character areas | TV1 | No |
| Ancoats, Shudehill, Cathedral, Smithfield Conservation Areas | TV2 | No |
| Visual receptors | TV3 | No |
| River Irwell | FRD5 | No |
| River Irk | FRD5, FRD6 | No |
| Bats | ECO7 | No |
| Breeding Birds | ECO8 | No |
| Water Utilities Infrastructure | FRD7 | No |
| Future residential receptors on the site | FRD8, NV4 | Yes |
| Future school users | FRD8 | No |
| Vehicle users of the local highway network | TA1, TA2, TA5 | No |
| Pedestrian users of the local highway network | TA3, TA5 | No |
| Users of public transport | TA4 | No |
| Existing off-site residential and | NV4, DSO1, DSO2 | Yes |

| Receptor / Group of Receptors Affected | Likely Residual Effects | Would Effect Interactions be Experienced? |
|---|---|---|
| sensitive receptors | | |
| Surrounding open amenity spaces. | DSO3 | No |
| District / Regional Population | SE3, SE7, SE8, SE9, SE10, SE11, HW3, HW4, HW, HW6, HW7, HW8, HW9, HW10, HW11, HW12, HW13, HW14 | No (similar effects) |
| District / Regional Economy | SE4, SE5, SE6 | No |
| Global atmosphere | CC1, CC2 | No |

19.15 **Table 19.4** demonstrates that once completed and operational Application 4 would result in effect interactions to future site users from noise and potential flood risk issues. Both effects would be minor adverse at worse, and so in combination are not likely to result in significant effect interactions. Existing off-site residential and sensitive receptors are predicted to experience effect interactions as a result of noise from fixed plant and road traffic, and changes to daylight and sunlight levels at some properties. As the effect on daylight and sunlight is predicted to be significant it is reasonable to conclude that where the same property also experienced a minor adverse noise effect from increased traffic noise the effect interaction would be significant. However this interaction would only impact a small number of properties immediately adjacent to the highway network (as detailed in **Chapter 13 Noise and Vibration** and **Chapter 14 Daylight, Sunlight and Overshadowing**), limited to the area around the south western site boundary of the site.

# NT02 – NT04 (Full Application 5)

## Likely Residual Effect Interactions of the Development and their Significance (Application 5)

### Demolition and Construction

19.15.1 **Table 19.5** summarises all likely adverse / beneficial residual effects associated with the demolition and construction phase of Application 5, as identified in **Volume 2: Main Text, Chapters 6** to **18** inclusive. **Table 19.5** also identifies the receptor or groups of receptors affected by the residual effects.

***Table 19.5:*** *Likely Residual Effects of the Demolition and Construction Phase (Application 5)*

| **Application 5 – Demolition and Construction Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| ***Townscape and Visual (TV)*** | | |
| TV1 – Impact to Townscape | **Major / moderate adverse** effects (**significant**) – **moderate / minor adverse** effects (**not significant**) | Townscape character areas |
| TV2 – Impact to the townscape and appearance of Conservation Areas | **Moderate / minor adverse** effect (**not significant**) | Ancoats Conservation Area |
| TV3 – Impact to Viewpoints | **Major moderate adverse** effects (**significant**) – **minor neutral** effects (**not significant**) | Assessed viewpoints |
| ***Ecology and Nature Conservation (ECO)*** | | |
| ECO1 – Ruderal Invasive | **Minor beneficial** effect (**not significant**) | Habitats and flora – ruderal invasive |
| ECO2 - Semi-natural broadleaved woodland | **Minor beneficial** effect (**not significant**) | Habitats and flora - semi-natural broadleaved woodland |
| ECO3 – River Irk Corridor | **Minor beneficial** effect (**not significant**) | Habitats and flora - River Irk Corridor |

| **Application 5 – Demolition and Construction Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| ECO4 – Bats Foraging and Commuting | **Minor beneficial** effect (**not significant**) | Habitats and flora - Bats |
| ECO5 – Breeding Birds | **Minor beneficial** effect (**not significant**) | Habitats and flora – Breeding Birds |
| ***Cultural Heritage (AH)*** | | |
| CH1 - Previously unrecorded prehistoric, Roman, and medieval archaeological remains | **Minor adverse** effect (**not significant**) | Below ground heritage assets |
| CH2 - Post-medieval and industrial archaeological remains | **Minor adverse** effect (**not significant**) | Below ground heritage assets |
| ***Ground Conditions (GC)*** | | |
| GC1 – Effects from contamination present at the site which is as a result of previous site activities. | **Minor adverse** effect (**not significant**) | Construction workers<br>Third Party Neighbours |
| GC2 – Effects from contamination present at the site which is as a result of previous site activities. | **Minor beneficial** effect (**not significant**) | Groundwater<br>River Irk |
| ***Drainage and Flood Risk (DFR)*** | | |

| **Application 5 – Demolition and Construction Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| FRD1 – Impact to water quality and hydromorphology by entrainment of materials | **Minor adverse** effect (**not significant**) | Rivers Irk and Irwell |
| FRD2 – Impacts to water quality by spillage of pollutants | **Minor adverse** effect (**not significant**) | Rivers Irk and Irwell<br>Nitrate Vulnerable Zone |
| FRD3 – Impact to hydrological and hydromorphological processes | **Minor adverse** effect (**not significant**) | Rivers Irk and Irwell |
| FRD4 – Impact to Flood Risk | **Minor adverse** effect (**not significant**) | Construction workers |
| ***Transport and Access (TA)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Air Quality (AQ)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Noise and Vibration (NV)*** | | |
| NV1 - Construction noise from the Proposed | **Minor** to **Moderate adverse** effect (**not** | Noise sensitive receptors – NSR4 (residential |

| **Application 5 – Demolition and Construction Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| Development | **significant**) | receptors of No 19 to 35 Dalton Street) |
| | **Major adverse** effect (**significant**) | Noise sensitive receptors – NSR7 (future residential receptors of Victoria Riverside) and NSR8 (future residential receptors of The Gas Works development) |
| NV2 - Construction vibration from the Proposed Development | **Negligible** to **minor adverse** (**not significant**) | All noise sensitive receptors apart from NSR7 |
| | **Moderate adverse** effect (**significant**) | Noise sensitive receptor NSR7 (future residential receptors of Victoria Riverside) |
| NV3 - Changes in road traffic noise as a result of construction phase development generated traffic. | **Negligible** to **minor adverse** (**not significant**) | Noise sensitive receptors |
| ***Daylight, Sunlight and Overshadowing (DSO)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Wind Microclimate (WM)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |

| Application 5 – Demolition and Construction Phase | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| **Socioeconomics (SE)** | | |
| SE1 – Direct employment generated | **Minor beneficial** effect (**not significant**) | District / Regional Population |
| SE2 – GVA added by direct employment | **Minor beneficial** effect (**not significant**) | District / Regional Economy |
| **Health and Wellbeing (HW)** | | |
| HW1 – Access to work and training | **Moderate beneficial** effect (**significant**)<br><br>**Minor beneficial** effect (**not significant**) | District Population |
| HW2 – Minimising the use of resources | **Moderate beneficial** effect (**significant**) | Local amenity |
| **Climate Change (CC)** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |

19.18 **Table 19.6** reorganises the results of **Table 19.5** so that the full range of likely significant residual environmental effects arising from the demolition and construction phase of Application 5 upon specific receptors or groups of receptors can be easily identified. As noted earlier in this chapter, the combination of two or more residual effects from two or more environmental topics upon a particular receptor or group of receptors was judged to have the potential to result in a significant effect interaction.

***Table 19.6**: Likely Effect Interactions of the Demolition and Construction Phase (Application 5)*

| Receptor / Group of Receptors Affected | Likely Residual Effects | Would Effect Interactions be Experienced? |
|---|---|---|
| Townscape character areas | TV1 | No |
| Ancoats Conservation Area | TV2 | No |
| Visual receptors | TV3 | No |
| Ruderal Invasive Species | ECO1 | No |
| Semi-natural broadleaved woodland | ECO2 | No |
| River Irk Corridor | ECO3, GC2, FRD1, FRD2, FRD3 | Yes |
| Bats | ECO4 | No |
| Breeding Birds | ECO5 | No |
| Below Ground Heritage Assets | CH1, CH2 | No |
| River Irwell | FRD1, FRD2, FRD3 | No |
| Nitrate Vulnerable Zone | FRD2 | No |
| Groundwater | GC2 | No |
| Construction workers | FRD4 | No |
| Existing off-site residential and sensitive receptors | GC1, NV1, NV2, NV3 | Yes |

| Receptor / Group of Receptors Affected | Likely Residual Effects | Would Effect Interactions be Experienced? |
|---|---|---|
| District / Regional Population | SE1, HW1 | No (similar effects) |
| District / Regional Economy | SE2 | No |

19.19 **Table 19.6** demonstrates that during the demolition and construction phase of Application 5 there is the potential for effect interactions to the River Irk. Some of these are beneficial, whilst others are adverse and result from enhancement to the habitat and potential surface water pollution. All effects are predicted to be minor and overall are not predicted to result in a significant effect interaction on the River Irk corridor. Nearby offsite sensitive receptors (e.g. residential properties) may experience a combination of noise, vibration, and contaminated land effects; however these would be localised and temporary and would be appropriately managed by the Construction Environmental Management Plan. As such these effect interactions are not predicted to be significant.

## The Completed and Operational Development

19.19.1 **Table 19.7** summarises all likely adverse / beneficial residual effects associated with the operational phase of the Proposed Application 5 Development, as identified in **Volume 2: Main Text, Chapters 6** to **18** inclusive. **Table 19.7** also identifies the receptor or groups of receptors affected by the residual effects.

***Table 19.7**: Likely Residual Effects of the Operational Phase (Application 5)*

| **Application 5 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| ***Townscape and Visual (TV)*** | | |
| TV1 – Impact to Townscape | **Major / moderate beneficial** effects (**significant**) – **moderate / minor neutral** effects (**not significant**) | Townscape character areas |
| TV2 – Impact to the townscape and appearance of Conservation Areas | **Moderate / minor beneficial** effect (**not significant**) | Ancoats Conservation Area |
| TV3 – Impact to Viewpoints | **Major / moderate beneficial** effects (**significant for 1 viewpoint**) –**moderate neutral** effects (**significant**) | Assessed viewpoints |
| ***Ecology and Nature Conservation (ECO)*** | | |
| ECO7 – Roosting Bats | **Minor beneficial** effect (**not significant**) | Habitats and flora - Bats |
| ECO8 – Breeding Birds | **Minor beneficial** effect (**not significant**) | Habitats and flora – Breeding Birds |
| ***Cultural Heritage (CH)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |

| **Application 5 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| ***Ground Conditions (GC)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Flood Risk and Drainage (FRD)*** | | |
| FRD05 - Impacts to water quality from site drainage | **Minor adverse** effect (**not significant**) | Rivers Irk and Irwell |
| FRD08 - Impacts to Flood Risk | **Minor adverse** effect (**not significant**) | 'More vulnerable' land classes regarding flood risk (e.g. residential uses) |
| ***Transport and Access (TA)*** | | |
| TA1 - Severance | **Negligible to Minor adverse** effect (**not significant**) | Vehicle users of the local highway network |
| TA2 - Driver Delay | **Minor adverse** effect (**not significant**) | Vehicle users of the local highway network |
| TA3 - Pedestrian Delay and Amenity | **Negligible to Minor adverse** effect (**not significant**) | Pedestrian users of the local highway network |
| TA4 - Public Transport | **Negligible to Minor adverse** effect (**not significant**) | Users of public transport |

| **Application 5 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| TA5 – Accidents and Safety | **Negligible to Minor adverse** effect (**not significant**) | Users of the local highway network |
| ***Air Quality (AQ)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Noise and Vibration (NV)*** | | |
| NV4 – Noise from Commercial and Fixed Plant and Equipment at Noise Sensitive Receptors (NSRs) | **Negligible** to **Minor adverse** effect (**not significant**) | Noise sensitive receptors |
| ***Daylight, Sunlight and Overshadowing (DSO)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Wind Microclimate (WM)*** | | |
| WM01 – Pedestrian Comfort / Safety | **Moderate adverse** to **moderate beneficial** effect (not significant) | On and off-site pedestrian receptors |
| **Socioeconomics (SE)** | | |

| **Application 5 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| SE3 – Net Additional Employment Opportunities | **Minor beneficial** effect (**not significant**) | District / Regional Population |
| SE4 – Gross Value Added to the Economy | **Minor beneficial** effect (**not significant**) | District / Regional Economy |
| SE5 – Expenditure from Residents of the Completed and Operational Proposed Development | **Minor – moderate beneficial** effect (**not significant**)<br>**Minor beneficial** effect (**not significant**) | District / Regional Economy |
| SE6 – Additional Council Tax Receipts | **Minor – moderate beneficial** effect (**not significant**) | District Economy |
| SE7 – Contribution to Housing delivery | **Minor – moderate beneficial** effect (**not significant**) | District Population |
| SE9 – Affordable Housing Delivery | **Minor beneficial** effect (**not significant**) | District Population |
| SE12 – Effect on Open Space and Play Space Provision | **Minor beneficial** effect (**not significant**) | District Population |
| **Health and Wellbeing (HW)** | | |
| HW3 – Housing design and affordability | **Minor beneficial** effect (**significant**) | Local and District Population |

| **Application 5 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| HW6 – Access to open space and nature | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW7 – Accessibility and active travel | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW8 – Crime reduction and community safety | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW9 – Access to healthy food | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW10 – Access to work and training | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW11 – Social cohesion and inclusive design | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW12 – Minimising the use of resources | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW13 – Climate change | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW14 - Access to health and social care services and other social infrastructure – dental practices | **Minor adverse** effect (**not significant**) | Local and District Population |
| **Climate Change (CC)** | | |
| Building Greenhouse Gas Emissions associated with energy use | **Negligible to minor adverse** effect (**not significant**) | Global atmosphere |

| **Application 5 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| Transport related Greenhouse Gas Emissions | **Minor adverse** effect (**not significant**) | Global atmosphere |

19.22 **Table 19.8** reorganises the results of **Table 19.7** so that the full range of likely significant residual environmental effects arising from the operational phase upon specific receptors or groups of receptors can be easily identified. As noted earlier in this chapter, the combination of two or more residual effects from two or more environmental topics upon a particular receptor or group of receptors was judged to have the potential to result in a significant effect interaction.

***Table 19.8**: Likely Effect Interactions of the Operational Phase (Application 5)*

| Receptor / Group of Receptors Affected | Likely Residual Effects | Would Effect Interactions be Experienced? |
|---|---|---|
| Townscape character areas | TV1 | No |
| Ancoats Conservation Area | TV2 | No |
| Visual receptors | TV3 | No |
| River Irwell | FRD5 | No |
| River Irk | FRD5 | No |
| Bats | ECO7 | No |
| Breeding Birds | ECO8 | No |
| Water Utilities Infrastructure | FRD7 | No |
| Future residential receptors on the site | FRD8, NV4 | Yes |
| Vehicle users of the local highway network | TA1, TA2, TA5 | No |
| Pedestrian users of the local highway network | TA3, TA5 | No |
| Users of public transport | TA4 | No |
| Existing off-site residential and sensitive receptors | NV4 | No |

| Receptor / Group of Receptors Affected | Likely Residual Effects | Would Effect Interactions be Experienced? |
|---|---|---|
| On and off site pedestrian receptors | WM01 | No |
| District / Regional Population | SE3, SE7, SE9, SE12, HW3, HW6, HW7, HW8, HW9, HW10, HW11, HW12, HW13, HW14 | No (similar effects) |
| District / Regional Economy | SE4, SE5, SE6 | No |
| Global atmosphere | CC1, CC2 | No |

19.23 **Table 19.8** demonstrates that once completed and operational Application 5 would result in effect interactions to future site users from noise and potential flood risk issues. Both effects would be minor adverse at worst, and so in combination are not likely to result in significant effect interactions.

# In Combination Assessment of Applications 4 and 5

## Likely Residual Effect Interactions of the Development and their Significance (Applications 4 and 5)

### Demolition and Construction

19.23.1 **Table 19.9** summarises all likely adverse / beneficial residual effects associated with the demolition and construction phase of Applications 4 and 5, as identified in **Volume 2: Main Text, Chapters 6** to **18** inclusive. **Table 19.9** also identifies the receptor or groups of receptors affected by the residual effects.

***Table 19.9**: Likely Residual Effects of the Demolition and Construction Phase (Applications 4 and 5)*

| **Applications 4 and 5 – Demolition and Construction Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| ***Townscape and Visual (TV)*** | | |
| TV01 – Impact to Townscape | **Major/moderate adverse** effects (**significant**) – **moderate/minor adverse** effects (**not significant**) | Townscape character areas |
| TV02 – Impact to the townscape and appearance of Conservation Areas | **Moderate/minor adverse** effects **to minor adverse** effects (**not significant**) | Ancoats, Shudehill, Cathedral, Smithfield Conservation Areas |
| TV03 – Impact to Viewpoints | **Major/moderate adverse** effects (**significant**) – **minor adverse** effects (**not significant**) | Assessed viewpoints |
| ***Ecology and Nature Conservation (ECO)*** | | |
| ECO1 – Ruderal Invasive | **Minor beneficial** effect (**not significant**) | Habitats and flora - Ruderal Invasive |
| ECO2 - Semi-natural broadleaved woodland | **Minor beneficial** effect (**not significant**) | Habitats and flora - Semi-natural broadleaved woodland |
| ECO3 - Plantation Woodland | **Minor beneficial** effect (**not significant**) | Habitats and flora - Plantation Woodland |
| ECO4 – River Irk Corridor | **Minor beneficial** effect (**not significant**) | Habitats and flora - River Irk Corridor |

| **Applications 4 and 5 – Demolition and Construction Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| ECO5 – Bats Foraging and Commuting | **Minor beneficial** effect (**not significant**) | Habitats and flora - Bats |
| ***Cultural Heritage (CH)*** | | |
| CH1 - Previously unrecorded prehistoric, Roman, and medieval archaeological remains | **Minor adverse** effect (**not significant**) | Below ground heritage assets |
| CH2 - Post-medieval and industrial archaeological remains | **Minor adverse** effect (**not significant**) | Below ground heritage assets |
| ***Ground Conditions (GC)*** | | |
| GC1 – Effects from contamination present at the site which is as a result of previous site activities. | **Minor adverse** effect (**not significant**) | Construction workers<br>Third Party Neighbours & On-site Users of Completed Adjacent Developments |
| GC2 – Effects from contamination present at the site which is as a result of previous site activities. | **Minor beneficial** effect (**not significant**) | Groundwater<br>River Irk |
| ***Flood Risk and Drainage (FRD)*** | | |
| FRD1 – Impact to water quality and | **Minor adverse** effect (**not significant**) | Rivers Irk and Irwell |

| Applications 4 and 5 – Demolition and Construction Phase | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| hydromorphology by entrainment of materials | | |
| FRD2 – Impacts to water quality by spillage of pollutants | **Minor adverse** effect (**not significant**) | Rivers Irk and Irwell<br>Nitrate Vulnerable Zone |
| FRD3 – Impact to hydrological and hydromorphological processes | **Minor adverse** effect (**not significant**) | Rivers Irk and Irwell |
| FRD4 – Impact to Flood Risk | **Minor adverse** effect (**not significant**) | 'More vulnerable' land classes regarding flood risk (e.g. residential or school uses)<br>Construction workers |
| ***Transport and Access (TA)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Air Quality (AQ)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Noise and Vibration (NV)*** | | |
| NV1 - Construction noise from the Proposed | **Minor** to **Moderate adverse** effect (**not** | Noise sensitive receptors – NSR1 (residential |

| Applications 4 and 5 – Demolition and Construction Phase | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| Development | **significant**) | receptors at Fairholme Caravan Park), NSR4 (residential receptors of No 19 to 35 Dalton Street), NSR4 (residential receptors of Sylvia Tower flats), NSR9 (future residential receptors of the Meadowside development), NSR10 (King of Kings School), NSR16 (future residential receptors of Phase 1 of the Proposed Development) and NSR17 (future residential receptors of Phase 2 of the Proposed Development). |
| | **Major adverse** effect (**significant**) | Noise sensitive receptors – NSR7 (future residential receptors of the Victoria Riverside) and NSR8 (future residential receptors of The Gas Works development). |
| NV2 - Construction vibration from the Proposed Development | **Negligible** to **minor adverse** (**not significant**) | All noise sensitive receptors apart from NSR7 and NSR16 |
| | **Moderate adverse** effect (**significant**) | Noise sensitive receptor NSR7 (future residential receptors of the Victoria Riverside) and NRS16 (future residential receptors of Phase 1 of the |

| Applications 4 and 5 – Demolition and Construction Phase | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| | | Proposed Development) |
| NV3 - Changes in road traffic noise as a result of construction phase development generated traffic. | **Negligible** to **minor adverse** (**not significant**) | Noise sensitive receptors |
| ***Daylight, Sunlight and Overshadowing (DSO)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Wind Microclimate (WM)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| **Socioeconomics (SE)** | | |
| SE1 – Direct employment generated | **Major beneficial** effect (**significant**)<br>**Moderate – major beneficial** effect (**significant**) | District / Regional Population |
| SE2 – GVA added by direct employment | **Moderate – major beneficial** effect (**significant**)<br>**Minor – moderate beneficial** effect (**not significant**) | District / Regional Economy |

| Applications 4 and 5 – Demolition and Construction Phase | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| **Health and Wellbeing (HW)** | | |
| HW1 – Access to work and training | **Moderate beneficial** effect (**significant**)<br><br>**Minor beneficial** effect (**not significant**) | District Population |
| HW2 – Minimising the use of resources | **Minor beneficial** effect (**not significant**) | Local amenity |
| **Climate Change (CC)** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |

19.26 **Table 19.10** reorganises the results of **Table 19.9** so that the full range of likely residual environmental effects arising from the demolition and construction phase of Applications 4 and 5 upon specific receptors or groups of receptors can be easily identified. As noted earlier in this chapter, the combination of two or more residual effects from two or more environmental topics upon a particular receptor or group of receptors was judged to have the potential to result in a significant effect interaction.

***Table 19.10**: Likely Effect Interactions of the Demolition and Construction Phase (Applications 4 and 5)*

| Receptor / Group of Receptors Affected | Likely Residual Effects | Would Effect Interactions be Experienced? |
|---|---|---|
| Townscape character areas | TV01 | No |
| Ancoats, Shudehill, Cathedral, Smithfield Conservation Areas | TV02 | No |
| Visual receptors | TV03 | No |
| Ruderal Invasive Species | ECO1 | No |
| Semi-natural broadleaved woodland | ECO2 | No |
| Plantation Woodland | ECO3 | No |
| River Irk Corridor | ECO4, GC2, FRD1, FRD2, FRD3 | Yes |
| Bats | ECO5 | No |
| Breeding Birds | ECO6 | No |
| River Irwell | FRD1, FRD2, FRD3 | Yes |
| Nitrate Vulnerable Zone | FRD2 | No |
| Groundwater | GC2 | |
| Below Ground Heritage Assets | CH1, CH2 | No |
| Future residential receptors on the site | GC1, FRD4, NV1, NV2 | Yes |

| Receptor / Group of Receptors Affected | Likely Residual Effects | Would Effect Interactions be Experienced? |
|---|---|---|
| Future school users | FRD4, NV1 | Yes |
| Construction workers | GC1, FRD4 | Yes |
| Existing off-site residential and sensitive receptors | NV1, NV2, NV3 | No |
| District / Regional Population | SE1, HW1 | No (similar effects) |
| District / Regional Economy | SE2 | No |

19.27 **Table 19.10** demonstrates that during the demolition and construction phase of Application 4 and Application 5 there is the potential for effect interactions to the River Irk. Some of these are beneficial, whilst others are adverse and result from enhancement to the habitat, removal of potential pollution sources from contaminated land and potential surface water pollution from construction works. All effects are predicted to be minor and overall are not predicted to result in a significant effect interaction on the River Irk corridor. The future users of earlier completed phases of the Proposed Development, and nearby offsite sensitive receptors (e.g. residential properties) may experience a combination of noise, vibration, contaminated land and flood risk effects however these would be localised and temporary and would be appropriately managed by the Construction Environmental Management Plan. As such these effect interactions are not predicted to be significant.

## The Completed and Operational Development

19.27.1 **Table 19.11** summarises all likely adverse / beneficial residual effects associated with the operational phase of the Proposed Development, as identified in **Volume 2: Main Text, Chapters 6** to **18** inclusive. **Table 19.11** also identifies the receptor or groups of receptors affected by the residual effects.

***Table 19.11**: Likely Residual Effects of the Operational Phase (Application 4 and Application 5)*

| **Applications 4 and 5 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| ***Townscape and Visual (TV)*** | | |
| TV01 – Impact to Townscape | **Major/moderate beneficial** effects (**significant**) – **moderate/minor neutral** effects (**not significant**) | Townscape character areas |
| TV02 – Impact to the townscape and appearance of Conservation Areas | **Moderate/minor beneficial/neutral** effects (**not significant**) | Ancoats, Shudehill, Cathedral, Smithfield Conservation Areas |
| TV03 – Impact to Viewpoints | **Major/moderate adverse** effects (**significant**) – **major/moderate beneficial** effects (**significant**) | Assessed viewpoints |
| ***Ecology and Nature Conservation (ECO)*** | | |
| ECO7 – Roosting Bats | **Minor beneficial** effect (**not significant**) | Habitats and flora – Bats |
| ECO8 – Breeding Birds | **Minor beneficial** effect (**not significant**) | Habitats and flora – Breeding Birds |
| ***Cultural Heritage (CH)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Ground Conditions (GC)*** | | |

| **Applications 4 and 5 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Drainage and Flood Risk (DFR)*** | | |
| FRD05 - Impacts to water quality from site drainage | **Minor adverse** effect (**not significant**) | Rivers Irk and Irwell |
| FRD06 - Impacts to channel morphology from new structures within the channel / floodplain | **Minor beneficial** effect (**not significant**) | River Irk |
| FRD07 - Impact to Water Utilities Infrastructure Capacity | **Minor beneficial** effect (**not significant**) | Water Utilities Infrastructure |
| FRD08 - Impacts to Flood Risk | **Minor adverse** effect (**not significant**) | 'More vulnerable' land classes regarding flood risk (e.g. residential or school uses) |
| ***Transport and Access (TA)*** | | |
| TA1 - Severance | **Minor adverse** effect (**not significant**) | Vehicle users of the local highway network |
| TA2 - Driver Delay | **Minor adverse** effect (**not significant**) | Vehicle users of the local highway network |
| TA3 - Pedestrian Delay and Amenity | **Minor adverse** effect (**not significant**) | Pedestrian users of the local highway network |

| **Applications 4 and 5 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| TA4 - Public Transport | **Negligible to Minor adverse** effect (**not significant**) | Users of public transport |
| TA5 – Accidents and Safety | **Minor adverse** effect (**not significant**) | Users of the local highway network |
| ***Air Quality (AQ)*** | | |
| No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. | No residual effects assigned as Minor or above. |
| ***Noise and Vibration (NV)*** | | |
| NV4 – Development-generated Road Traffic | **Negligible** to **Minor adverse** effect (**not significant**) | Noise sensitive receptors |
| ***Daylight, Sunlight and Overshadowing (DSO)*** | | |
| DSO1- Daylight impact to existing receptors | **Minor** to **Moderate adverse** effect **(significant)** | Surrounding residential properties, schools and student accommodations. |
| DSO2- Sunlight impact to existing receptors | **Minor** to **Moderate adverse** effect **(significant)** | Surrounding residential properties, schools and student accommodations. |
| DSO3 – Overshadowing | **Minor** to **Moderate adverse** effect **(significant)** | Surrounding open amenity spaces. |

| Applications 4 and 5 – Operational Phase | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| ***Wind Microclimate (WM)*** | | |
| WM01 – Pedestrian Comfort / Safety | **Moderate adverse** to **moderate beneficial** effect (not significant) | On and off-site pedestrian receptors |
| WM02 – Pedestrian Safety | **Major beneficial** effect (**not significant**) | Southwest corner of Victoria Riverside Block A |
| **Socioeconomics (SE)** | | |
| SE3 – Net Additional Employment Opportunities | **Minor – moderate beneficial** effect (**not significant**) | District / Regional Population |
| SE4 – Gross Value Added to the Economy | **Moderate – major beneficial** effect (**significant**) | District / Regional Economy |
| SE5 – Expenditure from Residents of the Completed and Operational Proposed Development | **Major beneficial** effect (**significant**)<br>**Minor – moderate beneficial** effect (**not significant**) | District / Regional Economy |
| SE6 – Additional Council Tax Receipts | **Major beneficial** effect (**significant**) | District Economy |
| SE7 – Contribution to Housing delivery | **Major beneficial** effect (**significant**) | District Population |

| **Applications 4 and 5 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| SE8 – Contribution to Housing Delivery (Swing Plot Scenario) | **Major beneficial** effect (**significant**) | District Population |
| SE9 – Affordable Housing Delivery | **Moderate beneficial** effect (**significant**) | District Population |
| SE11 – Effect on Primary School Provision (with a primary school included within swing plot) | **Minor – moderate beneficial** effect (**not significant**) | District Population |
| SE10 – Affordable Housing Delivery (Swing Plot Scenario) | **Moderate – major beneficial** effect (**significant**) | District Population |
| SE12 – Effect on Open Space and Play Space Provision | **Minor beneficial** effect (**significant**) | District Population |
| **Health and Wellbeing (HW)** | | |
| HW3 – Housing design and affordability | **Minor beneficial** effect (**significant**) | Local and District Population |
| HW4 – Access to health and social care services and other social infrastructure - GP practices | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW5 – Access to health and social care services and other social infrastructure - Primary schools (if | **Minor beneficial** effect (**not significant**) | Local and District Population |

| **Applications 4 and 5 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| school is provided within swing plot) | | |
| HW6 – Access to open space and nature | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW7 – Accessibility and active travel | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW8 – Crime reduction and community safety | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW9 – Access to healthy food | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW10 – Access to work and training | **Moderate beneficial** effect (**significant**)<br>**Minor beneficial** effect (**not significant**) | Local and District Population |
| HW11 – Social cohesion and inclusive design | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW12 – Minimising the use of resources | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW13 – Climate change | **Minor beneficial** effect (**not significant**) | Local and District Population |
| HW14 - Access to health and social care services and other social infrastructure – dental practices | **Minor adverse** effect (**not significant**) | Local and District Population |
| **Climate Change (CC)** | | |

| **Applications 4 and 5 – Operational Phase** | | |
|---|---|---|
| **Topic and Type of Residual Effect** | **Likely Significance of Residual Effect** | **Receptor / Group of Receptors Affected** |
| Building Greenhouse Gas Emissions associated with energy use | **Negligible to minor adverse** effect (**not significant**) | Global atmosphere |
| Transport related Greenhouse Gas Emissions | **Minor adverse** effect (**not significant**) | Global atmosphere |

19.30 **Table 19.12** reorganises the results of **Table 19.11** so that the full range of likely residual environmental effects arising from the operational phase upon specific receptors or groups of receptors can be easily identified. As noted earlier in this chapter, the combination of two or more residual effects from two or more environmental topics upon a particular receptor or group of receptors was judged to have the potential to result in a significant effect interaction.

***Table 19.12**: Likely Effect Interactions of the Operational Phase (Applications 4 and 5)*

| Receptor / Group of Receptors Affected | Likely Residual Effects | Would Effect Interactions be Experienced? |
|---|---|---|
| Townscape character areas | TV1 | No |
| Ancoats, Shudehill, Cathedral, Smithfield Conservation Areas | TV2 | No |
| Visual receptors | TV3 | No |
| River Irwell | FRD5 | No |
| River Irk | FRD5, FRD6 | No |
| Bats | ECO7 | No |
| Breeding Birds | ECO8 | No |
| Water Utilities Infrastructure | FRD7 | No |
| Future residential receptors on the site | FRD8, NV4 | Yes |
| Future school users | FRD8 | No |
| Vehicle users of the local highway network | TA1, TA2, TA5 | No |
| Pedestrian users of the local highway network | TA3, TA5 | No |
| Users of public transport | TA4 | No |
| Existing off-site residential and | NV4, DSO1, DSO2 | Yes |

| Receptor / Group of Receptors Affected | Likely Residual Effects | Would Effect Interactions be Experienced? |
|---|---|---|
| sensitive receptors | | |
| Surrounding open amenity spaces. | DSO3 | No |
| On and off site pedestrian receptors | WM01, WM02 | No |
| District / Regional Population | SE3, SE7, SE8, SE9, SE10, SE11, SE12, HW3, HW4, HW5, HW6, HW7, HW8, HW9, HW10, HW11, HW12, HW13, HW14 | No (similar effects) |
| District / Regional Economy | SE4, SE5, SE6 | No |
| Global atmosphere | CC1, CC2 | No |

19.31 **Table 19.12** demonstrates that once completed and operational Application 4 and Application 5 would result in effect interactions to future site users from noise and potential flood risk issues. Both effects would be minor adverse at worse, and so in combination are not likely to result in significant effect interactions. Existing off-site residential and sensitive receptors are predicted to experience effect interactions as a result of noise from fixed plant and road traffic, and changes to daylight and sunlight levels at some properties. As the effect on daylight and sunlight is predicted to be significant it is reasonable to conclude that where the same property also experienced a minor adverse noise effect from increased traffic noise the effect interaction would be significant. However this interaction would only impact a small number of properties immediately adjacent to the highway network (as detailed in **Chapter 13 Noise and Vibration** and **Chapter 14 Daylight, Sunlight and Overshadowing**), limited to the area around the south western site boundary of the site.

## Conclusions

19.32 This chapter has presented an assessment of the likely significant effect interactions of Application4, Application 5 and the Proposed Development; that is, the likely combination of significant environmental effects generated by the Applications individually and the Proposed Development in isolation upon a particular receptor or group of receptors. Effect interactions were considered for the demolition and construction phase and the completed and operational Development.

19.33 During the demolition and construction phase of the project (Application 4, Application 5, and Application 4 and 5 in combination) no significant effect interactions are anticipated to occur. Whilst there are predicted to be some residual effects to the River Irk, future site users and nearby existing residential reports, the minor adverse effects would be managed by the Construction Environmental Management Plan.

19.34 Once operational, effect interactions are anticipated to occur to future site users and nearby residential properties. For Application 4 and Application 4 and 5 the effect on daylight and sunlight is predicted to be significant and so it is reasonable to conclude that where the same property also experiences a minor adverse noise effect the effect interaction would be significant. However this interaction is only likely to impact a small number of properties immediately adjacent to the highway network (as detailed in **Chapter 13 Noise and Vibration** and **Chapter 14 Daylight, Sunlight and Overshadowing**), limited to the area around the south western site boundary of the site.

# 20. Schedule of Additional Mitigation

## Introduction

20.1 This chapter provides a summary of the additional mitigation commitments outlined within the Environmental Statement (ES). Mitigation is an iterative process of controlling environmental effects by a hierarchy of avoidance (most desirable), reduction, amelioration and compensation. Mitigation measures fall into two broad categories:

- **Embedded mitigation measures** – These have been identified throughout the development of the proposal and are used to inform the Proposed Development design, such that it avoids key areas (e.g. by changes to layout) or includes features that would minimise the identified potential impacts on specific receptors (e.g. by including landscaping); and
- **Additional mitigation measures** – These have been developed later in the process once specific potential impacts on key environmental receptors have been identified.

20.2 It is important to distinguish between these two forms of mitigation, as the embedded mitigation has helped to define the Proposed Development details that have been assessed. In each topic-specific chapter of this ES, the 'Assessment of Likely Significant Effects' section (i.e. without additional mitigation) represents an assessment of the Proposed Development comprising the embedded design measures, whilst the 'Residual Effects' section assesses the Proposed Development with the additional mitigation measures in place.

20.3 Embedded mitigation measures are presented in **Volume 2: Main Text, Chapter 5: The Proposed Development** and within each of the technical assessments, where relevant (see **Volume 2: Main Text, Chapters 6 - 18**). The embedded mitigation measures will be secured by the approval of the Planning Application Drawings and other approved documents for each planning application.

20.4 The residual effects of the Proposed Development have been assessed as part of the EIA and can be described as the effects which remain after the implementation of the embedded and any additional proposed mitigation measures (see **Volume 2: Main Text, Chapter 19: Effect Interactions**). The additional mitigation measures and their corresponding residual effect to which they address are presented below in **Tables 20.1 – 20.3** below. **Table 20.1** details the additional mitigation that will be secured by the Application 4 permission, **Table 20.2** details the additional mitigation that will be secured by the Application 5 permission, and **Table 20.3** details any further additional mitigation that would be required in the event that both Applications 4 and 5 are permitted.

20.5 Reference should be made to each technical chapter for the full definition of the effect stated and the proposed additional mitigation.

20.6 It is expected that each additional mitigation measure would be secured through an appropriately worded planning condition associated with their respective application. For example, in **Table 20.1**, a residual effect associated with Application 4 would have an additional mitigation measure conditioned as part of the permission for Application 4.

# Additional Mitigation for Application 4

20.7 **Table 20.1** presents the residual effects of Application 4, and the additional mitigation measures that would be secured through Application 4.

***Table 20.1**: Summary of Additional Mitigation Measures for Application 4*

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| ***Townscape and Visual*** | | |
| - | No additional mitigation identified | No additional mitigation identified |
| ***Ecology and Nature Conservation*** | | |
| Effects on retained and enhanced woodland and trees on Site and adjacent to Site | Implementation of tree protection measures as outlined within the Arboricultural Method Statement (AMS).<br>Implementation of a Construction Environmental Management Plan (CEMP) specific to the Application 4 works ('the Application 4 CEMP') | Production and implementation of a Landscape Environmental Management Plan (LEMP), which will include appropriate woodland management.<br>A series of footpaths / boardwalks throughout the woodland designed to direct public pressure and reduce impact on surrounding ground flora. |
| Effects due to the spread of ruderal | Implementation of Invasive Species Method Statement | Implementation of ISMS. |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| invasive species | (ISMS). | |
| Effects on enhanced existing habitats and newly-created habitats | Implementation of the Application 4 CEMP, which is to include:<br>• Dust Management Plan (DMP);<br>• Emergency Spill Response Plan;<br>• Sensitive Lighting Strategy; and<br>• Silt Management Plan. | Production and implementation of a LEMP, which will set out the enhancement and long-term management and monitoring objectives for both the retained and newly created habitats, including appropriate woodland management.<br>A series of footpaths / boardwalks throughout the woodland designed to direct public pressure and reduce impact on surrounding ground flora. |
| Effects on Roosting Bats | Implementation of Natural England European Protected Species (EPS) Licence including Precautionary Working Methods and soft demolition.<br>Provision of alternative roosting habitat to mitigate for the loss of available roosting habitat e.g. bat boxes.<br>Sensitive Lighting Strategy with bat-sensitive measures for the construction phase, to be included within the Application 4 CEMP. | Production and implementation of a LEMP.<br>Provision of alternative roosting habitat to mitigate for the loss of available roosting habitat e.g. bat boxes.<br>Sensitive Lighting Strategy with bat-sensitive measures for the operational Development. |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| Effects on Foraging / Commuting Bats | Management and enhancement of retained woodland habitat and River Irk corridor in the LEMP.<br><br>Sensitive Lighting Strategy with bat-sensitive measures for the construction phase, to be included within the Application 4 CEMP. | Production and implementation of LEMP.<br><br>Sensitive Lighting Strategy with bat-sensitive measures for the operational phase. |
| Effects on Breeding Birds | Protection of existing breeding bird habitat through implementation of the AMS and Application 4 CEMP.<br><br>Installation of a range of bird boxes onto retained trees within undisturbed areas within the wider Red Bank site. | Enhancements to breeding bird habitats will be provided through the LEMP.<br><br>Installation of a range of bird boxes onto retained trees within undisturbed areas within the wider Red Bank site. |
| Effects on Fish | River works including wall demolition would be timed to avoid disturbance of spawning fish. For the species encountered during detailed fish surveys this period is April – July.<br><br>Implementation of the Application 4 CEMP, which is to include:<br>• Dust Management Plan (DMP);<br>• Emergency Spill Response Plan; | No additional mitigation identified |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| | • Sensitive Lighting Strategy; and<br>• Silt Management Plan. | |
| ***Cultural Heritage*** | | |
| - | On the basis that RB01 – RB07, RB10 and RB12B will be excavated and mitigated as part of the HIF Applications, which proposes a series of trial trenches, no additional mitigation is identified. | No additional mitigation identified |
| ***Ground Conditions*** | | |
| Effect on construction / ground workers | Implementation of measures and controls within the Application 4 CEMP<br>Piling Risk Assessment to be produced to prevent contamination migration during piling<br>UXO Desk Study to be produced to zone or de-risk the Site | N/A |
| Effect on third-party neighbours and on-site users of completed adjacent developments | Production and implementation of measures and controls within the Application 4 CEMP | No additional mitigation identified |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| Effect on groundwater in superficial aquifer | Production and implementation of measures and controls within the Application 4 CEMP | No additional mitigation identified |
| Effect on groundwater in bedrock aquifer | Production and implementation of measures and controls within the Application 4 CEMP | No additional mitigation identified |
| Effect on surface water (River Irk) | Production and implementation of measures and controls within the Application 4 CEMP | No additional mitigation identified |
| ***Flood Risk and Drainage*** | | |
| Effect on the water quality and hydromorphology by entrainment on materials (River Irk, River Irwell and water utilities infrastructure) | Production and implementation of measures and controls within the Application 4 CEMP | N/A |
| Effect on water quality by spillage of pollutants (River Irk, River Irwell and Nitrate Vulnerable Zone (NZV)) | Production and implementation of measures and controls within the Application 4 CEMP | N/A |
| Effect on hydrological and hydromorphological processes | Production and implementation of measures and controls within the Application 4 CEMP | N/A |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| (River Irk and River Irwell) | | |
| Effect on flood risk (construction workers and land classed as 'Less vulnerable' and 'More Vulnerable' regarding flood risk) | Production and implementation of measures and controls within the Application 4 CEMP | N/A |
| Effect on groundwater levels and flow from excavation earthworks and below-ground structures (superficial and bedrock aquifers) | Production and implementation of measures and controls within the Application 4 CEMP, as well as the Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment | N/A |
| Effect on local abstractions (licensed groundwater abstractions and historic local boreholes) | Production and implementation of measures and controls within the Application 4 CEMP, as well as the Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment | N/A |
| Effect on groundwater quality due to the mobilisation of contaminants and sediments released at surface during earthworks or from accidental spillages (superficial and | Production and implementation of measures and controls within the Application 4 CEMP, as well as the Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment | N/A |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| bedrock aquifers and licensed groundwater abstractions and historic local boreholes) | | |
| Effect on water quality from Site drainage (River Irk and River Irwell) | N/A | No additional mitigation identified |
| Effect on channel morphology from new structures within the channel / floodplain (River Irk and River Irwell) | N/A | No additional mitigation identified |
| Effect on infrastructure capacity (water utilities infrastructure) | N/A | No additional mitigation identified |
| Effect on flood risk (land classed as 'Less vulnerable' and 'More Vulnerable' regarding flood risk) | N/A | No additional mitigation identified |
| Effect on groundwater levels and flow caused by permanent below-ground structures and the reduction of surface area for | N/A | Below-ground structures will be designed at the detailed design stage to allow groundwater to flow around them in direction of the River Irk.<br>No additional mitigation identified in regard to |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| ground water recharge (superficial and bedrock aquifers and licensed groundwater abstractions and historic local boreholes) | | development surface area. |
| ***Transport and Access*** | | |
| Construction phase effects on the local highway network and its users | Production and implementation of measures and controls within the Application 4 CEMP<br><br>Implementation of measures and controls within the Application 4 Construction Logistics Plan (CLP) / Construction Traffic Management Plan (CTMP) | N/A |
| Operational phase effects on Severance, Driver Delay, Pedestrian Delay, Public Transport, Accidents and Safety | N/A | Travel Plan<br><br>Provision of electric vehicle (EV) parking / charging spaces for residents.<br><br>Highway mitigation measures, as detailed within **Volume 2: Main Text, Chapter 11: Transport and Access**, which include:<br><br>• Amendments to signal timings at Cheetham Hill Rd |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| | | / Lord St junction including addition of a right turn arrow turning right into Lord St; and<br>• Minor amendments to kerblines at the Redbank / Lord St junction. |
| ***Air Quality and Dust*** | | |
| Construction dust and $PM_{10}$ from on-Site demolition and construction activities | Production and implementation of measures and controls within the Application 4 CEMP | N/A |
| Exhaust emissions from construction traffic and plant | Production and implementation of measures and controls within the Application 4 CEMP<br>Implementation of measures and controls within the Application 4 CLP / CTMP | N/A |
| Exhaust emissions from development generated road traffic | N/A | Travel Plan<br>Provision of EV parking / charging spaces for residents<br>Provision of cycle parking spaces |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| ***Noise and Vibration*** | | |
| Construction phase noise | Production and implementation of measures and controls within the Application 4 CEMP | N/A |
| Construction phase development-generated road traffic noise | No additional mitigation identified | N/A |
| Construction phase vibration | Production and implementation of measures and controls within the Application 4 CEMP | N/A |
| Operational phase development-generated commercial and fixed plant noise | N/A | Implementation of plant noise level limits |
| Operational phase development-generated road traffic noise | N/A | No additional mitigation identified |
| Operational noise sources contributing to the prevailing sound environment across the Site | N/A | **Appendix 13.8** provides further details on the possible façade configurations capable of meeting the sound insulation performances required to achieve the adopted internal criteria across the Proposed Development. |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| ***Daylight, Sunlight and Overshadowing*** | | |
| Effect upon existing receptors in regard to daylight during the operational phase | N/A | Further detailed studies at the detailed design stage to address the level of daylight and sunlight access to existing surrounding properties to minimise any significant adverse effects to neighbouring adjacent buildings. |
| Effect upon existing receptors in regard to sunlight during the operational phase | N/A | Further detailed studies at the detailed design stage to address the level of daylight and sunlight access to existing surrounding properties to minimise any significant adverse effects to neighbouring adjacent buildings. |
| Effect upon existing receptors in regard to overshadowing of open spaces during the operational phase | N/A | Further detailed studies at the detailed design stage to address the level of daylight and sunlight access to existing surrounding properties to minimise any significant adverse effects to neighbouring adjacent buildings. |
| ***Wind Microclimate*** | | |
| Effect on pedestrian safety | N/A | Further detailed studies at the detailed design stage to minimise any significant adverse effects to neighbouring adjacent buildings, with further refinement of the |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| | | Landscape Strategy to be made for subsequent detailed planning applications. |
| Effect on wind comfort | N/A | Further detailed studies at the detailed design stage to minimise any significant adverse effects to neighbouring adjacent buildings, with further refinement of the Landscape Strategy to be made for subsequent detailed planning applications |
| ***Socioeconomics*** | | |
| Direct employment generated by the construction phase | No additional mitigation identified | N/A |
| Gross Value Added (GVA) added by direct employment generated by the construction phase | No additional mitigation identified | N/A |
| Effect on net additional employment opportunities generated by the operational phase | N/A | No additional mitigation identified |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| GVA to the economy by the operational phase | N/A | No additional mitigation identified |
| Expenditure from residents of the Proposed Development by the operational phase | N/A | No additional mitigation identified |
| Effect on additional Council Tax receipts by the operational phase | N/A | No additional mitigation identified |
| Contribution to housing delivery by the operational phase | N/A | No additional mitigation identified |
| Effect on affordable housing delivery by the operational phase | N/A | No additional mitigation identified |
| Effect on primary school provision by the operational phase | N/A | No additional mitigation identified |
| Effect on secondary school provision by the operational phase | N/A | No additional mitigation identified |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| Effect on open space and play space provision by the operational phase | N/A | No additional mitigation identified |
| ***Health and Wellbeing*** | | |
| Air quality, noise and neighbourhood | Production and implementation of measures and controls within the Application 4 CEMP | N/A |
| Access to work and training | No additional mitigation identified | N/A |
| Minimising the use of resources | No additional mitigation identified | N/A |
| Housing design and affordability | N/A | No additional mitigation identified |
| Access to health and social care services and other social infrastructure – dental practices | N/A | No additional mitigation identified |
| Access to health and social care services and other social infrastructure – GP practices | N/A | No additional mitigation identified |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| Access to health and social care services and other social infrastructure – Primary schools (if school *is* provided within swing plot) | N/A | No additional mitigation identified |
| Access to health and social care services and other social infrastructure – Primary schools (if school *is not* provided within swing plot) | N/A | No additional mitigation identified |
| Access to health and social care services and other social infrastructure – Secondary schools | N/A | No additional mitigation identified |
| Access to open space and nature | N/A | No additional mitigation identified |
| Accessibility and active travel | N/A | No additional mitigation identified |
| Crime reduction and community safety | N/A | No additional mitigation identified |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| Access to healthy food | N/A | No additional mitigation identified |
| Access to work and training | N/A | No additional mitigation identified |
| Social cohesion and inclusive design | N/A | No additional mitigation identified |
| Minimising the use of resources | N/A | No additional mitigation identified |
| Climate change | N/A | No additional mitigation identified |
| ***Climate Change*** | | |
| Embodied carbon emissions | Production and implementation of measures and controls within the Application 4 CEMP<br>Implementation of measures and controls within the Application 4 CLP / CTMP | N/A |
| Replacement / refurbishment of building parts | N/A | Additional mitigation measures to be identified in subsequent detailed planning applications across all life cycle stages of the Proposed Development, with consideration given to the robustness and durability of components, minimising material waste and using fewer |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| | | finish materials. |
| Building emissions associated with buildings' energy use | N/A | Robust monitoring of energy consumption (i.e., smart metering)<br>Procurement of energy efficient equipment |
| Transport emissions | N/A | Travel Plan<br>Provision of EV parking / charging spaces for residents |
| Damp buildings can lead to mould growth | N/A | The consideration of (de-)humidification systems incorporated into buildings to sufficiently humidify or de-humidify buildings.<br>The consideration of (de-)humidification systems designed into the heating and cooling systems.<br>The consideration of particular sealant methods implemented for areas where high humidity may cause mould growth issues.<br>A maintenance plan to be put in place to ensure humidity is appropriately regulated and damage resolved. |
| Prolonged dry periods may lead to subsidence. This can be caused by | N/A | Following dry periods, buildings and the grounds should be inspected for cracking and subsidence, as part of the |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| the drying out and cracking of earthworks and soils | | scheduled maintenance and inspection programme.<br>Ensure subsidence risks at detailed design take account of changes in precipitation (summer decrease and winter increase) which may impact ground stability. |
| Overheating of buildings and ancillary components, such as electricals | N/A | Ensuring that natural ventilation in residential spaces is sufficient to regulate overheating for future climate projection and considering more frequent and intense heatwaves, or provision of a cooling system will need to be included in the design.<br>Electrical equipment to be located in shaded areas or provided with cooling to minimise risk of overheating. |
| Increased risk of fire | N/A | Development and implementation of fire management and evacuation plans. |
| Lightning strikes causing fires and damage to assets, the public realm, and pose health and safety risks to | N/A | Development and implementation of fire management and evacuation plans.<br>Lightning protection measures are included at detailed design. |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| end users | | |
| Drought can reduce the ability of infrastructure, such as water utilities, to function correctly | N/A | Implementation of drought management measures to allow infrastructure to function correctly. |
| Damage from high winds and rain infiltration into infrastructure components | N/A | The consideration of wind forces and rain infiltration in the durability of design and material choices.<br>Wind loading / action impacts on buildings and public realm elements.<br>Inclusion of measures to ensure that slope erosion due to heavy rainfall will be sufficiently captured by channels and discharge to public sewer.<br>The operational Site Maintenance and Inspection programme should include site debris clearance and drainage clearance. |
| High winds and storms can affect the stability of above-ground infrastructure and hasten material degradation due to wind-driven rain | N/A | The consideration of wind forces and rain infiltration in the durability of design and material choices.<br>Wind loading / action impacts on buildings and public realm elements. |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| infiltration | | |
| Vegetation can become damaged and destabilised | N/A | Implementation of a LEMP to ensure planting is resilient to higher wind speeds. The management plan will include maintenance measures to ensure the health of the planting and reduce the risk of destabilised vegetation posing a risk to buildings, infrastructure, the public realm and end users.<br><br>Maintenance plans following storm events which include assessing the condition of street furniture and the condition of the public realm and vegetation. Maintenance plans to remove debris from public realm areas and drainage. |
| Infrastructure such as signage or signals, or cycleway infrastructure, could also be damaged by high winds or lightning strike | N/A | Maintenance plans following storm events which include assessing the condition of street furniture and the condition of the public realm and vegetation. Maintenance plans to remove debris from public realm areas and drainage.<br>Wind loading / action impacts on buildings and public realm elements. |
| Vegetation in the public realm can dry out and die | N/A | Implementation of irrigation and a maintenance plan during dry / extreme temperature periods to ensure that |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| | | planting does not die. |
| Flooding may cause damage to car and cycle parking, posing an access / egress risk to end users and potential damage to end users vehicles | N/A | Ensure that the design is sufficient to prevent flooding of the car park taking into account the climate projections for precipitation. The design of the Development must be sufficient to ensure that the potential for flooding which impedes access of the car park to end users, their vehicles and emergency services is mitigated against. |
| Road and footway users may be sensitive to high winds | N/A | The inclusion of wind tunnel prevention measures to ensure wind tunnels will not exist or impact on public realm spaces. |
| Lower humidity can cause health problems for end users, such as catching a cold or infection | N/A | The consideration of (de-)humidification systems incorporated into buildings to sufficiently humidify or de-humidify buildings.<br>The consideration of (de-)humidification systems designed into the heating and cooling systems |
| High temperatures can cause discomfort for end users, alongside impacting concentration and | N/A | Ensuring that natural ventilation in residential spaces is sufficient to regulate overheating for future climate projection and considering more frequent and intense heatwaves, or provision of a cooling system will need to be |

| Topic and Type of Effect | Additional Mitigation Measures for Application 4 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| productivity in workspaces | | included in the design. |

# Additional Mitigation for Application 5

20.8 **Table 20.2** presents the residual effects of Application 5, and the additional mitigation measures that would be secured through Application 5.

***Table 20.2**: Summary of Additional Mitigation Measures for Application 5*

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| ***Townscape and Visual*** | | |
| - | No additional mitigation identified | No additional mitigation identified |
| ***Ecology and Nature Conservation*** | | |
| Effects due to the spread of ruderal invasive species | Implementation of ISMS | Implementation of ISMS |
| Effects on enhanced existing habitats and newly-created habitats | Adoption of the Application 5 CEMP – to include DMP, Emergency Spill Response Plan, Sensitive Lighting Strategy, and Silt Management Plan. | Production and implementation of a LEMP which will set out the enhancement and long-term management and monitoring objectives for both the retained and newly created habitats, including appropriate ongoing management for newly planted trees and created habitats |
| Effects on Roosting Bats | Provision of alternative roosting habitat to mitigate for the | Implementation of LEMP |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| | loss of available roosting habitat e.g. bat boxes.<br>Sensitive Lighting Strategy with bat-sensitive measures for the construction phase, to be included within the CEMP. | Provision of alternative roosting habitat to mitigate for the loss of available roosting habitat e.g. bat boxes.<br>Sensitive Lighting Strategy with bat-sensitive measures for the operational Development |
| Effects on Foraging / Commuting Bats | Sensitive Lighting Strategy with bat-sensitive measures for the construction phase, to be included within the Application 5 CEMP. | Implementation of LEMP<br>Sensitive Lighting Strategy with bat-sensitive measures for the operational phase |
| Effects on Breeding Birds | Appropriately timed vegetation clearance.<br>Enhancements to breeding bird habitats to be provided through the LEMP. | Installation of a range of bird boxes onto retained trees within undisturbed areas |
| Effects on Fish | River works including construction of outfall would be timed to avoid disturbance of spawning fish. For the species encountered during detailed fish surveys this period is April – July. | No additional mitigation identified |
| ***Cultural Heritage*** | | |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| Effect on previously unrecorded prehistoric, Roman, and medieval archaeological remains | Preservation by record | No additional mitigation identified |
| Effect on post-medieval and industrial archaeological remains | Preservation by record | No additional mitigation identified |
| ***Ground Conditions*** | | |
| Effect on construction / ground workers | Implementation of measures and controls within the CEMP<br>Piling Risk Assessment to be produced to prevent contamination migration during piling<br>UXO Desk Study to be produced to zone or de-risk the Site | N/A |
| Effect on third-party neighbours and on-site users of completed adjacent developments | Implementation of measures and controls within the CEMP | No additional mitigation identified |
| Effect on groundwater in superficial aquifer | Implementation of measures and controls within the CEMP | No additional mitigation identified |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| Effect on groundwater in bedrock aquifer | Implementation of measures and controls within the CEMP | No additional mitigation identified |
| Effect on surface water (River Irk) | Implementation of measures and controls within the CEMP | No additional mitigation identified |
| ***Flood Risk and Drainage*** | | |
| Effect on the water quality and hydromorphology by entrainment on materials (River Irk, River Irwell and water utilities infrastructure) | Implementation of measures and controls within the CEMP | N/A |
| Effect on water quality by spillage of pollutants (River Irk, River Irwell and Nitrate Vulnerable Zone (NZV)) | Implementation of measures and controls within the CEMP | N/A |
| Effect on hydrological and hydromorphological processes (River Irk and River Irwell) | Implementation of measures and controls within the CEMP | N/A |
| Effect on flood risk (construction workers and land classed as 'Less | Implementation of measures and controls within the CEMP and Flood Risk Assessment (FRA) | N/A |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| vulnerable' and 'More Vulnerable' regarding flood risk) | | |
| Effect on groundwater levels and flow from excavation earthworks and below-ground structures (superficial and bedrock aquifers) | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment | N/A |
| Effect on local abstractions (licensed groundwater abstractions and historic local boreholes) | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment | N/A |
| Effect on groundwater quality due to the mobilisation of contaminants and sediments released at surface during earthworks or from accidental spillages (superficial and bedrock aquifers and licensed groundwater abstractions and historic local boreholes) | Implementation of measures and controls within the CEMP, Demolition Plan, Remediation Strategy and, if required, the Piling Risk Assessment | N/A |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| Effect on water quality from Site drainage (River Irk and River Irwell) | N/A | No additional mitigation identified |
| Effect on channel morphology from new structures within the channel / floodplain (River Irk and River Irwell) | N/A | No additional mitigation identified |
| Effect on infrastructure capacity (water utilities infrastructure) | N/A | No additional mitigation identified |
| Effect on flood risk (land classed as 'Less vulnerable' and 'More Vulnerable' regarding flood risk) | N/A | No additional mitigation identified |
| Effect on groundwater levels and flow caused by permanent below-ground structures and the reduction of surface area for ground water recharge (superficial and bedrock aquifers and licensed groundwater abstractions and | N/A | No additional mitigation identified |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| historic local boreholes) | | |
| ***Transport and Access*** | | |
| Construction phase effects on the local highway network and its users | Implementation of measures and controls within the CEMP<br>Implementation of measures and controls within the CLP / CTMP | N/A |
| Operational phase effects on Severance, Driver Delay, Pedestrian Delay, Public Transport, Accidents and Safety | N/A | Travel Plan<br>Provision EV parking / charging spaces for residents |
| ***Air Quality and Dust*** | | |
| Construction dust and $PM_{10}$ from on-Site demolition and construction activities | Implementation of measures and controls within the CEMP | N/A |
| Exhaust emissions from construction traffic and plant | Implementation of measures and controls within the CEMP<br>Implementation of measures and controls within the CLP / CTMP | N/A |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| Exhaust emissions from development generated road traffic | N/A | Travel Plan<br>Provision of EV parking / charging spaces for residents<br>Provision of cycle parking spaces |
| ***Noise and Vibration*** | | |
| Construction phase noise | Implementation of measures and controls within the CEMP | N/A |
| Construction phase development-generated road traffic noise | No additional mitigation identified | N/A |
| Construction phase vibration | Implementation of measures and controls within the CEMP | N/A |
| Operational phase development-generated commercial and fixed plant noise | N/A | Implementation of plant noise level limits |
| Operational phase development-generated road traffic noise | N/A | No additional mitigation identified |
| Operational noise sources contributing to the prevailing sound | N/A | The need to agree façade configurations with MCC prior to the construction of each phase of the proposed Application |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| environment across the Site | | 5 development to be incorporated in an appropriate planning condition, thereby ensuring subsequent compliance with the internal noise criteria and an appropriate means of control. |
| ***Daylight, Sunlight and Overshadowing*** | | |
| Effect upon existing receptors in regard to daylight | N/A | No additional mitigation identified |
| Effect upon existing receptors in regard to sunlight | N/A | No additional mitigation identified |
| Effect upon existing receptors in regard to overshadowing of open spaces | N/A | No additional mitigation identified |
| ***Wind Microclimate*** | | |
| Effect on pedestrian safety | No additional mitigation identified | Implementation of the Landscaping Strategy and recommended wind mitigation measures as described in |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| | | **Volume 2: Main Text, Chapter 15: Wind Microclimate** |
| Effect on wind comfort | No additional mitigation identified | Implementation of the Landscaping Strategy and recommended wind mitigation measures as described in **Volume 2: Main Text, Chapter 15: Wind Microclimate** |
| ***Socioeconomics*** | | |
| Direct employment generated by the construction phase | No additional mitigation identified | N/A |
| Gross Value Added (GVA) added by direct employment generated by the construction phase | No additional mitigation identified | N/A |
| Effect on net additional employment opportunities generated by the operational phase | N/A | No additional mitigation identified |
| GVA to the economy by the operational phase | N/A | No additional mitigation identified |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| Expenditure from residents of the Proposed Development by the operational phase | N/A | No additional mitigation identified |
| Effect on additional Council Tax receipts by the operational phase | N/A | No additional mitigation identified |
| Contribution to housing delivery by the operational phase | N/A | No additional mitigation identified |
| Effect on affordable housing delivery by the operational phase | N/A | No additional mitigation identified |
| Effect on primary school provision by the operational phase | N/A | No additional mitigation identified |
| Effect on secondary school provision by the operational phase | N/A | No additional mitigation identified |
| Effect on open space and play space provision by the operational phase | N/A | No additional mitigation identified |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| ***Health and Wellbeing*** | | |
| Air quality, noise and neighbourhood | Implementation of measures and controls within the CEMP | N/A |
| Access to work and training | No additional mitigation identified | N/A |
| Minimising the use of resources | No additional mitigation identified | N/A |
| Housing design and affordability | N/A | No additional mitigation identified |
| Access to health and social care services and other social infrastructure – dental practices | N/A | No additional mitigation identified |
| Access to health and social care services and other social infrastructure – GP practices | N/A | No additional mitigation identified |
| Access to health and social care services and other social infrastructure – Primary schools (if | N/A | No additional mitigation identified |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| school *is* provided within swing plot) | | |
| Access to health and social care services and other social infrastructure – Primary schools (if school *is not* provided within swing plot) | N/A | No additional mitigation identified |
| Access to health and social care services and other social infrastructure – Secondary schools | N/A | No additional mitigation identified |
| Access to open space and nature | N/A | No additional mitigation identified |
| Accessibility and active travel | N/A | No additional mitigation identified |
| Crime reduction and community safety | N/A | No additional mitigation identified |
| Access to healthy food | N/A | No additional mitigation identified |
| Access to work and training | N/A | No additional mitigation identified |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| Social cohesion and inclusive design | N/A | No additional mitigation identified |
| Minimising the use of resources | N/A | No additional mitigation identified |
| Climate change | N/A | No additional mitigation identified |
| ***Climate Change*** | | |
| Embodied carbon emissions | Implementation of measures and controls within the CEMP<br>Implementation of measures and controls within the CTMP<br>/ | N/A |
| Replacement / refurbishment of building parts | N/A | No additional mitigation identified |
| Building emissions associated with buildings' energy use | N/A | Robust monitoring of energy consumption (i.e., smart metering)<br>Procurement of energy efficient equipment |
| Transport emissions | N/A | Travel Plan<br>Provision of EV parking / charging spaces for residents |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| Prolonged dry periods may lead to drying out and cracking of earthworks and soils, subsidence, and greater amounts of dust | N/A | Following dry periods, buildings and the grounds should be inspected for cracking and subsidence, as part of the scheduled maintenance and inspection programme.<br>Ensure subsidence risks take account of changes in precipitation (summer decrease and winter increase) which may impact ground stability. |
| Overheating of buildings | N/A | Ensuring that natural ventilation in residential spaces is sufficient to regulate overheating for future climate projection and considering more frequent and intense heatwaves, or provision of a cooling system will need to be included in the design |
| Drought can reduce the ability of infrastructure, such as water utilities, to function correctly | N/A | Implementation of drought management measures to allow infrastructure to function correctly |
| Damage from high winds and rain infiltration into infrastructure components | N/A | The operational Site Maintenance and Inspection programme should include site debris clearance and drainage clearance. |

| Topic and Type of Effect | Additional Mitigation Measures for Application 5 | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| High winds and storms can affect the stability of above-ground infrastructure and hasten material degradation due to wind-driven rain infiltration | N/A | The Landscape Access and Maintenance Strategy should include assessing the condition of street furniture, infrastructure and buildings |
| Vegetation can become damaged and destabilised from drought or wind, posing a risk to infrastructure, end users, and buildings | N/A | The Landscape Access and Maintenance Strategy should include assessing the condition of street furniture, infrastructure and buildings |
| Vegetation in the public realm can dry out and die | N/A | The Landscape Access and Maintenance Strategy should include irrigation and a maintenance plan during dry / extreme temperature periods to ensure that planting does not die |
| High temperatures can cause discomfort for end users | N/A | Ensuring that natural ventilation in residential spaces is sufficient to regulate overheating for future climate projection and considering more frequent and intense heatwaves, or provision of a cooling system will need to be included in the design |

## Further Additional Mitigation for Application 4 and 5

20.9 **Table 20.3** presents the residual effects of Application 4 and 5 in-combination, and any further additional mitigation measures from those already presented in **Table 20.1** and **Table 20.2** that would be secured through Application 4 and 5.

***Table 20.3**: Summary of Further Additional Mitigation Measures for Application 4 and Application 5 in Combination*

| Topic and Type of Effect | Further Additional Mitigation Measures for Application 4 and Application 5 in Combination | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| ***Townscape and Visual*** | | |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |
| ***Ecology and Nature Conservation*** | | |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |
| ***Cultural Heritage*** | | |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |
| ***Ground Conditions*** | | |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |
| ***Flood Risk and Drainage*** | | |

| Topic and Type of Effect | Further Additional Mitigation Measures for Application 4 and Application 5 in Combination | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |
| ***Transport and Access*** | | |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |
| ***Air Quality and Dust*** | | |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |
| ***Noise and Vibration*** | | |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |
| ***Daylight, Sunlight and Overshadowing*** | | |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |

| Topic and Type of Effect | Further Additional Mitigation Measures for Application 4 and Application 5 in Combination | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| ***Wind Microclimate*** | | |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |
| ***Socioeconomics*** | | |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |
| ***Health and Wellbeing*** | | |
| Access to health and social care services and other social infrastructure – Primary schools (if school is *not* provided within swing plot) | No additional mitigation identified | Continued review of school place planning modelling with MCC to understand the changing needs of primary education provision. |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |
| ***Climate Change*** | | |

| Topic and Type of Effect | Further Additional Mitigation Measures for Application 4 and Application 5 in Combination | |
|---|---|---|
| | During the Construction Phase | During the Operational Phase |
| - | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. | No additional mitigation measures identified to those already stated in **Table 20.1** and **Table 20.2**. |

# Conclusions

20.10 The Proposed Development has been designed in accordance with the findings and recommendations of the EIA. Any adverse effects identified through the assessment have been minimised as far as possible through the design process (embedded mitigation measures) or the application of appropriate mitigation measures to be secured as a planning condition (additional mitigation measures).

## Application 4

20.11 Additional mitigation for the adverse effects of the construction phase of the Application 4 would be secured primarily via:

- Construction Environment Management Plan (CEMP) for the Application 4 works;
    - Also containing a Construction Traffic Management Plan (CTMP) / Construction Logistics Plan (CLP), a Dust Management Plan (DMP), an Emergency Spill Response Plan and Silt Management Plan.
- Invasive Species Management Statement (ISMS);
- Natural England European Protected Species (EPS) Licence for roosting bat species;
- Arboricultural Method Statement (AMS);
- Sensitive Lighting Strategy;
- Piling Risk Assessment; and
- UXO Desk Study.

20.12 Additional mitigation for the adverse effects of the operational phase of the Application 4 would be secured primarily via:

- LEMP;
    - Also containing the provision of bird and bat boxes.
- Creation of a series of footpaths / boardwalks throughout the woodland designed to direct public pressure and reduce impact on surrounding ground flora;
- ISMS;
- Sensitive Lighting Strategy;
- Travel Plan;
- Provision of electric vehicle (EV) and cycle parking spaces for residents; and
- Operational plant noise level limits.

20.13 Each of the additional mitigation measures described above would be secured through the stipulation of a suitably worded planning condition and would be adhered to during the construction and operational phases of the Proposed Development (to an appropriate and agreed-upon timescale). With regard to the outline Application 4, it would be expected that the specific details of the mitigation measures would be further developed by the Applicant at the detailed design stage of future detailed planning applications.

## Application 5

20.14 Additional mitigation for the adverse effects of the construction phase of the Application 5 would be secured primarily via:

- Construction Environment Management Plan (CEMP) for the Application 5 works;
    - Also containing a Construction Traffic Management Plan (CTMP) / Construction Logistics Plan (CLP), a Dust Management Plan (DMP), an Emergency Spill Response Plan and Silt Management Plan.
- Invasive Species Management Statement (ISMS);
- Natural England European Protected Species (EPS) Licence for roosting bat species;
- Arboricultural Method Statement (AMS);
- Sensitive Lighting Strategy;
- Preservation of any on-Site archaeological remains by record;
- Piling Risk Assessment; and
- UXO Desk Study.

20.15 Additional mitigation for the adverse effects of the operational phase of the Application 5 would be secured primarily via:

- LEMP;
    - Also containing the provision of bird and bat boxes.
- Sensitive Lighting Strategy;
- ISMS;
- Travel Plan;
- Provision of electric vehicle (EV) and cycle parking spaces for residents; and
- Operational plant noise level limits.

# Abbreviations

| | |
|---|---|
| **AADT** | Annual Average Daily Traffic |
| **AAWT** | Annual Average Weekday Traffic |
| **AIA** | Arboricultural Impact Assessment |
| **AOD** | Above Ordnance Datum |
| **AQMA** | Air Quality Management Area |
| **bgl** | Below Ground Level |
| **BGS** | British Geological Survey |
| **BMV** | Best Most Versatile |
| **BNG** | Biodiversity Net Gain |
| **BRE** | Building Research Establishment |
| **BREEAM** | Building Research Establishment Environmental Assessment Methods |
| **BS** | British Standards |
| **CEMP** | Construction Environmental Management Plan |
| **CIEEM** | Chartered Institute of Ecology and Environmental Management |
| **CLP** | Construction Logistics Plan |
| **$CO_2$** | Carbon Dioxide |
| **COSHH** | Control of Substances Hazardous to Health |
| **DAS** | Design and Access Statement |
| **dB** | Decibels |
| **Defra** | Department for Environment, Food & Rural Affairs |
| **DfT** | Department for Transport |
| **DLUHC** | Department for Levelling Up, Housing and Communities |
| **DMP** | Dust Management Plan |
| **EA** | Environment Agency |
| **EIA** | Environmental Impact Assessment |
| **ES** | Environmental Statement |
| **EU** | European Union |
| **EV** | Electric Vehicle |
| **FRA** | Flood Risk Assessment |
| **FTP** | Framework Travel Plan |
| **GEA** | Gross External Area |
| **GHG** | Greenhouse Gas |
| **GLVIA** | Guidelines for Landscape and Visual Impact Assessment |
| **GMEU** | Greater Manchester Ecology Unit |
| **HA** | Highways Agency |
| **HDV** | Heavy Duty Vehicle |
| **HER** | Historic Environment Record |
| **HGV** | Heavy Goods Vehicle |
| **HMSO** | His Majesty's Stationery Office |
| **HSE** | Health and Safety Executive |
| **IAQM** | Institute of Air Quality Management |
| **IEEM** | Institute of Ecology and Environmental Management |
| **IEMA** | Institute of Environmental Management and Assessment |
| **IRZ** | Impact Risk Zone |
| **km** | Kilometre |
| **km/h** | Kilometres per hour |
| **LNR** | Local Nature Reserve |

| | |
|---|---|
| **LPA** | Local Planning Authority |
| **LZC** | Low or Zero Carbon |
| **MAGIC** | Multi-Agency Geographic Information for the Countryside |
| **NCA** | National Character Area |
| **NE** | Natural England |
| **NPPF** | National Planning Policy Framework |
| **NPPG** | National Planning Practice Guidance |
| **NTS** | Non Technical Summary |
| **OS** | Ordnance Survey |
| **PEA** | Preliminary Ecological Appraisal |
| **$PM_{2.5}$** | Particulate Matter with an aerodynamic diameter of less than 2.5µm |
| **$PM_{10}$** | Particulate matter with a mean aerodynamic diameter of 10µm |
| **ppm** | Parts per million |
| **PRoW** | Public Right of Way |
| **SAC** | Special Area of Conservation |
| **SAP** | Standard Assessment Procedure |
| **SCI** | Statement of Community Involvement |
| **SPA** | Special Protection Area |
| **SPR** | Source Pathway Receptors |
| **SPS** | Supporting Planning Statement |
| **SPZ** | Source Protection Zone |
| **SSSI** | Site of Special Scientific Interest |
| **SuDS** | Sustainable Drainage System |
| **TA** | Transport Assessment |
| **TPO** | Tree Preservation Order |
| **WFD** | Water Framework Directive |
| **UU** | United Utilities |
| **ZTV** | Zone of Theoretical Visibility |

# Glossary

| | |
|---|---|
| **Above Ordnance Datum (AOD)** | The distance above the mean tides at Newlyn, Cornwall. |
| **Air pollutants** | Amounts of foreign and/or natural substances occurring in the atmosphere that may result in adverse effects on humans, animals, vegetation and/or materials |
| **Air quality** | A measure of the degree to which air is polluted. |
| **Air quality sensitive receptors** | People, property or designated sites for nature conservation that may be at risk from exposure to air pollutants that could potentially arise as a result of the development. |
| **Ambient** | Background levels. |
| **Ancient Woodland** | Woodland that has existed continuously since 1600 or before in England, Wales and Northern Ireland. |
| **Annual average daily traffic flow** | A daily traffic flow (24hrs), expressed as a mean daily flow across all 365 days of the year (AADT) in units of vehicles per hour. |
| **Annual mean concentration** | The average (mean) of the hourly pollutant concentrations measured or predicted for a one year period |
| **ARCADY 5.0** | A computer program developed by the Transport Research Laboratory to analyse the capacity of roundabouts. |
| **Baseline** | Existing environmental conditions present on, or near a site, against which future changes may be measured or predicted. |
| **Biodiversity** | The variety of life forms that inhabit the earth. |
| **Borehole** | A hole drilled or dug into the earth’s surface through which groundwater can be withdrawn. |
| **BREEAM** | The Building Research Establishment's Environmental Assessment Method for rating the environmental performance of an office building. |
| **Construction Environmental Management Plan (CEMP)** | A documented management system with environmental procedures to monitor residual impacts of the construction and operational phases of the development. |
| **Contamination** | Contamination is the addition, or the result of addition, or presence of a material or materials to, or in, another substance to such a degree as to render it unfit for its intended purpose. |
| **Cumulative effects** | Effects that result from incremental changes caused by other past, present or reasonably foreseeable actions. |

| | |
|---|---|
| **Directive** | European Commission (EC) Directives impose legal obligations on European Member States. They are binding as to the results to be achieved, but allow individual states the right to decide the form and methods used to achieve the results. An example of this is the EC Air Quality Framework Directive 96/62 that is brought into legal effect in the UK by the Air Quality (England) Regulations (2000). |
| **Dust** | Fine particles of solid materials ranging in size from 1 to 75µm diameter (see British Standard 3405) capable of being resuspended in air and settling only slowly under the influence of gravity where it may cause nuisance. |
| **Dust deposition rate** | The rate at which particulate matter is deposited on to surfaces typically expressed in units of mg/m2/day. |
| **Ecology** | The study of living organisms in relation to their surroundings. |
| **Ecosystem** | Term used to describe a community of interdependent organisms and the physical environment they inhabit. |
| **Effluent** | A fluid discharged or emitted to the external environment. |
| **Emission** | A material that is expelled or released to the environment. Usually applied to gaseous or odorous discharges to the atmosphere. |
| **Emission factors** | The average emission rate of a given pollutant for a given source, relative to units of activity. Used to model future pollution concentrations under different scenarios |
| **Environmental Impact Assessment (EIA)** | A technique for ensuring that the likely effects of new development on the environment are fully understood and taken into account before the development is allowed to go ahead. It provides a focus for public scrutiny of the project and enables the importance of the predicted effects, and the scope for modifying or mitigating them, to be properly evaluated by the decision-making authority. |
| **Environmental impact** | The total effect of any operation on the surrounding environment. |
| **Environmental Statement (ES)** | The outcome of the Environmental Assessment presented in a formal document or documents in accordance with EC Directive 85/337. Includes such information that is reasonably required to assess the environmental effects of a development. |
| **EU limit values** | Limits set by the European Union on air quality to be achieved by member states. In the UK this EU Directive is prescribed under the Air Quality Limit Values (England) Regulations (2003) and subsequent amendments. For nitrogen dioxide the annual mean limit value and the annual mean objective value are set at the same concentration. |
| **Fauna** | The animal life characteristics of a particular biome. |
| **Flood** | The inundation of normally dry land by water. |
| **Flood plain** | An area of limited relief bordering a river inundated when a river overflows its banks during a flood. |
| **Flora** | The combination of plant life in a particular geographical area. |

| | |
|---|---|
| **Fluvial flooding** | Flooding occurs in the floodplains of rivers and watercourses when the capacity of watercourse is exceeded as a result of rainfall or snow and ice melts within catchment areas further upstream. |
| **Fumes** | The Clean Air Act 1993 (s.64) defines fumes as any airborne solid matter smaller than dust. In this assessment fume is considered to be airborne solid matter with a diameter of less than 1 µm. |
| **Fugitive dust emissions** | Dust emissions escaping from a construction site. |
| **Groundwater** | Water that accumulates in the pore spaces and cracks in the rocks beneath the earth's surface. |
| **Groundwater Source Protection Zone** | A defined area within which groundwater is extracted for potable water supply. The area is defined by the Environment Agency on the basis of the length of time taken for groundwater to migrate from the potable source. |
| **Gross Domestic Product (GDP)** | A measure of the total economic activity occurring in the UK. |
| **Habitat** | The specific environment in which an organism lives. |
| **Heavy Duty Vehicle** | A vehicle type classification, including rigid and articulated heavy goods vehicles, plus buses and coaches, that is used by air quality dispersion models |
| **Hydrology** | The scientific study of water in the earth/atmosphere system. |
| **Hydrogeology** | The study of geological factors relating to the Earth's water. |
| **Impact significance** | Opinions from a relevant planning authority at an initial stage as to what are the nature and potential scale of the environmental impacts arising from the proposed development and assessing what further studies are required to establish their significance. |
| **In-situ** | In the natural, original or appropriate position. |
| **Intrusive investigation** | An investigation involving penetration into the ground and removal of soil. |
| **Light pollution** | Different forms of unwanted or wasted light as identified by the Institute of Lighting Engineers, including sky glow, glare and light trespass. |
| **Light Duty Vehicle** | A vehicle type classification, including motorcycles, cars and light goods vehicles, that is used by air quality dispersion models |
| **Listed Building** | A building included in a list produced by the Secretary of State for Culture, Media and Sport. It comprises buildings and other structures that are of special architectural or historic interest. |
| **Local Nature Reserve** | An area of local interest to which there is a commitment for conservation declared under the National Parks and Access to Countryside Act 1949. |

| | |
|---|---|
| **Local road** | Minor roads, below the category of a local distributor, which provides direct access to residential and commercial properties. |
| **Mitigating factor** | A matter to be taken into account as a benefit to offset any perceived or demonstrable harmful impact. |
| **Mitigation (measure)** | The measures put forward to prevent, reduce and where possible, offset any adverse effects on the environment. |
| **National air quality objectives** | A series of objectives set by the Government's Expert Panel on Air Quality to be achieved either without exception or with a permitted number of exceedances within a specific timescale. For nitrogen dioxide the annual mean limit value and the annual mean objective value are set at the same concentration |
| **Net** | After all deductions have been made. |
| **Non-Technical Summary (NTS)** | A summary of the Environmental Statement in non-technical language providing a concise, yet comprehensive summary of the likely effects of the project on the environment. |
| **OSCADY 4.0** | A computer program developed by the Transport Research Laboratory to analyse the capacity of signal controlled junctions. |
| **Permeability** | The extent to which an environment allows a variety of access routes through it. A permeable environment is one where there is ease of movement and where people have a choice in the routes they may use. |
| **PICADY** | A computer program developed by the Transport Research Laboratory to analyse the capacity of priority (give-way) junctions. |
| **Pluvial Flooding** | Surface water flooding caused by rainwater run-off from urban and rural land with low absorbency. |
| **(Sensitive) Receptor** | A component of the natural, created or built environment such as human being, water, air, a building, or a plant that is affected by an impact. |
| **Residual impacts** | Those impacts of the development that cannot be mitigated following implementation of mitigation proposals. |
| **Risk assessment** | An assessment of the likelihood and severity of an occurrence. |
| **Road links** | Individual sections of the road network, usually divided by junctions, used in the modelling of scenarios |
| **Schedule 2 development** | Development project types under EIA regulations where EIA is not mandatory in all cases but may be required, depending on the size, nature and scale of the development and the potential for significant environmental effects to arise. |
| **Scoping** | An initial stage in determining the nature and potential scale of environmental impacts arising as a result of a development, and an assessment of what further studies are required to establish their significance. |

| | |
|---|---|
| **Scoping opinion** | A written statement of the opinion of the relevant planning authority as to the information to be provided in the Environmental Statement. |
| **Scoping report** | Report submitted prior to an EIA setting out the methods and scope proposed to assess the environmental impacts of a development. |
| **Screening opinion** | A written statement of the opinion of the relevant planning authority as to whether an EIA is required of a development. |
| **Scrub** | Vegetation dominated by shrubs and woody species. |
| **Setting** | The context in which a building or area can be appreciated. |
| **Site of Special Scientific Interest (SSSI)** | The best sites for wildlife and geological features in England as designated under the Wildlife and Countryside Act 1981. |
| **Special Protection Area (SPA)** | An area classified under Article 4 of the EC Directive on the Conservation of Wild Birds as being of international importance to wild birds. |
| **Statutory Consultees** | Groups or bodies that, by law, must be consulted as part of the planning application process for certain types of development. |
| **Statutory Flood Defences** | The position defined by the EA, at which protection is required to prevent flooding of a given annual frequency. |
| **Sustainable Development** | Development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. |
| **Sustainable Drainage Systems (SuDS)** | Sustainable drainage systems use techniques to control surface water run-off as close to its origin as possible, before it enters a watercourse. This involves moving away from traditional piped drainage systems to engineering solutions that mimic national drainage processes such as porous pavements. |
| **Synergism** | A condition in which two substances work together in such a way that their combined effect is greater than the sum of the two separate effects. |
| **Threshold** | A level of effect above which an assessment will be taken of whether any changes to procedures need to be made. |
| **Threshold value** | The minimum value that will produce a response or specified effect. |
| **Topography** | The natural or artificial features, level and surface form of the ground surface. |
| **Track-out** | The transport of mud and other dusty materials from a works area onto the public highway. Usually on the wheels and body work of vehicles. |
| **24 hour mean concentration** | The average (mean) of the hourly pollutant concentrations measured or predicted for 24 consecutive hours in one day |