AVISON YOUNG

# Environmental Statement Volume 2: Main Text

# Red Bank Neighbourhood, Victoria North, Manchester

## City River Park (Phase 1) and Future Development Platforms

March 2022

# Environmental Statement Volume 2 – Main Text

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# 1. Introduction

## Introduction

1.1 Manchester City Council (MCC) (hereafter referred to as the 'Applicant') is seeking to obtain 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 (hereafter referred to as the 'Proposed Development'). The Proposed Development is located on an area of land which forms part of Victoria North, (formerly referred to as Northern Gateway), a regeneration scheme which aims to deliver up to 15,000 new homes and social and physical infrastructure on approximately 155 hectares of land between Victoria Station and Queens Park. Seven interconnected neighbourhoods are proposed as part of the Victoria North regeneration project and the Proposed Development relates to land controlled by the JV within the emerging Red Bank and New Town neighbourhoods, located to the north east of Victoria Station, to the south of Red Bank road, and immediately adjacent to Manchester City Centre (hereafter referred to as 'the Site'). The Site is located within the administrative authority of MCC. The planning application to which this Environmental Statement (ES) directly relates is a full planning application for the infrastructure works at the Site. The planning application boundary is shown edged red on an Ordnance Survey (OS) base map presented in **Figure 1.1**.

1.2 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

1.3 The Site is irregular in shape and occupies an area of approximately 15.74 hectares ('ha'). It is located to the south of Red Bank Road, Manchester.

1.4 The site is bound by existing commercial and industrial uses to the north, hardstanding car park, existing commercial units to the west and the former Red Bank viaduct, Dantzic Street and Collyhurst Road to the south, and existing commercial units to the east Including the HMG Paint complex.

1.5 The Site and its immediate vicinity have a legacy of more than 150 years of industrial uses and Victorian and pre-Victorian infrastructure.

1.6 The Site is described in detail in Chapter 3: Site Description.

# Development Proposals

### The Development Project and EIA Strategy

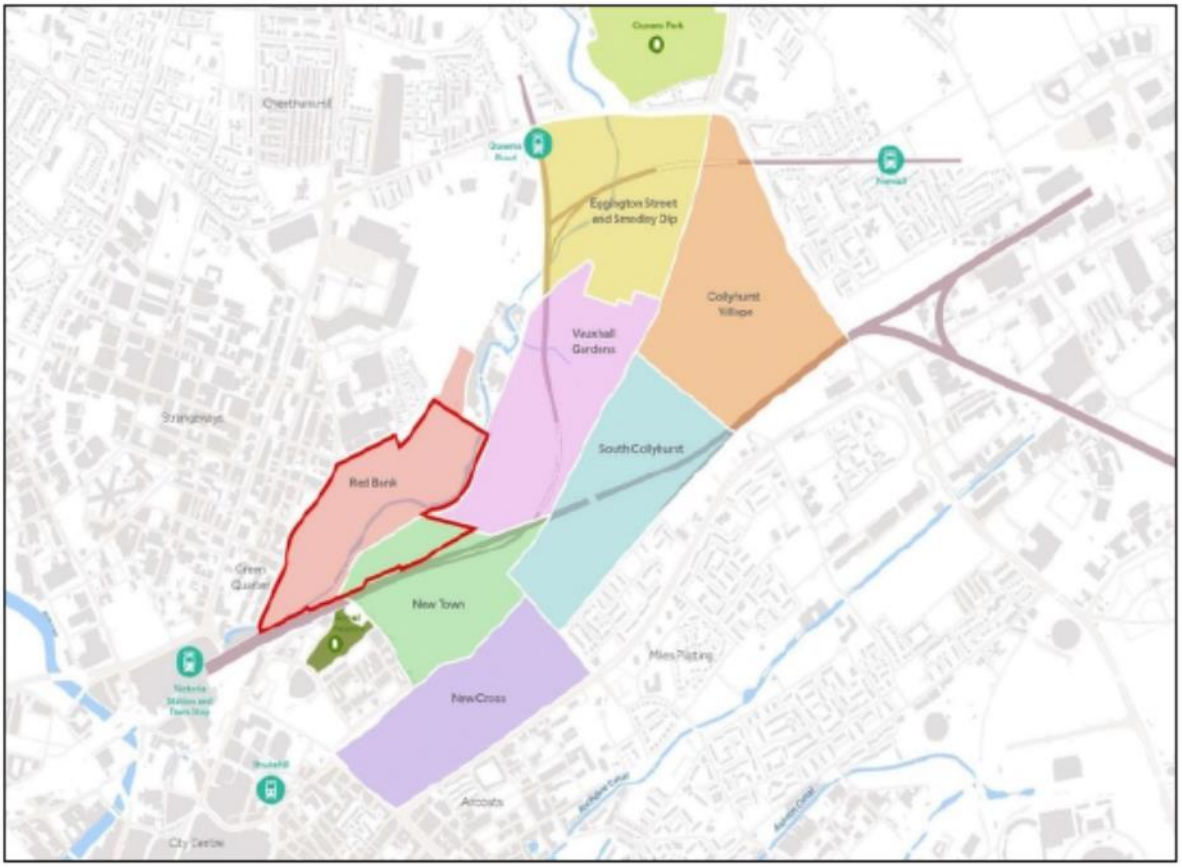
1.7 The Victoria North initiative is an area of approximately 155 hectares to the north of Manchester City Centre and Victoria Station offering an opportunity to deliver approximately 15,000 new homes over the next 15-20 years, along with a range of employment, social, community, cultural and ancillary uses. Victoria North will establish a series of new, sustainable and integrated residential neighbourhoods, with 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.

1.8 In April 2017, MCC appointed Far East Consortium International Ltd (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)[1], which provides a 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.

1.9 **Figure 1.2 (embedded)** presents the extent of area related to the Victoria North initiative, inclusive of the seven interconnected neighbourhoods identified within the SRF and an 'Initial Development Area' (the red line imposed on **Figure 1.2**). 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 housing development plots. The Initial Development Area shown is inclusive of the enabling works, the Proposed Development, and the subsequent neighbourhood application. Of the estimated 5,500 residential units that have the potential to be delivered in the Initial Development Area, FEC has created a First Phase within this area in which 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.

[1] http://northerngatewaymanchester.co.uk/framework/

***Figure 1.2**: Boundary of the Initial Development Area in the context of the Northern Gateway SRF initiative*




1.10 The Initial Development Area comprises an area of approximately 20 hectares (ha). It is located within the Lower Irk Valley. Presently, the location is affected by the, legacy 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 where works cannot be taken forward on a piecemeal, site by site basis, and are not viable for the private sector to fund in isolation.

1.11 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.

**The Development Project for EIA**

1.12 The infrastructure and enabling works, flood alleviation works and the plot development on land controlled and owned by MCC and FEC at Red Bank constitutes the "Development Project". This ES is prepared in respect of the HIF Infrastructure Works (the Proposed Development) (Application 2). Although the focus of this ES is to assess the Proposed Development, to ensure a robust worst-case assessment, it includes for an In-Combination Assessment (ICA) of the Development Project related to the Red Bank Neighbourhood, as well as the wider SRF. Due to the HIF funding and programme requirements, it has been necessary to approach the delivery of this development project by a number of separate planning applications. Four in total, will be made, as follows:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – for which planning permission has been granted, as explained below.
- City River Park (Phase 1), Future Development Platforms, New Spine Road, and Associated Infrastructure Works (HIF Infrastructure Works - referred to hereafter as 'Application 2'). I.e. this application, submitted by MCC.
- HIF Flood Defence Works (referred to hereafter as 'Application 3').
- Red Bank Neighbourhood (referred to hereafter as 'Application 4').

1.13 It is noted that, although the applications are given numbered references, this does not depict the order in which the applications are to be submitted and does not denote a pre-determined sequencing. Chapter 2 sets out in detail the proposed approach to the EIA and the different assessment scenarios.

1.14 Application 1 for the HIF Advance Enabling Works was submitted to MCC on 25th November 2021 (planning ref. 132252/VO/2021) and was approved on 23rd December 2021. Work on the HIF Advance enabling Works is targeted to begin on site in February 2022.

1.15 The Site on which the works under Application 2 are to be carried out, is shown on **Volume 2a: Main Text Figures - Figure 1.1**, as referenced earlier. The area of the Site is specific to the extent of the infrastructure works only, and does not include all of the land on which the wider Development Project will be carried out.

1.16 Further context relating to the EIA strategy, including the assessment approach presented in this ES to ensure as robust assessment as possible, is presented in Chapter 2: Approach.

## Outline of the Proposed Development

1.17 The planning application to which this ES relates (Application 2) seeks full planning permission for infrastructure works to the north of Victoria Station, Manchester ('the Proposed Development'):

- Creation of development platforms within the Red Bank Plateau. This comprises development of seven plots referred to as RB01, RB02, RB03, RB04, RB05a, RB05b and RB12b (**Figure 5.1** show these plot locations)
- Demolition of sections of the existing retaining wall adjacent to the northern banks of the River Irk.
- Remediation and earthworks across site. The development plot areas will have obstructions removed and the site turned to a depth of 500mm. Remediation will address any localised contamination hotspots through excavation and treatment on site. The existing slope between plots RB02 and RB03 and the River Irk will be regraded to address slope stability whilst maximising the development footprint of these plots.
- Construction of Plateau Avenue and junction from Red Bank. This is a new internal circulation road which runs along the northern border of the development from a new site access from Red Bank and encircles Plot RB05a before returning to the new site access.

- Creation of SUDs. This will include tree pits, swales and Plateau Avenue will incorporate permeable pavement sub base storage solutions.
- Utility and services connections and diversions. The redline extends to Queens Park substation to cover the proposed service connections in the adopted highway which will be routed along Dalton Street and Rochdale Road. New electricity high voltage (HV) network expansion and new surface water sewer are proposed along Dantzic Street. To avoid overloading the already constrained Union Bridge, a new river crossing is proposed to enable utility network expansions. This will be a buried 'u-tube' crossing installed in a trench across the bed of the river. New utilities networks are proposed within the Site, including telecoms, drainage (surface water & foul), electricity (high voltage and low voltage) and water. These are routed along the proposed Plateau Avenue, within the proposed parkland, and include upgrades to existing assets within existing streets.
- Provision of green infrastructure including (among others):
  - Creation of green links.
  - Creation of the first phase of the new City River Park.

1.18 The full description of development on the planning application form is:

> *"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, street works for new utilities including ducting up to the Queens Park substation, preparatory tree and shrub clearance, and demolition of certain existing structures, along 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."*

1.19 Environmental constraints and potential adverse effects have been identified throughout the EIA process and, as a result, mitigation measures have been incorporated into the proposals through design. Where environmental mitigation measures have not been integrated into the proposals through design, it is expected that the requisite mitigation measures will be secured by appropriate planning conditions where relevant. These have been identified, where appropriate, in the technical chapters of this ES (Chapters 6 to 18) and summarised in Chapter 19: Summary of Mitigation and Residual Effects.

1.20 A detailed description of the Proposed Development can be found in Chapter 5: Proposed Development of this ES, including the presentation of a series of plans and drawings.

# The Planning Application and Environmental Impact Assessment

## EIA Context

1.21 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.

1.22 The Proposed Development constitutes 'EIA development' under the Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (SI 2017/571)[2] as amended[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'.

1.23 This document is the ES which reports the findings of the EIA and supports the planning application 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 1.1 below and see **Appendix 1.1** for team credentials.

*Table 1.1: The Project Team*

| Discipline | Company |
|---|---|
| Client | Manchester City Council |
| Engineering and Structural Design | Arup<br>BAM Nuttall |
| Planning Consultant and EIA Co-ordinator | Avison Young |
| Ecology and Trees | TEP |
| Archaeology and Heritage | Arup |
| Ground Conditions | Arup |
| Drainage and Flood Risk | Arup |
| Townscape and Visual | Planit-IE |
| Transport and Access | Arup |
| Air Quality and Dust | Arup |

[2] HMSO. The Town and Country Planning (Environmental Impact Assessment) Regulations. 2017.
[3] HMSO. The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018.

| Discipline | Company |
|---|---|
| Noise and Vibration | Arup |
| Waste | Arup |
| Socio-economics | Arup |
| Climate Change | Arup |
| Health | Arup |

1.24 This ES relates to the full planning application proposing infrastructure works which is defined by the description of the development and the detailed plans for development that accompany the application.

1.25 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 topic scoped into the ES, cumulative and combined effects and a summary of residual effects.
- **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.

1.26 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 – Ecology and Trees
- Chapter 7 – Archaeology and Heritage
- Chapter 8 – Ground Conditions

- Chapter 9 – Drainage and Flood Risk
- Chapter 10 – Townscape and Visual
- Chapter 11 – Transport and Access
- Chapter 12 – Air Quality and Dust
- Chapter 13 – Noise and Vibration
- Chapter 14 – Waste
- Chapter 15 – Socio-economics
- Chapter 16 – Climate Change
- Chapter 17 – Health
- Chapter 18 – Summary of Mitigation and Residual Effects

1.27 This ES provides sufficient environmental information to enable MCC, as Local Planning Authority (LPA), to make an informed decision on whether to grant planning permission. The ES relates to the planning application which is defined by the description of the development and the detailed plans for development that accompany the application. The scope of this ES has been agreed with MCC through a formal scoping process.

### The Planning Application Package

1.28 The planning application package consists of the following documents:

- Covering letter prepared by Avison Young;
- Application form, relevant land ownership certificate (duly signed) and relevant planning application fee;
- Full set of planning and landscape drawings for approval, prepared by Arup/BAM and Planit;
- Lighting Strategy prepared by Arup;
- Construction Management Plan prepared by BAM;
- Crime Impact Statement prepared by Greater Manchester Police;
- Demolition Management Plan prepared by BAM;
- Ecological Enhancement Statement (including updated BNG metric) prepared by Avison Young/ TEP;
- Design and Access Statement prepared by Plan-it;
- Landscape Management Plan prepared by Plan-it
- Local Labour Agreement prepared by Avison Young;
- Planning Statement prepared by Avison Young;
- Social Value Statement prepared by MCC / Avison Young;

- Statement of Community Involvement prepared by Counter Context; and,
- Environmental Statement prepared by Avison Young.

## Environmental Statement Availability

1.29 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**
Norfolk House
7 Norfolk Street
M2 1DW

Contact: Richard Kevan

Tel: 0161 834 7187

**Manchester City Council**
Floor 6 Town Hall Extension
Albert Square
Manchester
M60 2LA

Contact: Jennifer Atkinson

Tel: 0161 234 4651

[4] 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 application and EIA sits in the context of the wider development project, giving assurance in respect of the approach to ensure the assessment is as robust as possible. Coverage 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.

2.4 A wide range of experience, resources and skills have been coordinated in order to bring together these applications and the project team, along with their professional roles, is presented at the end of this chapter.

2.5 This ES assesses the Development Project, which is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in 4 planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – Planning permission has been granted for the demolition of Creamline diary, tree and shrub clearance and construction of a temporary haul road.
- City River Park (Phase 1), Future Development Platforms, New Spine Road, and Associated Infrastructure Works (referred to hereafter as 'Application 2'). I.e., this application, submitted by MCC. Creation of development platforms, demolition of sections of existing River Wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diversions and provision of green infrastructure including creation of green links and first phase of the new City River Park.

[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] https://www.gov.uk/government/collections/planning-practice-guidance

- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within flood zone 3.
- Land controlled by the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') - Approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. (It should be noted that the entire Red Bank Neighbourhood of the Victoria North SRF, including third party land, will deliver up to 5,500 new dwellings).

2.6 Whilst the Applicant has the detail of the early applications, the later parts of the Development Project (and particularly Application 4) are still being designed and the details are not yet available. Therefore, the approach that has been taken in the ES is to break the Development Project into 3 elements, with each element being assessed in a level of detail commensurate with the detail that is available for the relevant part of the Development Project.

2.7 As such, a very full and detailed assessment is undertaken of Application 2, and then reasonable assumptions and judgements have informed and been made to assess Applications 1-4 together, and then Applications 1-4 and SRF.

# EIA Strategy

### EIA Strategy

2.8 Case law 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"). In identifying "the project" for the purposes of the EIA Regulations, one must consider if there is any 'functional link' between what might be (in planning terms) considered as two (or more) separate developments, but which in EIA terms cannot be divorced as they form one project – i.e. one development would not go ahead in its own right, or one could not correctly function without the other.

2.9 A review of applicable case law has been undertaken to support the approach to EIA in respect of the four applications related to the Initial Development Area, as identified in Chapter 1: Introduction of this ES. The approach ensures a robust assessment is undertaken which allows for separate applications to be made and approvals gained for the various elements of the redevelopment of the area.

2.10 The approach to EIA allows separate applications to be made, with the EIA for each application assessing the potential impacts of the Proposed Development in focus together with an assessment of impacts associated with the wider development project. Each application will be accompanied by an ES. An ES was submitted and approved with Application 1 (planning ref. 132252/VO/2021) and the assessments will become more detailed with each application, as the details of the development in Applications 3 and 4 become more concrete. Therefore, each

development that might be granted planning permission as part of the overall development project will have been assessed through the EIA process.

2.11 This ES is prepared in respect of the HIF Infrastructure Works (the Proposed Development) (Application 2). Although the focus of this ES is to assess the Proposed Development, it includes an In-Combination Assessment (ICA) of the other schemes forming the Red Bank Neighbourhood, as well as the wider SRF as the development project includes all four planning applications. This ES has used reasonable assumptions and judgements for the later applications as the actual development is yet to be designed. Paragraphs 2.25 to 2.27 of this chapter set out further detail regarding assessment scenarios.

## Screening

2.12 Regulation 6 of the 2017 EIA Regulations makes provision for a developer to request a 'Screening Opinion' from the Local Planning Authority (LPA) to ascertain whether an EIA is required if a development is classed as a Schedule 2 development. This decision is based on the likelihood of significant environmental effects arising in relation to the development proposals.

2.13 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.

2.14 As noted in Chapter 1: Introduction, the Proposed Development covers an area of approximately 16.63ha. As such, the Proposed Development falls above the threshold for EIA in respect of Schedule of the EIA Regulations.

2.15 The surpassed development threshold and potential for significant effect, 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, as outlined in Chapter 1: Introduction, it is accepted that the Proposed Development will constitute EIA development, because it is in fact part of a wider project which constitutes EIA development. As such, it has been agreed with MCC that an EIA is submitted to accompany the Infrastructure Works detailed planning application.

## Scoping

2.16 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.

2.17 In accordance with Regulation 15 of the 2017 EIA Regulations, a formal request for a Scoping Opinion was made to MCC on 25th November 2021, accompanied by an EIA Scoping Report.

2.18 A formal Scoping Opinion was issued by MCC on 7th January 2022. Responses received as part of the scoping exercise are noted in Table 2.1 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 can be found at **Appendix 2.2**.

2.19 The 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:

- Ecology and Trees.
- Archaeology and Heritage.
- Ground Conditions.
- Drainage and Flood Risk.
- Townscape and Visual.
- Transport and Access.
- Air Quality and Dust.
- Noise and Vibration.
- Waste.
- Socio-economic.
- Health.
- Climate Change.

2.20 MCC's Scoping Opinion confirmed that the proposed approach to each assessment was acceptable. A summary of the comments provided in the Scoping Opinion and where these are addressed in the ES is set out in Table 2.1.

2.21 Other topics were scoped out of the EIA as they have been identified as potentially giving rise to impacts that will be not significant. This approach was approved through MCC's Scoping Opinion (see **Appendix 2.2**). A description of these topics and reasons for scoping these out of the EIA is provided in Table 2.2.

*Table 2.1: Comments on EIA Scope*

| Consultee | Summary of Comments | Action |
|---|---|---|
| **MCC Planning** | MCC agree that the matters identified to be scoped out of the ES are appropriate.<br><br>For planning purposes, the development site is located in a Strategic Housing Location (policy H2) of the Manchester Core Strategy (2012) together with forming a key component of the Red Bank Neighbourhood as identified as part of the Northern Gateway Strategic Regeneration Framework Area.<br><br>The significance of the site should be reflected throughout the ES. The Environmental Chapters must therefore consider the impacts of the Proposed Development on this context in order to determine any wider significant environmental impacts.<br><br>**Ecology and Trees**<br><br>It is considered that the ecology and tree impacts of the Proposed Development are significant and require assessment through the EIA process.<br><br>MCC recommends that the ES provides the following information in respect of ecology and tree within a chapter of the ES:<br><br>• Provision of extended Habitat Surveys, to UK HAB specifications, and including the River Corridor;<br><br>• Surveys for Bats and Badgers;<br><br>• Surveys for invasive plant species, and measures to control the spread of invasive plants;<br><br>• Calculations using the Defra Biodiversity Metric v 3.0 to assess potential biodiversity losses and gains which may arise from the development proposals; | Each ES chapter considers the development of the wider SRF (see paragraphs 2.25-2.27 below).<br><br>Chapter 7: Ecology and Nature Conservation considers each of the recommended items. |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | • Proposals for mitigating and compensating for habitat losses and for any impacts on protected or priority species, including proposals for off-site habitat provision where these are considered necessary;<br><br>• Proposals for enhancing the local natural environment;<br><br>• Proposals for improving the water quality and habitat value of the River Corridor, including the potential for changing drainage schemes in ways which could benefit the River.<br><br>**Townscape and Visual**<br><br>The comments within the Scoping Report are noted and are acceptable in terms of their consideration in the ES.<br><br>**Archaeology and Heritage**<br><br>The comments within the Scoping Report are noted and are acceptable in terms of their consideration in the ES.<br><br>**Drainage and Flood Risk**<br><br>MCC recommends that the ES provides the following information in respect of flood risk and drainage within a chapter of the ES.<br><br>Proposed finished floor levels and flood mitigation measures should be in accordance with the government standing advice. An assessment regarding compensatory storage should be carried out where required (especially Flood Zone 3 areas), ensuring the development does not increase the risk of flooding to offsite areas.<br><br>The geomorphological survey should be used to assess the effectiveness of the existing flood defences and identify the scenario if any changes are to occur to the existing river channel and/or flood defences. | Noted.<br><br>Noted.<br><br>Chapter 9: Drainage and Flood Risk and the Flood Risk Assessment (**Appendix 9.1**) contains a full assessment on flood risk. |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | The Cheetham Hill Junction Drain (an ordinary watercourse) runs through the site, an assessment should be carried to identify the exact location, the drainage catchment and condition of this asset. The development should not impact on the functionality of this asset. | Cheetham Hill Junction Drain is considered throughout the drainage and flood risk assessment (see Chapter 9: Drainage and Flood Risk). |
| | Surface water management for the site needs to follow the drainage hierarchy:<br>• Infiltration into ground;<br>• Connection to the watercourse;<br>• Connection to discharge water sewer, and as a last resort;<br>• Connection to the combined sewer. | Noted. |
| | The use of pollution control measures for surface water discharge should be assessed and considered where appropriate. | Noted. |
| | There should also be the consideration of green and blue infrastructure to allow for the adaptation to climate change in heavily urbanised area. New Green infrastructure provision should be an exemplar of best practice and innovation in terms of both its design and management. Greater Manchester is the first city-region in the UK to develop a Natural Capital Investment Plan designed to encourage investments in natural capital that deliver financial as well as social returns. | Noted. See Chapter 9: Drainage and Flood Risk and Chapter 17: Climate Change. |
| | The area is situated within a Critical Drainage Area and in accordance with the Manchester City Council SFRA at least a 50% reduction in surface water runoff should be provided through SUDS as part of any brownfield development with the aim of reducing to the Greenfield runoff rates. Greenfield discharge rates should be used for all areas considered greenfield. | Noted. See Chapter 9: Drainage and Flood Risk. |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | Surface water should be managed to ensure there is no increased surface water from the proposed development and runoff from extreme events should be retained within the site such that the adjacent third party land is not affected. | Noted. See Chapter 9: Drainage and Flood Risk and **Appendix 9.1**. |
| | Hydraulic calculations and drawings to support the design need to be provided along with proposed standards of operation and maintenance in accordance with paragraph 081 of NPPF Planning Practice Guidance. | Noted. See **Appendix 9.1: FRA.** |
| | Management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime shall be submitted. | Noted. |
| | **Ground Conditions** | |
| | The comments within the Scoping Report are noted and are broadly acceptable in terms of their consideration in the ES. | Noted. |
| | **Transport and Access** | |
| | The traffic modelling within this chapter of the ES should include the following:<br>• A description of current baseline traffic conditions in the area; | The Scoping Opinion recommends a number of elements to be contained within the ES that had been agreed with MCC to be scoped out of the assessment. |
| | • An analysis of injury accidents during a recent five-year period, commenting on whether there are any underlying patterns of injury accidents that might be affected by the development; | There is no built development aspect of the Proposed Development. As such there will be no increase in transport demand upon completion of the works. As there are no anticipated increases in demand upon completion, and no major changes proposed to the adopted highway network there is no possibility of significant effects arising. However, as the wider Development Project includes the residential elements as part of |
| | • Traffic surveys and queue surveys (weekdays) - scope to be agreed with TfGM UTC and HFAS; | |
| | • A clear estimate of the level of new traffic likely to be associated with the development, based on an inspection of similar (and similarly-located) developments across the UK (excluding London) via the TRICS (or similar) | |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | database. The assessment work should be undertaken using a person-trip approach and applying the appropriate modal share percentages from local Census data. Other methodologies to determine trip rates are acceptable but these should be fully explained in the TA;<br><br>• A clearly defined methodology for determining the distribution / assignment of development trips onto the network i.e. understanding of where such new traffic is likely to distribute to/from, based on data sources such a Census Journey-to-Work statistics and/or vehicle turning proportions at nearby junctions;<br><br>• An assessment of traffic levels and impacts at the specified year of opening of the development, and at a future year at least five years later, with due regard for traffic growth (if any);<br><br>• An understanding of the likely impacts of the proposed development considered alongside any other nearby committed developments;<br><br>• In the relevant TA, clear diagrams should be provided illustrating the following elements, each individually:<br><br>o Base Flows<br><br>o Committed Development Flows<br><br>o Proposed Flows<br><br>o Proposed Distribution<br><br>o Base plus Committed plus proposed development<br><br>o Future plus Committed plus proposed development<br><br>• An increase of about 30vehs/hr at a junction as an appropriate threshold for considering the necessity of a traffic impact assessment; this is in preference to | Application 4 an assessment of the operational effects has been undertaken based on reasonable assumptions given the that the final development hasn't yet been submitted.<br><br>The transport consultants at Arup issued a follow up note to MCC to clarify the scope of the transport assessment (see **Appendix 2.3**). |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | a percentage-increase threshold, which tends to favour development in already heavily-trafficked areas;<br><br>• The scope of the junctions to be assessed by detailed modelling should be agreed with the City Council, as Local Highways Authority, in advance and will depend upon the outcome of the trip assessment and distribution exercise. For this reason, TfGM would advise that a trip generation and distribution exercise should be issued before submission of the planning application. Once this is undertaken it will be possible to finalise TfGM requirements in terms of the TA. This will largely depend on the amount of trip generation;<br><br>• Clear details of proposed vehicular access arrangements including general servicing arrangements. An engineering drawing should be supplied showing the changes to the road network to fully understand the impact of the proposed development;<br><br>• A swept path analysis should be provided for any vehicular access;<br><br>• A review of Traffic Regulation Orders on the surrounding streets in the vicinity of the development;<br><br>• An assessment of the likely environmental/traffic impacts of HGVs during the construction process.<br><br>A comprehensive review of the existing provision in the vicinity of the site for all pedestrians including those with disabilities. In addition to walking distances and pedestrian desire lines, pedestrian environment (including footway condition and widths) and pedestrian safety and security should be considered.<br><br>An audit of the footways in the vicinity of the development should be undertaken and improvements identified.<br><br>A comprehensive review of the cycling infrastructure in the vicinity of the proposed development should also be undertaken. This should include an assessment of the | |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | connectivity of the site with existing cycle routes. The quality and condition of existing infrastructure, cyclist safety and security should also be considered.<br><br>The catchment area for cycling, walking and public transport should be captured in maps. The quality of the routes for pedestrians and cyclists should be described and this should include a description of any signing for cycle routes as appropriate.<br><br>The TA should provide a review of existing public transport services (including service frequency and location of nearest stations/stops), with a view to supporting improvements to existing public transport services as required, in particular, assess the quality of the surrounding bus infrastructure i.e., upgrade to shelters etc.<br><br>The TA should include a plan clearly showing details of the proposed pedestrian and cycle access points serving the site and linkages into the surrounding area.<br><br>Connectivity with local public transport networks should be highlighted and should consider measures to encourage access by sustainable modes. Possible measures include but are not limited to the provision of pedestrian crossings, cycleways, cycle parking, new/improved footway ensuring that there are linkages into existing cycle and pedestrian facilities, as well as upgrades to existing bus stops (where appropriate).<br><br>Details of cycle parking facilities for the proposed development (e.g. number of spaces, location and type) should be provided and shown on plan.<br><br>**Air Quality and Dust**<br><br>The comments within the Scoping Report are noted and are acceptable in terms of their consideration in the ES.<br><br>**Noise and Vibration**<br><br>The comments within the Scoping Report are noted and are broadly acceptable in terms of their consideration in the ES. | Noted.<br><br>Noted. |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | The City Council, as Local Planning Authority, recommends that the ES must take account of the following additional matters with reference to impacts on noise and vibration.<br><br>Vibration limits will be required and these will need to consider impacts on commercial and residential receptors.<br><br>The hours require amendment to those stated in section 13.13 to Monday to Friday 07:30 to 18:00, Saturday 08:30 to 14:00 and no working Sunday or Bank Holidays.<br><br>The noise assessment will also be required to consider any noise from generators or plant/equipment used to provide power or facilities to the site compounds and offices consistent with BS4142@2014.<br><br>**Waste**<br><br>The comments within the Scoping Report are noted and are acceptable in terms of their consideration in the ES.<br><br>**Health**<br><br>The comments within the Scoping Report are noted and are acceptable in terms of their consideration in the ES.<br><br>**Socio-economic**<br><br>The comments within the Scoping Report are noted and are acceptable in terms of their consideration in the ES.<br><br>**Climate Change**<br><br>The comments within the Scoping Report are noted and are acceptable in terms of their consideration in the ES. | Noted. See Chapter 13: Noise and Vibration.<br><br>Noted.<br><br>Noted.<br><br>Noted.<br><br>Noted. |

| Consultee | Summary of Comments | Action |
|---|---|---|
| **Manchester Airport Group** | Redbank lies within Manchester Airport's safeguarded area and consideration should therefore be made to whether development within the area causes: an obstacle; an attraction to birds; light or reflection that might present a visual hazard; interference with radar and other air navigation and communication systems and whether the construction process will present any hazard to aircraft safety.<br><br>When considering the type, scale and design of any development within the Redbank Infrastructure area, we therefore recommend that consideration of the relevant aerodrome safeguarding criteria, consultation procedures, and any potential impacts on aircraft safety are addressed. This will principally relate to the height of buildings at this location and whether there is any potential interference to RADAR operations. | Noted. The Proposed Development does not include any built development and as such there will be no impact on Manchester Airport's safeguarded area. The details of buildings heights and position for the residential element of the development project (Application 4) is not yet known. Any potential impacts on aircraft safety will be considered as part of the EIA which support application 4. |
| **Environment Agency** | **Ecology and Trees**<br><br>In relation to ecological assessment for development, all surveys should be completed during appropriate seasons/ periods in accordance with industry standards for the specific survey. It is noted from scoping report that current Phase 1 surveys were undertaken in March 2021, when ecological survey identification is less optimal and when many species are unlikely to be present. Based on longevity of Victoria North development, we would advise consideration to replicating surveys during a more optimal survey period within 2022.<br><br>**Drainage and Flood Risk**<br><br>For the purpose of the FRA we note that a hydraulic modelling exercise will be undertaken to establish baseline conditions of fluvial flood risk – we welcome this decision.<br><br>For the purpose of the WFD Compliance Assessment we note fluvial geomorphology survey of the River Irk has been undertaken – we welcome this decision. | Noted.<br><br>Noted. |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | **Ground Conditions**<br><br>For the purpose of section we acknowledge that a further assessment of ground conditions is being undertaken further to the findings of preliminary ground investigations undertaken within 2019. Where possible/ available, we ask that addition ground investigation reporting is provided as part subsequent planning applications to inform any relevant conditional requirements. | Noted. |
| **Tameside Metropolitan Borough Council - Ecology** | Proposed developments in the area will not affect any sites specially designated for their nature conservation value, but they do have the potential to affect semi-natural habitats and protected species, most notably bats, badgers and nesting birds. Parts of the area may support the priority habitat lowland deciduous woodland.<br><br>The proposals also present a long-term opportunity to achieve enhancements to the natural environment, and opportunities to achieve a net gain in local biodiversity.<br><br>I would recommend that any Environmental Impact Assessment includes the following information in relation to Ecology and Ecological impacts –<br><br>• Extended Habitat Surveys, to UK HAB specifications, and including the River Corridor;<br><br>• Surveys for Bats and Badgers;<br><br>• Surveys for invasive plant species, and measures to control the spread of invasive plants;<br><br>• Calculations using the Defra Biodiversity Metric v 3.0 to assess potential biodiversity losses and gains which may arise from the development proposals;<br><br>• Proposals for mitigating and compensating for habitat losses and for any impacts on protected or priority species, including proposals for off-site habitat provision where these are considered necessary; | Noted. See Chapter 8: Ecology and Nature Conservation. |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | • Proposals for enhancing the local natural environment; and<br><br>• Proposals for improving the water quality and habitat value of the River Corridor, including the potential for changing drainage schemes in ways which could benefit the River | |
| **MCC – Environmental Protection** | **Air Quality**<br><br>I can accept the comments provided and for the earthworks and enabling section we will need an assessment and mitigation measures recommending in order to control fugitive dust emissions during the demolition and enabling phase of the development. A further assessment and mitigation will be required for the construction phase and a full assessment with regard to operational impact and impact to future occupiers and receptors will be required at the relevant part of the development.<br><br>**Noise and Vibration**<br><br>I can accept the majority of the comments provided for the enabling and demolition phase in section 13 and also the noise limits at the receptors stated in section 13.14 during this phase of the development. We will require vibration limits too and once agreed these will need to be met at both commercial and residential receptors.<br><br>The hours will need to be changed from those stated in section 13.13 to reflect MCC permitted hours for construction sites (Monday to Friday 07:30 to 18:00 , Saturday 08:30 to 14:00 and no working Sunday or Bank Holidays).<br><br>We will require an assessment of noise from any generators or plant / equipment used to provide power or facilities to the site compounds and offices consistent with BS4142:2014. | The Proposed Development does not include any built form and as such there will be no impacts associated with the operational phase of the development. However, as the wider Development Project includes the residential elements as part of Application 4 an assessment of the operational effects has been undertaken based on reasonable assumptions given the that the final development hasn't yet been submitted.<br><br>Noted.<br><br>Noted.<br><br>Noted. See Chapter 13: Noise and Vibration. |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | Noise and vibration from the construction stage and the developed stage has been scoped out of this part of the application due to it solely being connected to demolition and enablement. Construction noise and vibration and the development impact will need to be addressed at the relevant application stage.<br><br>**Ground Conditions**<br><br>I agree with ground conditions being scoped in as this site is likely to have significant levels of contamination from various former uses include a dye works, gas holders, railway land and sidings, leather tanning and a chemical works. | The ES includes an assessment of construction activities as well as the demolition of selected structures.<br><br>Noted. |
| **MCC – Lead Local Flood Authority** | Repetition of MCC Flood Risk and Drainage comments above. | See comments above. |
| **Greater Manchester Archaeological Advisory Service (GMAAS)** | The significance of the historic built environment across the wider Northern Gateway SRF was subject to specialist appraisal in 2018 by Stephen Levrant Heritage Architecture. As is pointed out in the Scoping Report, this high-level study of the larger area was completed before the design proposals had been finalised, and was therefore unable to fully assess the potential impact(s) of the proposed works on designated heritage assets and their setting. Whilst the Conservation & Urban Design Team at Manchester City Council may wish to comment further, GMAAS is satisfied that the approach to fully assessing potential impacts on the historic built environment set out in the Scoping Report is entirely appropriate.<br><br>The methodology for assessing the potential effects of the proposals on the archaeological (below-ground) interests in the application site is also acceptable for the purposes of the EIA. It is noted in the Scoping Report that 'profession judgement, which is defined as being informed, reasonable and balanced with respect to outcomes, will be used in assessing the overall significance of effects' on heritage assets. GMAAS accepts that such profession judgement will need to be employed when determining the significance of potential below-ground archaeological remains, but advises that this process should also be informed by the archaeological research objectives set out in the | Noted. See Chapter 10: Archaeology and Heritage.<br><br>Noted. See Chapter 10: Archaeology and Heritage. |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | current North West Regional Research Framework, especially those formulated for the Industrial and Modern periods. | |
| **MCC Highways** | If the new internal access roads are to be offered for adoption, then they should be constructed to MCC adoption standards including acceptable geometric parameters and paving materials. They should be designed so that they provide sufficient interconnectivity (whilst limiting the potential for rat-running) and should provide high quality pedestrian and cycling infrastructure to connect the city centre with the development area.<br><br>Proposed works to Dantzic Street should take account the importance of this route particularly for cyclists and pedestrians and incorporate suitable infrastructure whilst facilitating low vehicle speeds and servicing requirements to developments along its length.<br><br>We anticipate that a Demolition and Construction Management Plan will be submitted at planning application stage and this should cover the following:<br><br>• The routing of construction traffic;<br><br>• Detail the amount of vehicular activity associated with the construction including appropriate swept-path assessment;<br><br>• Details of the location and arrangements for contractor parking;<br><br>• The identification of the vehicular access points into the site;<br><br>• Identify measures to control dust and mud including on the surrounding public highway including details of how the wheels of contractor's vehicles are to be cleaned during the construction period;<br><br>• The details of an emergency telephone contact number for the site contractor to be displayed in a publicly accessible location; | The proposed internal road is not intended to be adopted.<br><br>Since the submission of the EIA Scoping Report, works to Dantzic Street have been removed from the proposals.<br><br>A Construction Management Plan (CMP) is submitted as a standalone document with the planning application. |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | • A highway dilapidation survey should be provided including photographs and commentary on the condition of carriageway/footways on construction vehicle routes surrounding the site.<br><br>The submitted plan will be shared with the MCC Highways Coordination Team so that they can assess the implications of the proposals in relation to other adjacent works taking place. | |
| **Historic England** | This development could, potentially, have an impact upon a small number of designated heritage assets and their settings in the area around the site. In line with the advice in the National Planning Policy Framework (NPPF), we would expect the Environmental Statement to contain a thorough assessment of the likely effects which the proposed development might have upon those elements which contribute to the significance of these assets. We note that the applicant has set out the extent of the assets that they believe will be affected on p.36 of the submitted scoping report, and have established the elements that they intend to scope in and scope out of the EIA in the table on pp.43-44. The methodology that these cumulatively set out would seem to be appropriate, and does not raise concerns from a heritage perspective.<br><br>It is also positive that the Environmental Statement intends to consider the potential impacts on non-designated features of historic, architectural, archaeological or artistic interest, since these can also be of national importance and make an important contribution to the character and local distinctiveness of an area and its sense of place.<br><br>It is noted that the assessment also proposes to take account of the potential impact which associated activities (such as construction, servicing and maintenance, and associated traffic) might have upon perceptions, understanding and appreciation of the heritage assets in the area. This assessment should also consider, where appropriate, the likelihood of alterations to drainage patterns that might lead to *in situ* decomposition or destruction of below ground archaeological remains and deposits, and can also lead to subsidence of buildings and monuments. | Noted. See Chapter 10 Archaeology and Heritage.<br><br>Noted.<br><br>Noted. See Chapter 10 Archaeology and Heritage. |

| Consultee | Summary of Comments | Action |
|---|---|---|
| **Natural England** | The scoping request is for a proposal that does not appear, from the information provided, to affect any nationally designated geological or ecological sites (Ramsar, SPA, SAC, SSSI, NNR) or landscapes (National Parks, AONBs, Heritage Coasts, National Trails), or have significant impacts on the protection of soils (particularly of sites over 20ha of best or most versatile land), nor is the development for a mineral or waste site of over 5ha. | Noted. |
| **Transport for Greater Manchester (TfGM)** | **Site Specific Comments**<br>• The width of Dantzig Street should be sufficient so that two standard double decker buses can pass each other at the same time.<br>• High quality pedestrian and cycling routes should be provided to the site. These shouldn't stop at the site boundary and should extend into the city centre.<br>• High quality pedestrian facilities should include an assessment of the streetlighting as well as the pedestrian crossing facilities and the footway condition etc.<br>• A trip generation and trip distribution study should be provided as soon as possible as this may need strategic development and individual junction assessments.<br>**General Comments**<br>**Traffic Impact and Transport Modelling Requirements**<br>• TfGM UTC can be contacted in respect of the availability of any traffic counts in the area that could be used for the assessment, as new counts are not always required.<br>• A description of current baseline traffic conditions in the area. | As noted above, works to Dantzic Street has been removed from the planning application.<br>Cycling and active routes are proposed within the application (see Chapter 5: Proposed Development).<br>As noted above, the Scoping Opinion recommends a number of elements to be contained within the ES that had been agreed with MCC to be scoped out of the assessment.<br>There is no built development aspect of the Proposed Development. As such there will be no increase in transport demand upon completion of the works. As there are no anticipated increases in demand upon completion, and no major changes proposed to the adopted highway network there is no possibility of significant effects arising. As |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | • An analysis of injury accidents during a recent five-year period, commenting on whether there are any underlying patterns of injury accidents that might be affected by the development.<br><br>• Traffic surveys and queue surveys (weekdays) - scope to be agreed with TfGM UTC and HFAS.<br><br>• A clear estimate of the level of new traffic likely to be associated with the development, based on an inspection of similar (and similarly-located) developments across the UK (excluding London) via the TRICS (or similar) database. The assessment work should be undertaken using a person-trip approach and applying the appropriate modal share percentages from local Census data. Other methodologies to determine trip rates are acceptable but these should be fully explained in the TA.<br><br>• A clearly defined methodology for determining the distribution / assignment of development trips onto the network i.e. understanding of where such new traffic is likely to distribute to/from, based on data sources such a Census Journey-to-Work statistics and/or vehicle turning proportions at nearby junctions.<br><br>• An assessment of traffic levels and impacts at the specified year of opening of the development, and at a future year at least five years later, with due regard for traffic growth (if any).<br><br>• An understanding of the likely impacts of the proposed development considered alongside any other nearby committed developments.<br><br>• In the relevant TA, clear diagrams should be provided illustrating the following elements, each individually:<br><br>o Base Flows<br><br>o Committed Development Flows | such, it has been agreed with MCC that operational transport and access effects from the completed development are scoped out of the ES. However, as the wider Development Project includes the residential elements as part of Application 4 an assessment of the operational effects has been undertaken based on reasonable assumptions given the that the final development hasn't yet been submitted.<br><br>The transport consultants at Arup issued a follow up note to MCC to clarify the scope of the transport assessment (see **Appendix 2.3**). |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | ○ Proposed Flows<br>○ Proposed Distribution<br>○ Base plus Committed plus proposed development<br>○ Future plus Committed plus proposed development<br>• TfGM HFAS recommends an increase of about 30vehs/hr at a junction as an appropriate threshold for considering the necessity of a traffic impact assessment; this is in preference to a percentage-increase threshold, which tends to favour development in already heavily-trafficked areas.<br>• The scope of the junctions to be assessed by detailed modelling should be agreed with TfGM (UTC) and the Local Authority in advance and will depend upon the outcome of the trip assessment and distribution exercise. For this reason, TfGM would advise that a trip generation and distribution exercise should be issued before submission of the planning application. Once this is undertaken it will be possible to finalise TfGM requirements in terms of the TA. This will largely depend on the amount of trip generation.<br>• Clear details of proposed vehicular access arrangements including general servicing arrangements. An engineering drawing should be supplied showing the changes to the road network to fully understand the impact of the proposed development.<br>• A swept path analysis should be provided for any vehicular access.<br>• A review of Traffic Regulation Orders on the surrounding streets in the vicinity of the development.<br>• An assessment of the likely environmental/traffic impacts of HGVs during the construction process. | |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | **Site Accessibility by Sustainable Modes**<br><br>The TA should include a comprehensive review of the existing provision in the vicinity of the site for all pedestrians including those with disabilities. In addition to walking distances and pedestrian desire lines, pedestrian environment (including footway condition and widths) and pedestrian safety and security should be considered.<br><br>An audit of the footways in the vicinity of the development should be undertaken and improvements identified.<br><br>A comprehensive review of the cycling infrastructure in the vicinity of the proposed development should also be undertaken. This should include an assessment of the connectivity of the site with existing cycle routes. The quality and condition of existing infrastructure, cyclist safety and security should also be considered.<br><br>The catchment area for cycling, walking and public transport should be captured in maps. The quality of the routes for pedestrians and cyclists should be described and this should include a description of any signing for cycle routes as appropriate.<br><br>The TA should provide a review of existing public transport services (including service frequency and location of nearest stations/stops), with a view to supporting improvements to existing public transport services as required, in particular, assess the quality of the surrounding bus infrastructure i.e. upgrade to shelters etc.<br><br>The TA should include a plan clearly showing details of the proposed pedestrian and cycle access points serving the site and linkages into the surrounding area.<br><br>Connectivity with local public transport networks should be highlighted. The developer should consider measures to encourage access by sustainable modes. | Noted, see Transport Assessment at **Appendix 11.1**. |

| Consultee | Summary of Comments | Action |
|---|---|---|
| | **Travel Plan**<br><br>A Framework Travel Plan for the development should accompany any future planning application. | Noted. |

*Table 2.2: Non-Significant Topics Scoped Out of the EIA*

| Topic |
|---|
| Wind Microclimate |
| Daylight, Sunlight and Overshadowing |
| Materials |
| Lighting |
| Major Accidents and Disasters |

# EIA Procedure and Methodology

## Consultation

2.22 Consultation is recognised as a critical part of this application and associated ES, as well as the wider development project and the related forthcoming planning applications. It has been necessary to agree the Planning, EIA and Consultation Strategy at the outset, ensuring co-ordination and understanding between the infrastructure works packages and the emerging FEC Red Bank proposals, and seeking to address key planning and design considerations at the earliest opportunity. Engagement had with MCC Officers and also with the community and stakeholders to date, is presented below.

***Pre-Application Consultation***

2.23 A pre-application with MCC Officers, as referenced in paragraph 2.16, has included discussion of matters relating to the required scope of the planning application submission and key technical matters to address, and the proposals for public consultation strategy.

***Community and Stakeholder Consultation***

2.24 An initial stage of consultation on the project in October 2021 focused on introducing the community and other stakeholders to the plans for the Red Bank Neighbourhood, including the enabling works to be delivered through HIF funding.

2.25 A leaflet with information about the project and the consultation process was distributed to residents and businesses. This included details of the consultation website and the public information drop-in events. An electronic copy of this leaflet was also sent by email to local businesses and other key stakeholders on the Engagement Register managed by Counter Context. The cover email again introduced the proposals, highlighted the consultation events and the consultation website.

2.26 Two drop-in events were held at GRUB, a commercial space on Red Bank on Thursday 21 October 2021, from 3pm to 7pm and Friday 22 October 2021, from 1:30pm to 5pm. Information was displayed on boards covering:

- The Joint Venture, Victoria North and the Strategic Regeneration Framework.
- The vision for Red Bank and the City River Park.
- The Red Bank Neighbourhood.
- HIF investment and enabling works.
- Proposals for improving the quality of the natural environment and restoring the River Irk.
- Early proposals and ideas around placemaking, activation, movement and connectivity.
- The timescale for future planning applications and future consultation.

2.27 The consultation website (www.redbank-regeneration.co.uk) acted as an information hub, providing access to the content in the consultation leaflet distributed to residents and other stakeholders, as well as all the information presented on information boards at events. The website also allows visitors to sign up to an email list for updates.

2.28 An online consultation survey asked for feedback on a number of the areas for which information was presented at events. It asked respondents about their experiences of the area currently and their views on the vision for the Red Bank Neighbourhood and proposals for restoring the River Irk. It also asked for more specific feedback on the types of uses and activities to be supported at St Catherine's Wood and in the City River Park more broadly. A paper version of the feedback form was available for people to complete and return to staff at events.

2.29 This initial stage of consultation saw a total of 20 responses. This included 13 responses through the online survey form, 3 paper forms collected at events and 4 emails. Feedback was generally positive, with support for the vision for the Red Bank Neighbourhood and the City River Park, and improvements to the area more generally. There was also strong support for each of the proposals for restoring the River Irk and the uses and activities listed in relation to the park - particularly nature trails, seating and cycle lanes. In terms of movement and connectivity, there was particular support for new and enhanced cross valley links, including new bridges over the river. A small number of comments expressed concern about noise, light pollution and other disturbance as a result of construction works, as well as tree loss from St Catherine's Wood. These comments and all other feedback will be considered as part of the development of design proposals, as well as strategies for mitigation.

2.30 This initial consultation marks the first phase of a five-step programme of communication and engagement leading up to the submission of a hybrid application by FEC for the residential-led neighbourhood. Building on this early feedback, a next phase of consultation was undertaken in December 2021 presenting further information on the updated plans for the Red Bank neighbourhood, as well as detailed park design and other aspects of the masterplan.

2.31 A professionally designed A5 postcard with details of the consultation process was distributed to local residents and businesses. The postcard provided details of the consultation process and the two drop-in information events taking place during the consultation process. The postcard also provided details of the communication channels for people to find out more about the proposals and provide feedback. These included the consultation web page, as well as a dedicated email address and Freephone information line. The consultation postcard was distributed to residential and commercial addresses within the same distribution area as at the first stage of consultation. A press release was issued on Monday 6th December 2021 by Manchester City Council and was included on their website. The press release issued by Far East Consortium was picked up by several news outlets who then issued their own articles, including:

- **Business Live**, "Sustainable regeneration' plans to create 5,500 Victoria North homes outlined", 6 December 2021.
- **About Manchester**, "FEC unveils 'Wild Urbanism' concept for Red Bank regeneration", 6 December 2021.
- **The Manc**, "Plans for a new 'Wild Urbanism' regeneration concept at Red Bank have been unveiled", 6 December 2021.
- **Insider Media**, "FEC unveils sustainable regeneration vision", 7 December 2021.
- **The Business Desk,** "Developer unveils 'Wild Urbanism' concept for Red Bank regeneration", 6 December 2021.
- **Place North West,** "FEC adds detail to Red Bank vision", 6 December 2021.

2.32 As at the first stage of consultation, Drop-in events were held at GRUB, a popular independent venue in the Red Bank area that is accessible for the local community. Two events were held at different times of day, allowing people to attend at a time that suited them.

2.33 The timing of the two events was as follows:

- Wednesday 8 December 2021, 3pm until 7pm, at GRUB (50 Red Bank, Manchester M4 4HF)
- Thursday 9 December 2021, 4pm until 7.30pm at Abbott Community Primary School (Livesey St, Collyhurst, M40 7PR)

2.34 Throughout this phase of consultation, several channels were made available for people to ask questions and provide feedback. To summarise, these were:

- The Freephone information line (08081 699 993).
- The project email address (info@redbank-regeneration.co.uk).
- The feedback form or consultation questionnaire, accessible form the consultation website (www.redbank-regeneration.co.uk)

2.35 A total of 34 responses were received during this phase of consultation. At this stage, respondents expressed support for the vision for the Red Bank Neighbourhood, the detailed proposals for the park, and the proposals to include a new primary school. There was also support in the feedback for the various non-residential uses proposed as part of the masterplan, particularly retail, service and cultural facilities.

2.36 Respondents put forward a number of suggestions, for example around signage, prioritising active travel routes, the accessibility of these routes as well as provision for different the groups within the park.

2.37 As at the previous stage of consultation, some respondents expressed the view that the proposals should respect and enhance the character of St Catherine's Wood and build on the historical character of the Red Bank area. Other considerations and concerns noted at this stage included parking and delivery, flood risk management, the potential impacts of tall buildings in terms of daylight and safeguarding access for transport infrastructure.

2.38 The Applicant has considered this feedback and will continue to engage with the local community and other stakeholders as the proposals continue to develop.

### EIA Assumptions

2.39 The EIA is based on a series of information including:

- The Site red line application boundary (see **Figure 1.1**).
- The written description of the Proposed Development including construction timescales and proposed construction methods and management protocols (see Chapter 5: The Proposed Development).
- The quantum of development and detailed plans submitted for approval as part of the application (see: Chapter 5: The Proposed Development).

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

### Assessment Approach

2.41 The EIA Regulations, supported by UK case law, provide the legal framework for the process of EIA and contents of Environmental Statements. In this case, proposals are being made by way of a detailed application and, as such, full detail as to the quantum and extent of development is presented and assessed in this ES.

2.42 As set out above, in order for this application to proceed independently it is supported by an EIA. The EIA approach is robust and includes a series of assessment scenarios to enable likely significant impacts 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 (Chapter 6 to Chapter 17). This ensures that:

- The impacts of the Proposed Development are identified in isolation.

- The impacts of the Proposed Development within the wider development project (inclusive of all related applications) are identified.
- The impacts of the wider SRF, inclusive of the Proposed Development and wider development project, are identified.

2.43 The assessment scenarios are presented in Table 2.3.

*Table 2.3: In-Combination Assessment Scenarios*

| Assessment | Stage | Scenario |
|---|---|---|
| In-Combination Assessment (ICA) | Stage 1 – Demolition and Construction Phase | Scenario 1a – Assessment of the impacts relating to the Proposed Development only |
| | | Scenario 1b – Assessment of the impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4 |
| | | Scenario 1c – Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF |
| | Stage 2 – Completed Development and Operational Phase | Scenario 2a – Assessment of the impacts relating to the Proposed Development only |
| | | Scenario 2b – Assessment of the impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4 |
| | | Scenario 2c – Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF |

### Cumulative assessment

2.44 Further to the ICA, a Cumulative Impact Assessment (CIA) is also presented. Schemes for consideration in the CIA were identified through a planning application search of the MCC and Salford City Council (SCC) planning portals. The cumulative sites include for those approved projects within 1km of the Site considered as having potential for cumulative impact with the Proposed Development. This is the typical approach to CIA undertaken for an EIA. This process identified a total of 20 projects to be included within the cumulative assessment. The list of sites

considered as part of the CIA are presented in Table 2.4 and are presented on **Figure 2.4**. The list of sites was agreed with MCC through the Scoping process.

2.45 It should be noted that although Application 1 has been approved by MCC on 23rd December 2021 (ref. 132252/VO/2021), it is not being included as a cumulative site as the development is already considered in scenarios 1b, 1c, 2b, 2c, 3b and 3c within this ES, and effectively forms part of the development project. Including it as a cumulative site within Table 2.4 would result in the potential effects being "double counted".

*Table 2.4: Cumulative Sites*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status |
|---|---|---|---|---|
| 1 | 129393/VO/2021 | 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 | Approved Jun 2021 |
| 2 | 127971/FO/2020 | 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 |
| 3 | 128248/FO/2020 | 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 | 150m south | Approved June 2021 |
| 4 | 116366/FO/2017 | 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 | 150m south | Approved Aug 2017<br><br>Under construction |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status |
|---|---|---|---|---|
| | | 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 | | |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<br><br>Under construction |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 |
| 7 | 124973/FO/2019 | 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 | 350m south | Approved Feb 2016 |
| 8 | 111777/FO/2016/C1 | 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 | 250m south east | Approved Sep 2016<br><br>Under construction |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status |
|---|---|---|---|---|
| 9 | 121375/FO/2018 | 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. | 840m south | Approved Oct 2020 |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | Approved Oct 2018<br><br>Under construction |
| 11 | 20/76134/FUL | 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 | 1000m south west | Approved Feb 2020 |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br><br>Under construction |
| 13 | 19/74465/HYBEIA | 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) | 960m south west | Validated Nov 2019 |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status |
|---|---|---|---|---|
| | | 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 7BN | | |
| 14 | 126944/FO/2020 | 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 | 140m south east | Approved Sep 2020<br>Under Construction |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | 145m south east | Approved October 2017 |
| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, | 635m south west | Approved June 2018 |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status |
|---|---|---|---|---|
| | | B1 and D1) with associated landscaping, access and other associated works | | |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 |
| 19 | 124888/FO/2019 | 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>Under Construction |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 |

2.46 The assessment scenarios for consideration within the CIA are presented in Table 2.5.

*Table 2.5: Cumulative Impact Assessment Scenarios*

| Assessment | Stage | Scenario |
|---|---|---|
| Cumulative Impact Assessment (CIA) | Stage 3 – Cumulatives | Scenario 3a - Assessment of the cumulative impacts relating to the Infrastructure works plus impacts associated with agreed cumulative sites |
| | | Scenario 3b - Assessment of the cumulative impacts relating to the Infrastructure works, plus impacts associated with Application 1 (HIF Advance Enabling Works), 3 (HIF Flood Defence Works) and 4 (Red Bank Neighbourhood), and the agreed cumulative sites |

| Assessment | Stage | Scenario |
|---|---|---|
| | | Scenario 3c - Assessment of the cumulative impacts relating to the Infrastructure works, plus impacts associated with Application 1 (HIF Advance Enabling Works), 3 (HIF Flood Defence Works) and 4 (Red Bank Neighbourhood), the wider SRF, and the agreed cumulative sites |

2.47 The CIA is presented within each of the technical chapters. The assessment scenarios proposed ensure all potential cumulative impacts of the Proposed Development, the wider development project, and the NG SRF are considered as part of this EIA.

### Assessment Assumptions

2.48 As outlined earlier in Chapter 1: Introduction and earlier in this chapter, the application and ES for this proposed development is coming forward in advance of two other associated applications and follows the submission and approval of an enabling works application which all together form the wider development project. As noted in Chapter 1: Introduction, Application 1 has been submitted to MCC and is approved (ref. 132252/VO/2021). In order to present a robust assessment, it is necessary to present information in relation to Applications 3 and 4, which provide the assumptions for the presentation of the impacts of the ICA and CIA.

2.49 Wherever possible, definitive and fixed information relating to Applications 3 and 4 is used. Where definitive information is not available, due to the design programmes for each of the applications, a maximum, upper quantum and / or worst-case position has been assumed, informed by relevant available information at the time the assessment is undertaken. This serves to ensure that the ICA and CIA assessments are robust.

2.50 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. Where specific information is not known at this stage with regard to Applications 3 and 4, the assumptions for the purpose of working up the assessments has relied upon the detail within the SRF.

2.51 Table 2.6 details the assumptions used in this ES.

*Table 2.6: Assumptions used as basis for In-Combination Assessment and Cumulative Impact Assessment*

| Application / Project | Applicant | Site Location Plan (indicative, unless otherwise stated) | Estimated Site Area (ha) | Quantum of development (indicative, unless otherwise stated) |
|---|---|---|---|---|
| Advance Enabling Works (Application ref. 132252/VO/2021) | Manchester City Council | **Figure 2.1** (submitted plan with application 132252/VO/2021) | 2.83 ha | The below has been approved by MCC (Application ref. 132252/VO/2021):<br>• The demolition of Creamline Dairies.<br>  ○ Area of Demolition – 0.34ha<br>  ○ Estimated quantum of material generated during demolition. To be recycled on site – 684m$^3$ of concrete and 250m$^3$ mixed hardcore<br>• Tree and shrub clearance to facilitate the construction of a temporary haul road.<br>  ○ Area of Tree Clearance – 1.05 ha<br>• The construction of the temporary haul road.<br>  ○ Length of Haul Road – 750m<br>  ○ Area of haul road – 0.9ha |
| Flood Defence and Alleviation Measures Application | Manchester City Council | See **Figure 2.2** | Circa 1 ha | • Flood mitigation and defence works along the River Irk to reduce the area of flood zone 3<br>• Potential for new bridge to replace Union Bridge |

| Application / Project | Applicant | Site Location Plan (indicative, unless otherwise stated) | Estimated Site Area (ha) | Quantum of development (indicative, unless otherwise stated) |
|---|---|---|---|---|
| | | | | • New bridges at Dantzic St and Collyhurst |
| Red Bank Neighbourhood Application | Far East Consortium | See **Figure 2.3** | Circa 15.3 ha | • Approximately 4,000 no. residential dwellings<br>• Indicative massing to align with the NG SRF, including a number of landmark buildings at height<br>• Retail and commercial floorspace<br>• Open and amenity space<br>• Access and associated infrastructure |
| Northern Gateway Strategic Regeneration Framework (SRF) | n/a | See **Figure 2.4a** and **Figure 2.4b** | Circa 155 ha | • Residential-led regeneration scheme proposing approximately 15,000 dwellings over a 15-20 year period<br>• Employment and commercial uses<br>• Retail provision<br>• Green and Blue infrastructure<br>• Improved transport and access |

### Consistency

2.52 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 with the remaining three Victoria North applications; and
- Assessment of Cumulative Effects.

### Spatial and Temporal Scope of Assessment

2.53 The spatial extent of the EIA is described by the geographical area potentially affected by the proposed schemes and will need to take into account:

- The physical extent of the proposed schemes 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.

2.54 The environmental baseline studies undertaken as part of the EIA consider the current conditions of the Site. Therefore, the technical chapters will contain a description of the relevant study area that may be affected by the scheme.

2.55 With reference to the baseline conditions, the impact assessment will be made against existing baseline conditions. The assessment will address effects arising from the construction and operation of the proposed schemes as follows:

- Construction effects may arise directly from 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.

2.56 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 scheme did not go ahead).

### Impact Prediction

2.57 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."*

2.58 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.

2.59 The following types of effect are considered:

- Direct impacts that arise from activities that form an integral part of the proposed scheme (e.g. new infrastructure/land take);
- Indirect impacts that arise from activities not explicitly forming part of the proposed scheme (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 scheme;
- 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; and
- Adverse impacts that have a negative influence.
- In-combination impacts with the remaining three Victoria North applications.

### Significance Criteria

2.60 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 2.7 and Table 2.8 below. These criteria are used as a guide only and the specific criteria for each technical assessment will be presented within each chapter.

*Table 2.7: 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. |

2.61 Descriptions of the magnitude of impact are provided in Table 2.8 below.

*Table 2.8: 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 |
| 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. |

### Identification of Significant Effects

2.62 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.

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

2.64 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

2.65 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

- Further mitigation – is the mitigation that is not embedded into the proposals and which requires further action than already proposed.

2.66 Where environmental mitigation measures have not been integrated into the proposals through design, it is expected that all other requisite measures or 'further 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 Chapter 18: Summary of Mitigation and Residual Effects.

### Limitations and Assumptions

2.67 The EIA has been undertaken based on the planning application drawings and description of the development submitted with the planning applications. The technical assessments have been based on the current land uses and the existing baseline conditions at the Site. Any assumptions made or limitations relating to individual technical assessments are presented, where applicable, in the relevant technical chapters.

2.68 As explained earlier, the planning application which is subject of this ES is part of a wider "development project" for EIA purposes. Two further planning applications will follow this one, during which time the detail of the wider development project will become clearer. Each of the subsequent applications will be accompanied by an ES and as the detail emerges the assessments in those ESs will consequently be more detailed. However, that is not possible at this stage, and so in producing this ES, certain assumptions have been made in respect of Applications 3, 4 and the wider SRF, for the purposes of undertaking the assessment for those topics that are known to be likely to have significant effects in relation to the Proposed Development (Application 2). There is considered to be insufficient information available in relation to the wider development project and wider SRF to make a meaningful assessment in respect of those topics that are considered non-significant effects of the Proposed Development (as referred to in Table 2.2). However, Application 2 has been submitted with an appropriately scoped ES and each subsequent application (3 and 4) will be scoped and an ES submitted for each of those which will fully assess the appropriate topics which are identified for those as likely to give rise to significant impacts. As such, all planning applications for the wider development project will have been robustly and rigorously assessed for EIA purposes, and whatever is granted planning permission will have been assessed.

# 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.

## Site Location

3.2 The Site is irregular in shape and occupies approximately 15.74 ha of land to the north of Victoria Station, Manchester, within the ward of Cheetham. The Site Location Plan is presented at **Figure 1.1**.

3.3 The Site is bound by existing commercial and industrial uses to the north, hardstanding car park, existing commercial units to the west and the former Red Bank viaduct, Dantzic Street and Collyhurst Road to the south, and existing commercial units to the east Including the HMG Paint complex.

3.4 As noted in Chapter 1: Introduction, the Site is located within the Initial Development Area and within the Red Bank and New Town neighbourhoods proposed by the of the Northern Gateway SRF. **Figure 3.1** below shows the infrastructure works application site boundary (shown in red) in the context of the wider SRF.

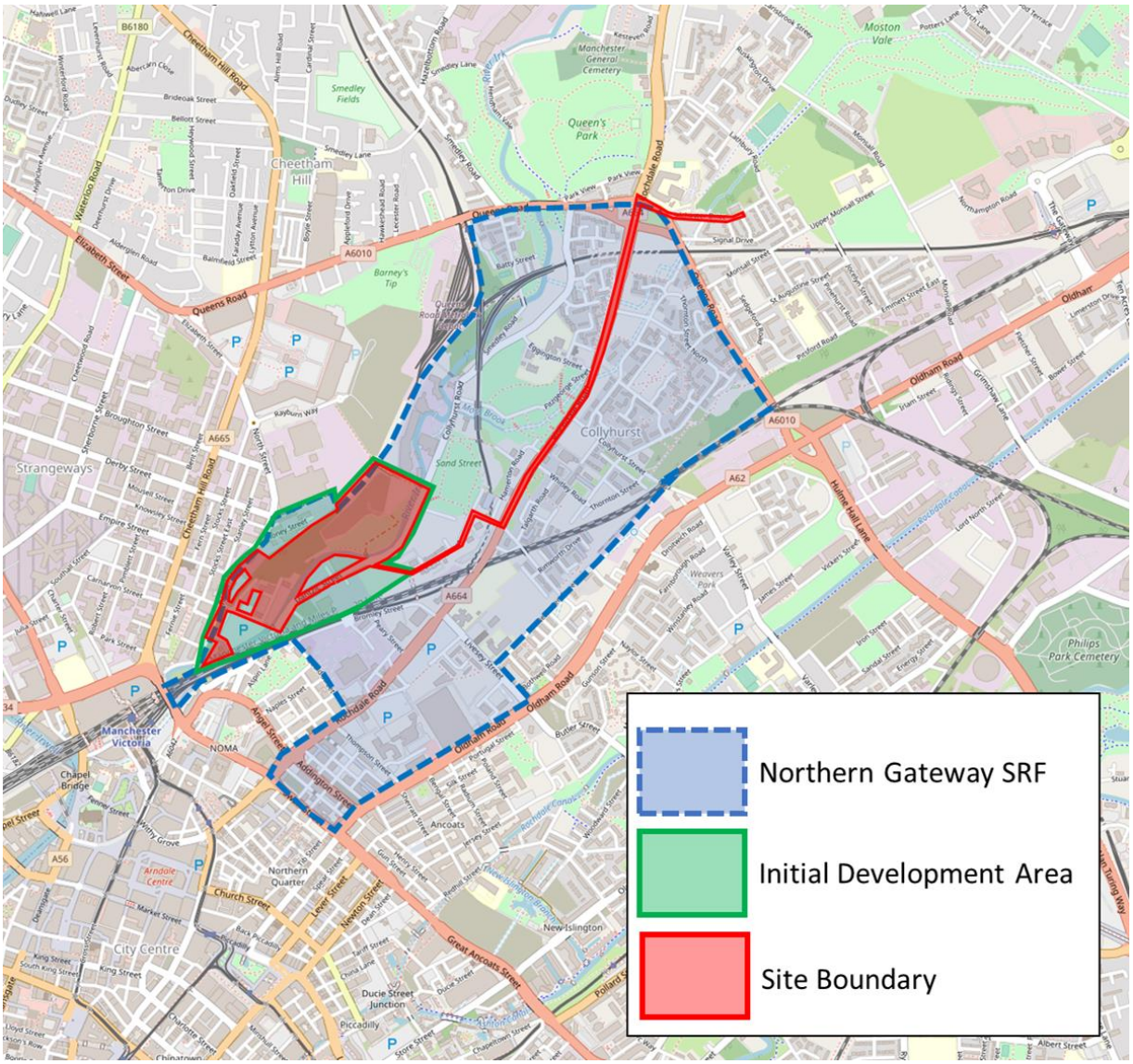



*Figure 3.1: Site Location in context of Initial Development Area and wider Northern Gateway SRF (not exact planning boundaries).*

# Site Description

3.5 For the purposes of this ES, the Initial Development Area, within which the site sits, is divided into the following areas:

- Red Bank Plateau;
- Red Bank Viaduct;
- St Catherine's Wood;
- Travis Island;
- New Town Plots.

3.6 **Figure 3.2** below shows the extent of these areas:

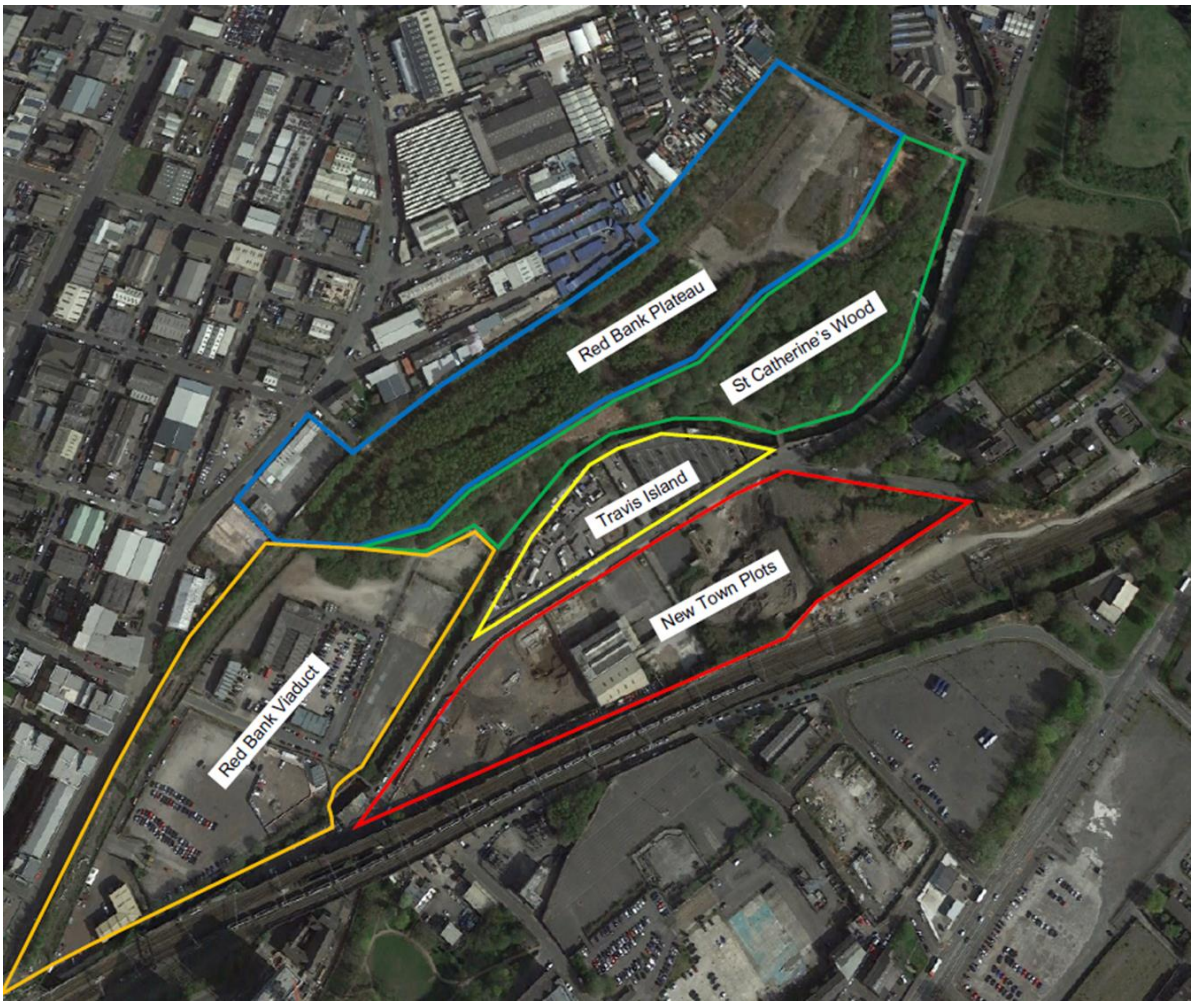



*Figure 3.2: Existing Site Areas*

3.7 Travis Island, New Town Plots and parts of Red Bank Viaduct areas are excluded from the Site area. The site boundary also includes the High Voltage Electricity connection to Queens Park substation along Dalton Street and Rochdale Road.

## Site History

3.8 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.

# Site and Surrounding Context

### *Ecology and Trees*

3.9 One Special Protection Area (SPA) 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 3.1km northeast of the Site.

3.10 One Site of Special Scientific Interest (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 3.1km northeast of the Site. Although the Site falls within the SSSI Risk Impact Zone (IRZ) for Rochdale SSSI, the parameters of the Proposed Development do not meet the risk IRZ threshold.

3.11 There is one statutory locally ecologically designated site within 2km of the Site:

- Boggart Hole Clough LNR located 1.6km north of the Site

3.12 There are, however, four non-statutory Sites of Biological Importance (SBIs) lie within 2km, including:

- Rochdale Canal: Scott's Lane to Ducie Street Basin SBI located 0.9km south of the Site.
- Ashton Canal (West) SBI located 1.2km south of the Site.
- Reservoirs at Harpurhey SBI located 0.8km north east of the Site.
- River Irwell SBI located 1.8km south west of the Site.

**Semi-natural Woodland**

3.13 The Red Bank terrace is dominated by semi-natural broad-leaved woodland. The woodland is predominantly self-seeded silver birch Betula pendula regeneration. The age and height structure of the woodland is homogenous and based on the diameter of the tree trunks the majority of the tree stock is approximately 20 years old. Goat willow Salix caprea and buddleia Buddleja davidii are occasionally noted through the woodland. This young woodland has limited understorey, with areas of bare ground or large stands of Himalayan balsam present. Although classifying as semi-natural woodland in terms of habitat code, it does not meet the necessary criteria to be classified as S41 NERC habitat of principal importance. However, the woodland does 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.

**Plantation Broad-leaved Woodland**

3.14 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. 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 S41 NERC habitat of principal importance. However, the woodland does meet the 'Lowland Broadleaved Woodland Greater Manchester BAP' with the plantation woodland criteria.

**Scrub and Scattered Broadleaved Trees**

3.15 Bramble *Rubus fruticosus agg.* dominated scrub is present in a large area on the northern bank of the River Irk. Other areas of scrub are dominated by buddleia and goat willow. Small, scattered trees, separate from areas of woodland, are present along the Red Bank Viaduct. Species include balsam poplar *Populus balsamifera*, silver birch and goat willow. All of the scattered trees have been assessed as either Category B or Category C in accordance with BS5837:2012.

**River Irk**

3.16 The River Irk runs throughout the Site, flowing from 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. Within the 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 buddleia, is present throughout the entirety of banks of the watercourse. A large area of continuous bracken *Pteridium aquilinum* is present on the northern bank of the River Irk.

3.17 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 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. The River Irk Corridor has therefore been taken forward in this assessment as an important ecological feature at the Local Level.

**Other Habitats**

3.18 The remainder of the Site is either hardstanding, hardstanding with ephemeral vegetation growth on previously developed land, or buildings associated with Creamline Dairies and other warehouses. Stands of buddleia are scattered throughout the areas of hardstanding.

**Invasive Plant Species**

3.19 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.

3.20 Giant hogweed is an invasive plant species that is listed under the Invasive Alien Species (Enforcement and Permitting) Order 2019. Giant hogweed was found infrequently along the banks of the River Irk.

3.21 Japanese knotweed *Fallopia japonica* is an invasive plant species that is listed under Schedule 9 of the Wildlife and Countryside Act 1981. Japanese knotweed was recorded along the northern banks of the River Irk.

### *Townscape and Visual*

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

***Townscape Character***

3.23 Existing and proposed townscape character areas have been defined within the Northern Gateway SRF[1]. The study area is largely located within the Lower Irk Valley neighbourhood, which occupies the western parts of the Northern Gateway, and the Site and wider study area 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 and potential contamination hot-spots, 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.

3.24 The Proposed Development area spans the majority of the Red Bank neighbourhood area, identified within the Northern Gateway SRF. There are 16 Grade II listed buildings and 1 Grade 11* listed building within 500m of the Site, the closest of which is the Grade II Listed Union Bridge, located on the south eastern boundary of the Site. The Red Bank Viaduct to the south of the Site forms a major structure which runs parallel to Red Bank and bisects the once heavily industrialised Irk Valley. To the north, the industrial heritage of the river corridor remains evident, with large floorplate industrial/commercial buildings located along the Site's northern edge. Buildings to the north of the Site are predominantly low in height, at 1-2 storeys.

[1] Northern Gateway Strategic Regeneration Framework (MCC) (2019) http://northerngatewaymanchester.co.uk/framework/ [Access: 23.01.22]

3.25 Redundant areas of hard standing and areas of previous demolition indicate the historic industrial legacy. The character is reinforced by the self-seeded woodland. Topography within the Site is highly modified and disturbed due to historic land uses within the Site and surrounding context. The Site, along with adjacent areas along the river corridor, are largely devoid of built development and form a significant 'gap' in the urban grain. There is no formal public access to the Site. A short public footpath route is located to the north of the Site off Collingham Street and connects to Collyhurst Road over the bridge via Barney's Steps.

### *Drainage and Flood Risk*

3.26 The Site sits within the River Irk catchment and the river is located in the south of the Site. The river flows in a south-westerly direction towards the confluence with the River Irwell, located approximately 900m downstream.

3.27 The Manchester, Salford and Trafford SFRA identifies the River Irk as the primary source of flood risk, with surface water as a secondary source of flood risk. The SFRA doesn't identify the Site as an area at risk of groundwater flooding.

3.28 The EA flood map[2] shows that the majority of the Site sits in Flood Zone 1. This is classified to be at 'Low Risk' of fluvial flooding. This comprises land assessed as having a less than a 1 in 1000 annual probability of river or sea flooding in any year (<0.1%). Areas identified as Flood Zone 3 follow the edges of the River Irk channel within the Site, and are therefore considered as Flood Zone 3a, rather than Flood Zone 3b classified as functional floodplain.

3.29 The EA surface water flooding maps show that there are localised areas of low, medium, and high risk of surface water flooding (directly generated from pluvial events). The surface water flooding follows the alignment of the plateau with the depth of the flooding being less than 300mm for most of the site.

3.30 Based on information available at the point of submission, there are no known existing sewers within the site boundary, so surface water flooding is assumed to occur due to localised low points. Although the majority of the area within the site boundary is brownfield, an initial geotechnical investigation found that infiltration varies due to large areas of made ground beneath the site. This could also contribute to surface water flooding. The site sits within the Conurbation Core Critical Drainage Area (CDA) as identified in the Manchester, Salford and Trafford SFRA. This means the area would be sensitive to an increase in surface water runoff as a result of the new development and is associated with historic flooding in the area. This could be due to the capacity of the existing sewer network or other watercourses including culverts.

### *Ground Conditions*

3.31 There are no protected geological designations within the Site boundary.

[2] https://flood-map-for-planning.service.gov.uk/

3.32 Glacial till underlies the Site in the area south-east of the River Irk and along the north-western site boundary. Although not indicated, it is assumed that alluvial deposits are to be found in association with the current and former channels of the River Irk.

3.33 Bedrock varies from east to west across the Site. The Chester Pebble Beds Formation underlies the west of the Site; The Manchester Marls Formation underlies the centre of the Site; and the Collyhurst Sandstone Formation underlies the north-eastern corner of the Site. All three units are shown on mapping to be gently dipping (5 degrees) SSW.

3.34 The principal aquifers beneath the Site are the Chester Pebble Peds Formation and Collyhurst Sandstone Formation. The Manchester Marl is classified as a Secondary (B) Aquifer.

### *Climate Change*

3.35 The UK's most recent final GHG emissions national statistics (for 2019)[3], set out the total UK GHG emissions for 2019 at 454.8 million tonnes of carbon dioxide equivalents ($MtCO_{2e}$). UK total emissions are showing a general downward trend, with 2019 UK total GHG emissions down 2.8% from 468.1 $MtCO_{2e}$ in 2018. In 2019, the largest emitting sector was transport, accounting for 27% of the UK GHG emissions.

3.36 At a local level, in 2019, emissions in Manchester were 2,019,800 tonnes of carbon dioxide equivalents ($tCO_{2e}$)[4].

3.37 The Proposed Development is located within the North-West and North Wales climate district (Met Office, 2020). Table 3.1 describes the baseline climate data for the region[5].

*Table 3.1: UK regional historical climate characteristics for the NW England region of the UK, representing the current climate conditions for the Site*

| Parameter | North England Regional Climate Observations |
|---|---|
| Temperature | Mean annual temperatures over the region depend very much on altitude and, to some extent, proximity to the coast. |
| Rainfall | The exposure of NW England 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. Manchester averages 830mm. Whilst rainfall is generally well distributed through the year, there is a seasonal pattern. The driest season is spring whilst there is an autumn/winter maximum, when the Atlantic depressions are at their most vigorous. |
| Wind | NW England is among the most exposed parts of the UK as it is close to the |

[3] UK Government (2020) National Statistics for carbon emissions. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957887/2019_Final_greenhouse_gas_emissions_statistical_release.pdf [last accessed 03.11.21]
[4] UK Government (2021) Local Authority and Regional Carbon emissions per industry. Available at: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2019 [last accessed 03.11.21]
[5] UK regional climates. Available online: north-west-england--isle-of-man_-climate---met-office.pdf (metoffice.gov.uk)

| Parameter | North England Regional Climate Observations |
|---|---|
| | Atlantic and contains large upland areas. The region experiences 5-10 gales per year, defined as days that the wind reaches a mean speed greater than 34 knots over ten consecutive minutes. |
| Sunshine | Sunshine duration is controlled by the length of day and cloudiness. It decreases with increasing altitude, latitude and distance from the coast. Average annual sunshine hours over NW England range from 1200 hours to 1500 hours. |
| Ground frost | Ground frost refers to a temperature below 0oC measured on a grass surface. In NW England ground frost occurs on average between 75 and 150 days per year. |
| Snowfall | The occurrence of snow is closely linked to temperature. Over most of the area, snowfall is normally confined to the months from November to April, but upland areas may have occasional falls in October and May. On average, the number of days with snow falling is about 20 days in lower-lying parts of the mainland but as much as 50 days over the highest ground. |

### *Accessibility*

3.38 The Site is within a ten-minute walk of the City Centre.

3.39 The A665 Cheetham Hill Road and A664 Rochdale Road provide major radial routes to and from the city centre and carry a mix of road users including buses. Bus stops are located on these routes providing public transport access to the site.

3.40 Victoria Station is located approximately 420m to the south-west of the proposed development and is one of the main transport interchanges within Manchester City Centre with heavy and light rail services, buses and taxis. Shudehill interchange, one of the main bus stations within the City Centre is located approximately 600m south of the proposed development.

3.41 Metrolink services are also available in the area, the closest of which is located at Victoria Station 420m south of the Site.

### *Archaeology and Heritage*

3.42 The Site is located in an area of low archaeological potential for Prehistoric, Roman, Early Medieval, Medieval and Post Medieval periods. The Site is located in an area of and high potential for Industrial and Modern periods.

3.43 There is one designated heritage asset located within the site boundary. This is the Grade II listed Union Bridge. No other designated heritage assets (Scheduled Monuments, Grade I, II* and II Listed Buildings, Conservation Areas, Registered Parks and Gardens or Registered Battlefields) are located within the Site boundary. There are 22 grade II listed buildings and one Grade II* listed building within 350m radius of the Site, however many of these assets have no intervisibility with the subject site given the local topography and the intervening built form.

3.44 The Site is not located within a Conservation Area nor are there any Conservation Areas in the immediate vicinity of the Site. Shudehill Conservation Area is located approximately 300m southwest of the Site, but there is no intervisibility between the Site and this Conservation Area due to the distance between the two, local topography and intervening built form.

***Air Quality***

3.45 The development site is not within an AQMA; however, it is adjacent to an AQMA to the southwest. MCC declared the Manchester AQMA in 2001 due to exceedances of the nitrogen dioxide ($NO_2$) annual mean objective and particulate matter ($PM_{10}$) 24-hour mean objective.

***Noise***

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

# Summary

3.47 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 on 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 a mixture of semi-natural and plantation broadleaved woodland with the remainder wither hardstanding or hardstanding with ephemeral vegetation on previously developed land or buildings
- The Site is located in Flood Zones 1, 2 and 3a.
- There are localised areas low, medium and high risk of surface water flooding.
- Principal and Secondary B aquifers lie beneath the Site.
- The Site is located in an area of and high potential for Industrial and Modern periods.
- There is one designated heritage asset located within the Site boundary and 23 listed buildings within 350m of the Site.
- Shudehill Conservation Area is located approximately 300m southwest of the Site
- The Site is located in an accessible location in Manchester City Centre
- The Site is not located within the Greater Manchester AQMA, however it does lie adjacent to the AQMA.
- The noise climate on site is dominated by traffic noise from the surrounding road network as well as train lines associated with nearby Victoria Station.

3.48 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 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 HIF works and the process of design evolution in response to the EIA process. The enabling works form part of a wider Development Project, being the regeneration of the area through a housing-led mixed-use development in line with the Council's Northern Gateway SRF which covers this part of Manchester. In terms of the wider Development Project, the Applicant has always intended to bring forward such a scheme in accordance with the principles and objectives of the SRF, and so there is no need for a more detailed consideration of alternatives to that wider project. Therefore, this chapter concentrates on the alternatives considered by the Applicant for the HIF works.

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.

4.5 No alternative sites were considered for the development as the Proposed Development constitutes the infrastructure works that are required in preparation for, and in association with, the Red Bank Neighbourhood redevelopment project which is part of the Northern Gateway SRF on an area of land which forms part of Victoria North, immediately adjacent to Manchester City Centre.

## No Development Option

4.6 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 Chapter 3: Site Description.

4.7 In the absence of the Proposed Development, it is not expected that there would be any significant changes to the baseline conditions. There is no indication that in the absence of development the use and therefore management of the Site would alter and therefore it is considered that the environmental conditions of the Site would remain at its existing level as described in Chapter 3: Site Description.

4.8 Due to the fact that the NG SRF has been endorsed, the Site is part of the Initial Development Area of Victoria North initiative (essentially Phase 1 of the NG SRF) and funding has been secured by Manchester City Council to undertake the necessary infrastructure works, the 'no development option' at this site is not, in fact, an option. The HIF works that make up the Proposed Development to be assessed in this ES are necessary in order to begin the process of regeneration and development in the Initial Development Area of Victoria North in accordance with the SRF.

4.9 The 'no development option' has been dismissed by the Applicants, as the reason for their involvement in the Site is to bring forward the development of the Site in line with the SRF. The 'no development option' would mean the Site is not developed and the regeneration benefits of the wider development project, as well as the NG SRF, would not be realised.

### Ecology

4.10 In, the absence of the Proposed Development, there would be no change to the current ecological baseline on site or loss of trees and, by association, no potential for Biodiversity Net Gain as part of the regeneration proposals.

### Townscape and Visual

4.11 In the absence of the Proposed Development, there would be no change to the Site character and no temporary disruption to localised views. However, by association, there would also not be the opportunity for redevelopment of the Site for the proposed Red Bank Neighbourhood and no potential for beneficial townscape and visual impact that are expected to occur as a result of the new City River Park.

### Flood Risk and Drainage

4.12 In the absence of the Proposed Development, 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.

### Ground Conditions

4.13 In the absence of the Proposed Development, there would be no change to the ground conditions on site and no risk of potential for impact on any identified sensitive receptors, both relating to the construction and use of this

proposed development and in relation to the wider development project. By association there would be no potential improvement to ground conditions on site.

### Transport and Access

4.14 In the Absence of the Proposed Development there would be no change to the local traffic conditions on site and no risk of adverse effects. This relates to the Proposed Development as well as the wider development project.

### Air Quality

4.15 In the absence of the Proposed Development, there would be no change to the local air quality on site or in the surrounding area during the proposed construction period. The proposals do not include any uses that would contribute to vehicle emissions and as such there would be no change to air quality past the construction phase regardless of whether the development came forward or not. This relates to the Proposed Development as well as the wider development project.

### Noise

4.16 In the absence of the Proposed Development, there would be no change to the local noise environment on site or in the surrounding area during the proposed construction period. This relates to the Proposed Development as well as the wider development project. The proposals do not include any noise producing uses and as such there would be no change to the noise conditions past the construction phase regardless of whether the development came forward or not.

### Climate Change

4.17 In the absence of the Proposed Development, there would be no potential for additional or avoided GHG emissions associated with demolition, construction and operation. This relates to the Proposed Development as well as the wider development project.

## Design Evolution

4.18 The Applicant and the design team for the full application 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.

4.19 The objective of the Proposed Development is to create a new internal access road and new junction from the existing Red Bank Road, utility and services connections, remediation and earthworks, demolition of existing structures and the provision of green infrastructure which will enable the associated works, and, ultimately, the Red Bank Neighbourhood.

### Early Design Development

4.20 A masterplan for the development was prepared as part of the HIF funding application. The design was largely architecturally led with engineering considerations limited to a desk study to look at the history of the site and general ground investigation as an early review of extent of potential contamination and ground conditions. The City Park and circulation route along with a basic plot layout on the Red Bank Plateau and along Dantzic Street (including Travis Island), a requirement for an improved road layout on Dantzic Street and a new bridge at Collyhurst Weir (as part of circulation strategy) were all established as part of this early masterplan development to help inform an application for funding.

4.21 Following the HIF funding application, the Applicant undertook further detailed assessments of the site and surrounding area to develop the design for some of the key features of the infrastructure delivery including:

- Plateau Avenue road alignment.
- The junction position for Plateau Avenue and Red Bank road.
- An access route from Plateau Avenue down to the Irk river front via the existing plateau slope and plots off Roger street.
- Development of circulation strategy route through the St Catherine's Wood Park.
- Development of a masterplan design for Dantzic Street including consideration of a new bridge off Dantzic Street to address utility requirements and enhance early circulation route concepts.
- Commenced development of river bank terracing design proposals close to Union bridge and the concept of some river bank reprofiling to provide better connectivity and restore ecology habitat along the Irk.
- Considerations of some of the engineering challenges of the site including requirements to address the steep nature of some of the existing slopes to the plateau are for then proposed development and the potential for changes in conditions that may influence the slope, reuse of material and early assessment of potential remediation requirements of taking the site forward.

### Design Development in Support of Clarity of the Scheme in Application 2

4.22 The previous masterplan for the Site was superseded as more information became available on the requirements for plot delivery, more defined requirements for plot layout, which influenced the Plateau Avenue and junction location.

4.23 The initial design for the new road "Plateau Avenue" has developed since the early stages of the design. Initial designs showed a uniform 6.5m carriageway with 2.0m footways. The initial bend in the carriageway on Site has since been widened to 7.3m to allow large vehicles to pass on the immediate bend. The route of the loop around Plot RB05a was updated to match the alignment of an updated plot configuration.

4.24 The HIF Infrastructure delivery design for Dantzic Street was scaled back to installation of utilities and diversion requirements to reflect land ownership and land access timeframes. In addition, the design of a new Dantzic Street Bridge was excluded from the HIF Infrastructure delivery scope, as that is now to be delivered as part of a later design package and will be the subject of a later planning application. Design supporting plot preparation for all plots along Dantzic Street (on land known as Travis Island) was excluded from the HIF Infrastructure delivery scope as that will alsobe delivered as part of a later design package and will be the subject of a later planning application. Again, this change was made to reflect land ownership and land access timeframes.

4.25 The earthworks modelling of the Red Bank Plateau has taken into consideration the steep section of the plateau slope at the meander of the River Irk making the plateau narrow through this section (adjacent to RB02 and RB03 plots).[ Here it was identified early in the design process that works were needed to improve the stability of the slope (and ensure the slope will comply with i modern design standards) as part of the Proposed Development. This will mitigate the risk associated with potential future slope collapse. Several solutions were considered including soil nails and retaining walls but the optimum solution for the design developed into a slackened slope angle and the removal of material across two proposed plots (RB02 and RB03). This would achieve viable plot areas and it also supported design stability of the slope The redesign exercise has also led to the opportunity to improve the planned quality of vegetation to be provided on the new slope and this will contribute to biodiversity net gain to a greater degree than earlier planned. Split level plots were considered to remove the need for unnecessary excavation in plot delivery, but early consideration of the later building plot development by the masterplan team favoured a reduction of full plot level. The finished earthworks surface levels of surrounding plots either side of RB02 and RB03 were determined based on the proposed Plateau Avenue road surface and levels of the circulation route access. The consideration of the plots' interaction with both these routes determined both optimum cut and fill balance on the site and avoided unnecessary off-site disposal. A proposed earthworks strategy for re use of material and an early remediation strategy was developed in parallel to support the modelled finished surfaces of the site.

4.26 Initial designs for the drainage presented an opportunity to consider a surface-based SuDS solution. Design development of other elements (mainly on street parking) led to a final design based predominantly on a permeable paving solution in combination with pipes and a reduced area of swales and detention basins.

4.27 The key points of design evolution of the Proposed Development are as follows:

- Creating a new circular road from Red Bank which loops around plot RB05a.
- Widening the new circular road to 7.3m on entry to enable large vehicles to pass on the immediate bend.
- Creating a new circulation route through the new park from the Red Bank area to the existing St Catherine's Wood bridge to the south of the Site.
- Removal of works from the planning application for works to Dantzic Street .
- Removal of Travis Island from the planning application.

- Reduction of the slope angle between Red Bank Plateau and the River Irk.
- Inclusion of a SuDS Strategy that is based predominantly on permeable paving as opposed to swales and detention basins.

## Summary

4.28 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 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 This chapter and the accompanying figures define the application area, the study area, the maximum quantum of development proposed, the means of access and describes the Proposed Development which is the subject of this planning application. It also describes the wider Development Project as this ES assesses the detail of the planning application but also the effects of the Development Project.

5.3 This ES is prepared in connection with the planning application for the HIF Infrastructure Works (the Proposed Development) (Application 2). Although the ES is able to assess the Proposed Development in detail, it also assesses (at a higher level, given that the schemes are still being devised), the In-Combination Assessment (ICA) of the other schemes related to the Red Bank Neighbourhood, as well as the wider SRF (i.e., it assesses the "Development Project"). One application for the HIF advanced enabling works (Application 1) has previously been submitted and approved (planning ref. 132252/VO/2021). Two further planning applications will follow this one for the flood alleviation works and the residential led development, during which time the detail of the wider Development Project will become clearer. Each of the subsequent applications will also be accompanied by an ES and as the detail emerges the assessments in those ESs will consequently be more detailed. As the detail for Applications 3 and 4 are still being worked up the assessment of the wider development within this ES (i.e., the Development Project) is necessarily high level.

5.4 The information presented in this chapter alongside the plans submitted for approval form the basis of assessment within the EIA and provides the level of detail required to enable the assessment of environmental effects in line with the 2017 EIA Regulations.

## Description of the Development

5.5 This planning application seeks full planning permission for:

> *"City Council Development for creation of a new City River Park (Phase 1) and other green infrastructure and green links, creation of development platforms for future delivery of the new Red Bank Neighbourhood including remediation and earthworks, construction of a new road and priority junction from Red Bank road, utility and services connections and diversions, street works for new utilities including ducting up to the Queens Park substation, preparatory tree and shrub clearance, demolition of certain existing structures, and other associated works"*

**The Development Project**

5.6 This ES assesses the Development Project, which is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in 4 planning applications which are explain below. MCC and FEC are starting to develop proposals for the first major phase of development at Victoria North. The plans include the transformation of its landholdings to create the new "Red Bank Neighbourhood": a sustainable residential-led neighbourhood which reinvigorates the green spaces along the River Irk Valley and brings nature into the city. The Red Bank Neighbourhood will form part of a larger "Initial Development Area" identified within the Red Bank and New Town neighbourhoods envisaged by the Northern Gateway Strategic Regeneration Framework.




*The proposed Red Bank Neighbourhood (not exact planning boundaries)*

## Overview of Red Bank Neighbourhood

5.7 The plans for Red Bank Neighbourhood include:

- Approximately 4,000 homes (out of the 5,500 homes envisaged in the Initial Development Area), across a range of tenure types and sizes, including affordable homes, set within high quality public realm;
- New community facilities;
- 5 hectares of new or improved green space, including the revitalisation of St Catherine's Wood;
- New walking and cycling routes to improve connections between neighbouring communities;
- Improvements to the River Irk to enhance the river environment, including measures to help prevent flooding; and,
- Low carbon neighbourhood that delivers development in a sustainable way.




*Red Bank Neighbourhood Concept Plan including public realm and residential plots*

5.8 The JV's proposals at Red Bank are envisaged as a single development project, including the HIF infrastructure and enabling works, and the residential plot development associated with FEC's proposed residential masterplan, which will deliver approximately 4,000 of the 5,500 new homes envisaged for the Initial Development Area. In order to meet the HIF funding requirements, and the resulting programme implications, a series of planning applications will be submitted to MCC for approval as follows:

*Table 5.2: Red Bank Neighbourhood Planning Applications*

| Application No.* | Description of Proposals | Applicant | Timescale for Submission | Timescale for Delivery |
|---|---|---|---|---|
| 1 | Advance HIF Enabling Works | MCC | Nov '21 | June '22 |
| 2 | Main HIF Infrastructure Works | MCC | Q1 '22 | March '24 |
| 3 | HIF Flood Defence and Alleviation Measures | MCC | Q3 '22 | March '24 |
| 4 | Red Bank Neighbourhood Application | FEC | Q2/Q3 '22 | '22 – '33 |

* Note that the application numbering does not necessarily refer to the sequencing of submissions

5.9 Notably Application 1 has already been granted planning permission (LPA reference: 132252/VO/2021) with works due to commence on site during Q1 of 2022.

5.10 The key components of each application are briefly summarised below to give an overview of the overall Development Project.

## Advance HIF Infrastructure Enabling Works (Application 1)

5.11 A key condition of the HIF funding that has been secured by MCC is that the spend availability only runs until March 2024, by which time the infrastructure and enabling works must be completed. Therefore, the infrastructure works required at the Site will be split into multiple planning applications to allow an early start on site.

5.12 The enabling works were the subject of Application 1 (LPA reference: 132252/VO/2021), which was granted planning permission on 23rd December 2021, for the following development:

- The demolition of Creamline Dairies including partial demolition of the c. 5m high retaining wall between the Dairies site and former railway line to the immediate south-east;
- Tree and shrub clearance to facilitate the construction of a temporary haul road; and,
- The construction of the temporary haul road.

5.13 This planning application comprised the HIF enabling works and will facilitate an early start on site and clear a path for the main HIF works proposed by this application, flood works (Application 3) and, ultimately, residential led development (Application 4) proposed by successive prospective planning applications at the Site.

## Future Development Platforms and Green Infrastructure (Main HIF Infrastructure Works - Application 2)

1.1 The creation of development platforms, formation of a new spine road (Phase 1), and new utilities and services connections that will allow for future residential-led development (to be applied for in a future planning application), together with new and improved green infrastructure, including the revitalisation St Catherine's Wood as part of the City River Park, are the subject of this planning application. The works are summarised below.

### Permanent Green Infrastructure and Landscaping

1.2 The permanent landscaping works comprise:

- The enhancement of St Catherine's Wood park 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.

### Preparatory Works to Create Development Platform

1.3 The preparatory works comprise:

- Demolition of sections of retaining wall. Three sections of the existing river wall adjacent to the northern banks of the River Irk are proposed for removal to facilitate the proposed earthworks and landscaping in these areas.
- Tree and shrub clearance to facilitate the construction of the residential led development platform (Red Bank Plateau) and as part of the park area/ proposed landscape improvements.
- The reclamation of the development platform at Red Bank Plateau, Red Bank Terraces and the circulation route to Union Waterfront comprising.
    - Cut and fill and remediation to the Red Bank Plateau and Red Bank Terraces, including the regrading/reprofiling of existing slopes and changing the Red Bank Plateau platform levels.
    - The reprofiling of stretches of the northern bank of the River Irk and the erection of a bund to assist with flood alleviation.

### Highway Works

1.4 The highway works comprise:

- The formation of a new spine road (Phase 1) (Plateau Avenue) on Red Bank Plateau. This application is seeking planning permission for Phase 1 of the new road at Plateau Avenue. This road will be constructed with sacrificial highway and footpath finishes for Phase 1, which will be upgraded by FEC's residential led development. The detail of the road will be agreed through future reserved matters applications pursuant to FEC's prospective outline planning application (Application 4).
- The creation of a circulation route leading from 'Red Bank Terraces' and 'Union Waterfront', at the western extent of the Site, to the Packaging Products access bridge, at the eastern-most point of the Site, which will also be for emergency access.
- The formation of the new priority junction at Red Bank road.

### Utilities Works

1.5 The utilities works comprise:

- New drainage installation including the creation of SuDS, including drainage for the future development plots (to be applied for by FEC as part of Application 4/ the residential masterplan).
- 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.
- 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.

### Temporary Works

1.6 The temporary works comprise:

- Temporary construction access from the eastern-most point of the Site, adjacent to the Packaging Products site.
- Temporary site security including gates and fencing to be erected during construction works.

5.14 The Proposed Development for Application 2 is set out from paragraph 5.21 below.

## HIF Flood Defence and Alleviation Works (Application 3)

5.15 The restoration of the River Irk is key for the success of the Red Bank Neighbourhood. Although there have been significant improvements in water quality over the years, its re-naturalisation is fundamental for habitat creation and the return of life in and around the River Irk, as well as allow for new residential development to be built in the area.

5.16 Application 3 will focus on providing new flood defences as well as improvements to the river's water quality and bringing life back to the river. Key aims include:

- Making the river more naturalistic and less engineered in order to improve and create habitats, but also make access better for people.
- Delivering positive environmental change will increase biodiversity, benefiting many species.
- The trout could be used as a flagship species for the river, along with other species – a powerful metaphor for positive change.

- Parts of the river are dominated by invasive species – Japanese Knotweed and Himalayan Balsam – and there is a long-term commitment to keep the invasive species under control.
- Comprehensive measures to achieve flood resilience to safeguard new and existing homes.

5.17 Subject to the agreement of flood mitigation works, Application 3 may also include new and/or improved bridges to the south of the City River Park providing new/ improved connections over the River Irk.

## Red Bank Neighbourhood Application (Application 4)

5.18 The emerging vision for the residential masterplan to be applied for by FEC on JV controlled land is to deliver:

- Approximately 4,000 new homes (of the 5,500 envisaged for the Initial Development Area) across a range of tenure types and sizes, including affordable homes, set within high quality public realm.
- New community facilities.
- Low carbon neighbourhood that delivers development in a sustainable way.

5.19 The below diagram sets out some of the initial thoughts and ideas that have been developed for the Red Bank Neighbourhood, including how the potential residential development plots (shown as indicative locations in white on the below diagram) will sit alongside the regeneration of St Catherine's Wood, the Red Bank Viaduct, and surrounding green streets and spaces.




*Place-making at the Red Bank Neighbourhood including public realm and residential plots*

## The SRF

5.20 The wider SRF will include a residential-led regeneration scheme proposing approximately 15,000 dwellings over a 15-20 year period. Employment, commercial and retail provision will also be delivered together with green and blue infrastructure and improved transport and access.

## Detailed Design Parameters for Application 2.

5.21 As detailed in Chapter 2: Approach, the assessment of effects will be undertaken on the basis of the quantum of development and the planning application drawings. These plans, along with the written description of the proposed infrastructure works, allow the likely significant effects of the proposals in Planning Application 2 and then the wider Development Project to be fully assessed and appropriate mitigation secured.

5.22 As the application is being applied for in detail a set of detailed plans are submitted for approval. These plans provide information on the likely form and layout of development and allow informed assumptions to be made within the EIA. Seven plans are submitted for illustrative purposes only and are not for approval. These plans are:

- Aspirational Landscape Masterplan – this plan provides an indication of the potential future configuration of the layout of the proposed wider development on land controlled by the JV and is subject to change.
- Indicative Cut and Fill Volumes – this plan provides an indication of the cut and fill volumes.
- Indicative Proposed Utilities Sections – this plan provides an indication of the proposed utilities sections.
- Indicative HIF Utilities & Drainage Diversions – this plan provides and indication of the proposed utilities and drainage connections to be diverted.
- Indicative HIF Telecoms Network – this plan provides an indication of proposed telecom network locations.
- Indicative Proposed Electrical Demands & 6.6kV Circuits – this plan provides an indication of the proposed electrical demands on site.
- Indicative Proposed HIF Potable Water Network Upgrade – this plan provides an indication of the proposed potable water upgrades on site.

*Table 5.3: Detailed Plans Submitted for Approval and Illustrative Plans Not for Approval*

| Plan Name | Status (For Approval or Illustrative and Not for Approval) | Purpose | Drawing No. / Reference | Figure reference |
|---|---|---|---|---|
| HIF Infrastructure Study Area (Site Location Plan) | For Approval | Identifies the location of the Site in red | VNIF-ARP-00-YYY-DR-G-0009_P05 | **Figure 1.1** |
| Landscape General Arrangement HIF Delivery Plan | For Approval | Illustrates the proposed layout across the Site | VNIF-PLA-ZZ-YYY-DR-L-1011 | **Figure 5.1** |
| Aspirational Landscape Masterplan – **illustrative plan not for approval** | Illustrative and Not for Approval | Indication of the potential future configuration of the layout of the wider Proposed Development on land controlled by the JV and **is not for** | VNIF-PLA-ZZ-YYY-DR-L-1000 | **Figure 5.2** |

| Plan Name | Status (For Approval or Illustrative and Not for Approval) | Purpose | Drawing No. / Reference | Figure reference |
|---|---|---|---|---|
| | | **approval** | | |
| Highway General Arrangement | For Approval | Identifies the proposed layout of the new internal road | VNIF-ARP-00-YYY-DR-CH-0001_P06 | **Figure 5.3** |
| Plateau Avenue General Arrangement | For Approval | | VNIF-ARP-00-YYY-DR-CH-0002_P05 | **Figure 5.4** |
| Demolition Plan | For Approval | Identifies the location of the sections of retaining wall to be demolished | VNIF-ARP-00-YYY-DR-CS-0002_P02 | **Figure 5.5** |
| Existing Site Wide Utilities & Drainage | For Approval | Identifies the location of existing utilities on site | VNIF-ARP-00-YYY-DR-CU-0001_P04 | **Figure 5.6** |
| Existing Surface Water Catchments | For Approval | Identifies the existing surface water catchments on site | VNIF-ARP-00-YYY-DR-CD-0001_P02 | **Figure 5.7** |
| Indicative Utilities & Drainage Diversions – **illustrative plan not for approval** | Illustrative and Not for Approval | Identifies locations of utilities to be diverted and **is not for approval** | VNIF-ARP-00-YYY-DR-CU-1001_P06 | **Figure 5.8** |
| Indicative Proposed Electrical Demands & 6.6kV Circuits – **illustrative plan not for approval** | Illustrative and Not for Approval | Identifies the electrical demands on site and **is not for approval** | VNIF-ARP-00-YYY-DR-CU-1002_P04 | **Figure 5.9** |
| Indicative Proposed HIF Potable Water Network Upgrade – **illustrative plan not for approval** | Illustrative and Not for Approval | Identifies the proposed potable water upgrades on site and **is not for approval** | VNIF-ARP-00-YYY-DR-CU-1003_P06 | **Figure 5.10** |

| Plan Name | Status (For Approval or Illustrative and Not for Approval) | Purpose | Drawing No. / Reference | Figure reference |
|---|---|---|---|---|
| Proposed Utilities Sections | For Approval | Provides a section to illustrate the proposed layout of the utilities services beneath the highways | VNIF-ARP-00-YYY-DR-CU-1004_P03 | **Figure 5.11** |
| St. Catherine's Wood Detailed Area Plan | For Approval | Illustrates the proposed layout across the Site | VNIF-PLA-ZZ-YYY-DR-L-1002 | **Figure 5.12** |
| Red Bank Plateau – Detailed Area Plan | For Approval | | VNIF-PLA-ZZ-YYY-DR-L-1005 | **Figure 5.13** |
| Union Plaza - Detailed Area Plan | For Approval | | VNIF-PLA-ZZ-YYY-DR-L-1012 | **Figure 5.14** |
| Red Bank Terraces - Detailed Area Plan | For Approval | | VNIF-PLA-ZZ-YYY-DR-L-1013 | **Figure 5.15** |
| Tree Retention and Removal Plan | For Approval | Details the trees proposed to be retained and lost on site | VNIF-PLA-ZZ-YYY-DR-L-1006 | **Figure 5.16** |
| Proposed Levels General Arrangement Plan | For Approval | Details the proposed levels across the Site | VNIF-PLA-ZZ-YYY-DR-L-1007 | **Figure 5.17** |
| Planting & Habitats Plan | For Approval | Details the proposed planting and habitats arrangements | VNIF-PLA-ZZ-YYY-DR-L-1008 | **Figure 5.18** |
| Hardworks General Arrangement Plan | For Approval | Details the proposed layout of hard landscaping | VNIF-PLA-ZZ-YYY-DR-L-1010 | **Figure 5.19** |

| Plan Name | Status (For Approval or Illustrative and Not for Approval) | Purpose | Drawing No. / Reference | Figure reference |
|---|---|---|---|---|
| Boundary Treatments Plan | For Approval | Details the proposed boundary treatment across the Site | VNIF-PLA-ZZ-YYY-DR-L-1014 | **Figure 5.20** |
| Riverside Sections 1 of 2 St Catherine's Wood | For Approval | Provides a cross section across the proposals | VNIF-PLA-ZZ-YYY-DR-L-3001 | **Figure 5.21** |
| Riverside Sections 2 of 2 St Catherine's Wood | For Approval | | VNIF-PLA-ZZ-YYY-DR-L-3002 | **Figure 5.22** |
| Union Plaza Sections | For Approval | | VNIF-PLA-ZZ-YYY-DR-L-3003 | **Figure 5.23** |
| Red Bank Sections 1 of 2 | For Approval | | VNIF-PLA-ZZ-YYY-DR-L-3004 | **Figure 5.24** |
| Red Bank Sections 2 of 2 | For Approval | | VNIF-PLA-ZZ-YYY-DR-L-3005 | **Figure 5.25** |
| St Catherines Wood Sections | For Approval | | VNIF-PLA-ZZ-YYY-DR-L-3006 | **Figure 5.26** |
| Furniture Plan | For Approval | Details the furniture proposed locations across the Site | VNIF-PLA-ZZ-YYY-DR-L-4000 | **Figure 5.27** |
| Kurbs and Edges Plan | For Approval | Details the curbs and edges locations across the Site | VNIF-PLA-ZZ-YYY-DR-L-1009 | **Figure 5.28** |
| River Embankment Detailed Area | For Approval | Illustrates the proposed layout at the river embankment | VNIF-PLA-ZZ-YYY-DR-L-1015 | **Figure 5.29** |

| Plan Name | Status (For Approval or Illustrative and Not for Approval) | Purpose | Drawing No. / Reference | Figure reference |
|---|---|---|---|---|
| Proposed HIF Telecoms Network – indicative and not for approval | For Approval | Details of proposed telecom network and **is not for approval** | VNIF-ARP-00-YYY-DR-CU-1006_P06 | **Figure 5.30** |
| Proposed Surface Water General Arrangement | For Approval | Surface water arrangements | VNIF-ARP-00-YYY-DR-CD-0002_P05 | **Figure 5.31** |
| Proposed Foul Drainage General Arrangement | For Approval | Foul water arrangements | VNIF-ARP-00-YYY-DR-CD-0003_P04 | **Figure 5.32** |
| Proposed Surface Water Drainage Sheet 1 of 2 | For Approval | Proposed surface water drainage detail | VNIF-ARP-00-YYY-DR-CD-0010 | **Figure 5.33** |
| Proposed Surface Water Drainage Sheet 2 of 2 | For Approval | | VNIF-ARP-00-YYY-DR-CD-0011 | **Figure 5.34** |
| Proposed Surface Water Drainage Dantzic Street | For Approval | | VNIF-ARP-00-YYY-DR-CD-0012_P02 | **Figure 5.35** |
| Proposed Exceedance Route Sheet 1 of 2 | For Approval | Proposed exceedance route drainage | VNIF-ARP-00-YYY-DR-CD-0018_P04 | **Figure 5.36** |
| Proposed Exceedance Route Sheet 2 of 2 | For Approval | | VNIF-ARP-00-YYY-DR-CD-0019_P05 | **Figure 5.37** |
| Indicative Cut and Fill Volumes (**Illustrative Plan not for approval**) | Illustrative and Not for Approval | Cut and fill | VNIF-ARP-00-YYY-DR-CE-0003_P01 | **Figure 5.38** |
| Indicative Proposed Utilities Sections (I**llustrative Plan not for approval**) | Illustrative and Not for Approval | Utilities sections | VNIF-ARP-00-YYY-DR-CU-1004_P03 | **Figure 5.39** |

5.23 A high level overview of the infrastructure works applied for by this planning applications (Application 2) is provided below. The rest of this chapter provides more detailed commentary on each element in turn:

- Demolition of sections of retaining wall. Three sections of the existing river wall adjacent to the northern banks of the River Irk are proposed for removal to facilitate the proposed earthworks and landscaping in these areas.
- Tree and shrub clearance to facilitate the construction of the infrastructure and residential development platform (Red Bank Plateau), and as part of the St Catherine's Wood/ City River Park creation and proposed landscape improvements.
- Remediation and earthworks across site including the regrading/ reprofiling of existing slopes, creating development platforms at Red Bank Plateau, reprofiling to create Red Bank Terraces and Union Waterfront public realm areas, and reprofiling of stretches of the northern bank of the River Irk.
- The construction of a new road (Plateau Avenue) on Red Bank Plateau. This road will be constructed with sacrificial highway and footpath finishes which will be superseded by FEC's planning application for the wider residential led development later this year. FEC's planning application (Application 4) will apply for the final road and footpath finishes to Plateau Avenue.
- The creation of a circulation route leading from 'Red Bank Terraces' and 'Union Waterfront', at the western extent of the Site, to the Packaging Products access bridge, at the eastern-most point of the Site, which will also be for emergency access.
- 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; and,
- 5 hectares of new or improved green space, including the revitalisation of St Catherine's Wood as part of the new City River Park. These works will include 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.
- New drainage installation including the creation of SuDS, including drainage for the new highway and drainage connections for plots RB01 to RB05b and RB12b.The drainage output for the HIF Infrastructure Works will be a series of sustainable drainage networks, which will collect the required surface and foul water from the Site.
- Utility and services connections and diversions. Utilities and connections for all new development plots and park/ landscape/ public realm areas and highways. Utilities diversion and new installations on Dantzic Street. 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 Masterplan location.

5.24 Each component of the planning application is described in more detail below. The General Arrangement Plan is presented at **Figure 5.1**.




*Figure 5.1 HIF Landscape General Arrangement Plan (Dwg reference: VNIF-PLA-ZZ-YYY-DR-L-1011)*

# Preparatory Works Including Development Platforms

### Demolition of Sections of Retaining Wall

5.25 The demolition of the Creamline Dairies buildings was approved in December 2021 under planning permission 132252/VO/2021.

5.26 The Proposed Development includes the demolition of sections of the existing river wall adjacent to the northern banks of the River Irk. The Demolition Plan (Dwg reference: VNIF-ARP-00-YYY-DR-CS-0002) outlines the location of the structures to be demolished (see **Figure 5.5**).

5.27 Access into the existing St Catherine's Wood will be temporarily created from the Red Bank Plateau. This will allow the riverbank wall to be removed in two short sections and the bank reprofiled to improve connectivity

with the river. The excavated material will be retained within the Site and used to reprofile the slope forming a circulation route through the park. The temporary access will be reinstated once the wood works are complete.

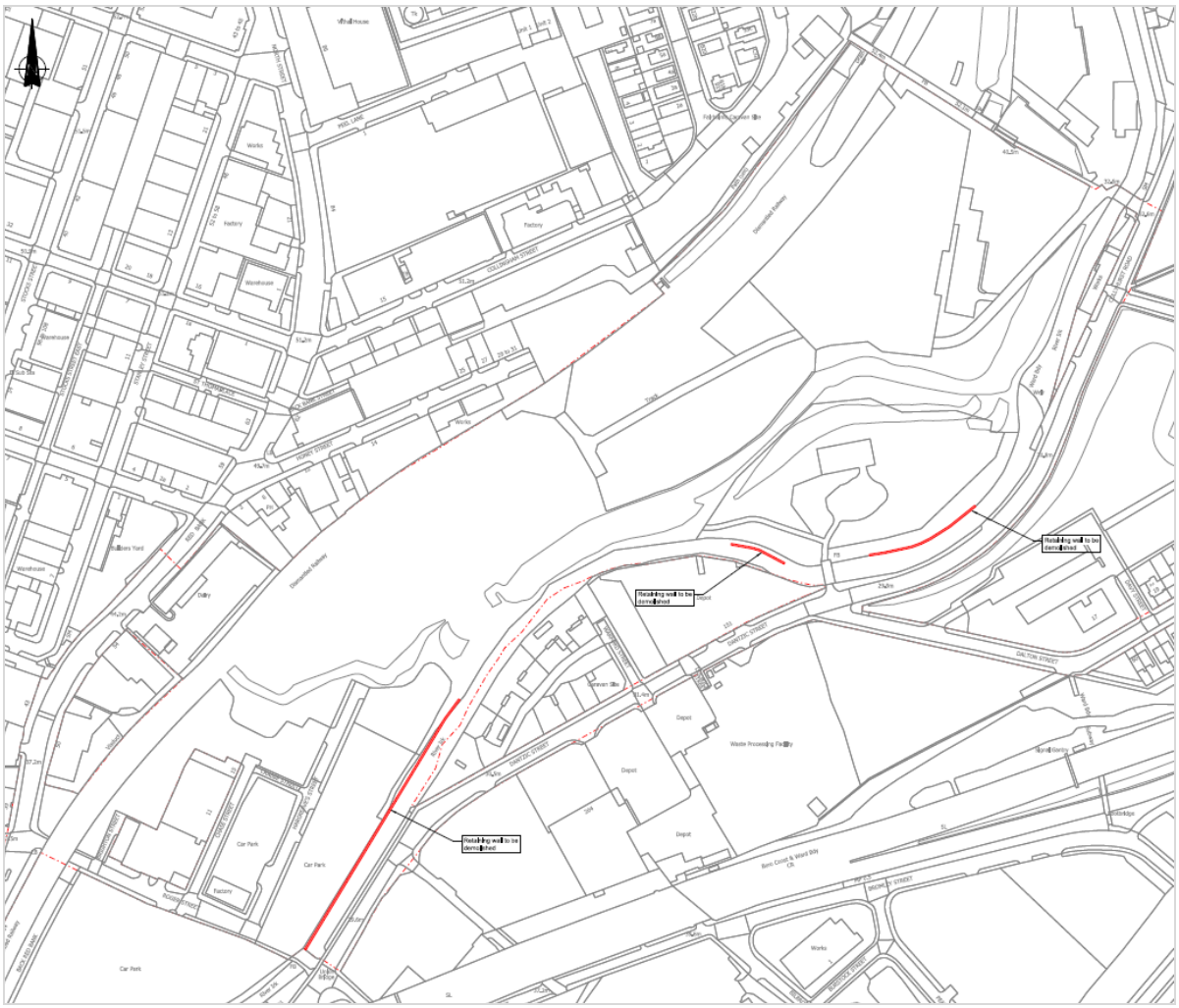



*Figure 5.5: Demolition Plan (Dwg reference: VNIF-ARP-00-YYY-DR-CS-0002)*

### Tree and Shrub Clearance

5.28 Tree and vegetation clearance will be undertaken, predominantly on Red Bank Plateau and in St Catherine's Wood, to allow for the delivery of the proposed terraced routes, new development platform and development plots. The area of vegetation to be removed on Red Bank Plateau is largely of poor quality in ecological terms, due to its self-seeded nature, young age, lack of species diversity and poor ground flora.

5.29 In St Catherine's Wood, and on slopes associated with Red Bank Plateau, the scheme will look to enhance existing vegetation, and tree clearance will be limited to individual tree removal where required or appropriate to enhance the quality of the woodland.

5.30 Due to the level changes in St Catherine's Wood, in order to create accessible and compliant pedestrian routes a number of trees will have to be felled as the changes in contours will negatively impact their root protection

areas too greatly. There are also several trees in poor condition or dead which will also be removed. However, all felled timber is intended to be used on site and tree cover will be increased in general and species will be chosen to boost benefits to wildlife.

5.31 The Tree Retention and Removal Plan below shows the existing trees / tree groups to be removed shaded red (approximately 1.94 ha) and the existing trees / tree groups to be retained shaded green (approximately 1.99ha).

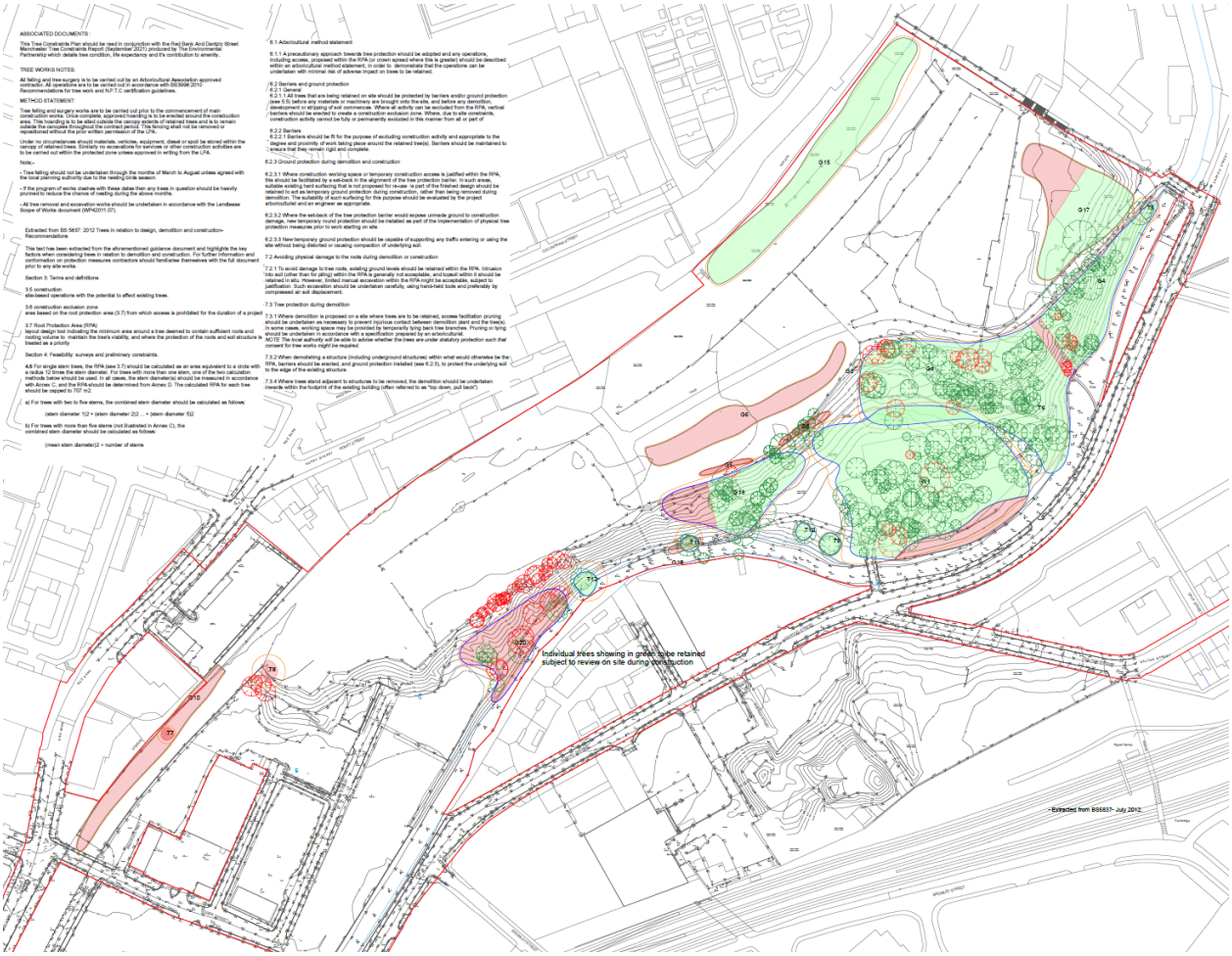



*Figure 5.16: Tree Retention and Removal Plan (Dwg reference: VNIF-PLA-ZZ-YYY-DR-L-1006)*

## Reclamation of Development Platforms, Cut and Fill and Remediation

### Red Bank Plateau and Circulation Route to Union Waterfront

5.32 The Proposed Development comprises the creation of a development platform within the Red Bank Plateau.

5.33 The Red Bank Plateau area will have obstructions removed to a depth of 2m and the Site turned over to a depth of 500mm over the main Red Bank development area, including plots RB01 to RB05b and RB12b. This strategy will also be applied to the circulation route between Red Bank Terrace and the Union Waterfront and along the Public Realm area of Union Waterfront between RB07 and PBo6 and the River Irk. The remediation requirements

are likely to be limited to addressing any localised contamination hotspots or soft spots through excavation and treatment on site.

### Red Bank Terraces

5.34 The 10m level change between the River Irk and the development plots on the plateau above is currently pinched in at the point of the proposed feature steps. This significant drop is elongated out towards the river to allow for a fully accessible route (1 in 21 slope) for both pedestrians and cyclists with a central more direct stepped route up through the centre.

5.35 The Red Bank Terrace area has been designed to primarily provide accessible water-fronting and cycling routes connecting the Red Bank Plateau area with the bottom of the bank and Union Waterfront, also creating a terraced public realm. Red Bank Terraces will be created on the existing slope through a cut and fill exercise and a series of small retaining walls aiming to minimise surplus material. A retaining wall up to 4m in height will be created to address changes in ground level between the new access adjacent to RB12b and Red Bank Terrace.

## Highway Works

### Construction of Plateau Avenue and New Priority Junction

5.36 A new circulation road is proposed (i.e. 'Plateau Avenue') which will be a private (non-adopted) highway. Plateau Avenue would run from a new priority junction on Red Bank to the west of the Site, which would be adopted by MCC.

5.37 For the purposes of this application the proposed road will be constructed with sacrificial highway and footpath finishes which will be upgraded in future by FEC's residential led development. The detail of the road will be agreed through future reserved matters applications pursuant to FEC's prospective outline planning application (Application 4).

5.38 The road is proposed to traverse the northern area of the Site along Red Bank Plateau. The initial bend has a carriageway width of 7.3m to allow two large vehicles to pass. Once on the plateau the carriageway width is reduced to 6.0m, which allows two wide vehicles to pass with caution. A one-way loop would encircle plot RB05a with a width of 4.5m, which allows enough space for a vehicle to pass a stationary car.

5.39 Street tree planting is proposed as part of this planning application between areas of parking and loading to break up the space. A sacrificial highway finish is being applied for within this planning application, with the permanent highway finishes being delivered as part of future applications and are not therefore applied for by this particular planning application.

### Creation of Circulation Routes

5.40 As part of the Circulation Strategy, an active travel route has been incorporated within the design along the edge of Red Bank Plateau, overlooking St Catherine's Wood and the wooded embankment. This will also provide emergency access provision from the P&P bridge and Town Square to the rear of the Plots RB01 to RB05.

5.41 To the river's edge along the north bank there will be a pedestrian circulation route that connects the Union Waterfront public realm with the new park at St Catherine's Wood. Connectivity to Collyhurst Road and Dantzic Street will be provided across St Catherine's Wood bridge and the new Collyhurst Weir Bridge and Dantzic Street Bridge (both of which will be delivered as part of a separate subsequent planning applications supporting the Victoria North masterplan delivery).

5.42 As noted above, a fully accessible 1 in 21 slope route is proposed through Red Bank Terrace. Steps will provide a shorter route option for those who prefer, these are to be fully compliant with handrails and tactile paving to the top and bottom. Seating options will be provided along this route to allow people to rest.

5.43 Stepped routes, like at Red Bank Terraces, provide short cuts through the twisting 1 in 21 sloped route that traverses the level change between the plateau and central St Catherine's Wood area. Whilst St Catherine's Wood can be circumnavigated via smoothed surfaced shallow routes the centre of the woodland and play area is to be surfaced in narrower bark paths so as to be fully permeable and more suited to a wildlife habitat.

5.44 An existing 1 in 9 slope located to the north-east of St Catherine's Wood is set to be retained and resurfaced as part of the proposals as without significant re-levelling and tree felling a 1 in 21 slope could not be achieved here down to meet the existing bridge and the sloped route will offer a potentially important pedestrian and cycle link north.

## Public Realm and Landscape Works

### Revitalisation of St Catherine's Wood

5.45 5 hectares of new or improved green space, including the revitalisation of St Catherine's Wood is proposed as part of the new City River Park. The City River Park is defined in the Northern Gateway SRF and subsequent phases of the park will be delivered in future planning applications.

5.46 St Catherine's Wood at present is a part planted, part self-seeded mixed woodland on the Site of the former Travis Isle Mill and house and St Catherine's School and Church, from whom it takes its name. This character area will retain its woodland identity yet with much greater management in place in order to secure safety and enhance its benefits to wildlife. The proposals for St Catherine's Wood comprise:

### Fully Accessible Walking and Cycling Routes

5.47 St Catherine's Wood drops c. 10m in level from the plateau down to the River Irk. A fully accessible 1 in 21 or greater slope is proposed within the woods for pedestrians and cyclists, that winds its way up the slope through the woodland, with shorter more direct stepped routes also available.

5.48 A riverside walk is proposed to run the entire length of the woodland, from Union Waterfront to meet the plateau development plots. As noted above some areas the existing river wall is proposed to be removed and the land reprofiled. This will allow wildlife to move freely between the river and woods, underneath a raised metal board-walk.

5.49 To create the circulation route and vision through St Catherine's Wood, access into the existing park will be temporarily created from the Red Bank Plateau through an area of low quality and lower density vegetation adjacent to RB04. This will allow the riverbank wall to be removed in two short sections and the bank reprofiled to improve connectivity with the river. The excavated material will be retained within the park and used to reprofile the slope forming the circulation route through the park. The temporary access will be reinstated once the wood works have been completed.

### Play Space

5.50 Woodland play and artwork are proposed, with a focus on timber structures that will integrate within the existing trees and topography to provide interactive play elements for a wide range of child ages.

5.51 Equipment will be installed with sensitivity around the existing trees and with an aim to encourage children's appreciation of nature. Water play will provide a different type of engagement and a sense of connection to the River Irk.

### Lighting and Security

5.52 Lighting will be applied to the primary route through the woodland connecting the Plateau and Dantzig Street. Low intensity lighting to some areas of play will allow passive surveillance for night-time use. Areas of darkness away from the routes will be preserved for the benefit of ecology.

### Existing Woodland Management

5.53 As noted above, there will be some selected tree removal and management techniques utilised to open up the woodland and accommodate new accessible footways. However, the majority of trees are to be retained and sensitively integrated within the design. There will also be new tree planting in areas where there is space in the tree cover, and tree species and planting will be introduced to increase diversity and habitat benefit.

### New Habitat and Landscape Planting

5.54 Informal seating terraces are proposed where there is currently a clearing in the centre of the woodland. Here orchard trees are proposed with areas of open wild-flower meadow beneath to offer a change of aesthetics and habitat and a space for people to gather.

### Removal of Riverbanks

5.55 The existing river wall will be removed along the northern bank of the River Irk, to the east of Union Bridge (which will be unaffected by the works), and reprofiled with terraces and steps, providing a new piece of engaging public realm with strong connectivity to the river, whilst also improving flood alleviation through the removal of the existing wall.

5.56 The existing topographical slope which is present between future Plots RB02 and RB03 and the River Irk in the will be regraded to address slope stability whilst maximising the development footprint of these plots. In addition, the ground level future Plots of RB02 and RB03 will be reduced from current ground levels on the plateau to maximise the development footprint of these plots (taking consideration of the reprofiled slope). The 10m level change will be reprofiled in a series of steps and is referred to as Red Bank Terraces.

### Seating areas

5.57 Informal seating terraces are proposed to nestle into the existing contours where there is currently a clearing in the woodland.

5.58 A variety of seating will be provided to suit all user groups, including options with backrests, as well as benches, and picnic tables.

## Red Bank Terraces

5.59 Red Bank Terraces will see a new fully accessible cycle and pedestrian route up through the Site from the River Irk alongside stepped more direct routes and informal play. The 10 metre level change between the River Irk and the development plots on the plateau above is currently pinched in at the point of the proposed feature steps. This significant drop is elongated out towards the river to allow for a route for both pedestrians and cyclists with a central more direct stepped route up through the centre.

5.60 Although most existing trees will struggle to be maintained here due to topography and engineering issues, the terraces will be heavily planted with a wide range of species. Planting will flow throughout this area of the Site with several new trees of a variety of species proposed.

5.61 This character area also incorporates the upper and lower existing viaduct areas which will be transformed into new destination areas of public realm. Secondary, more meandering routes of perforated metal cantilevered steps will provide a less formal means of access and allow for planting to flow beneath them.

5.62 A linear park will link directly into the top of the feature steps and can also be accessed via steps from the south. The form of the space is planned to be retained as much as possible as an attractive raised green and destination public realm.

5.63 Lighting will be applied to the winding pathways and stairs, seating areas and soft landscaping. Enhanced levels of light will be provided to changes in level at ramps and stepped routes. The Viaduct route from the top of the terraces into the city will have low level lighting to allow the sky and surrounding cityscape to take precedent.

### Riverside/ Union Waterfront

5.64 Riverside consists of those areas immediately adjacent to the River Irk. The river is at present neglected, largely walled along its length within the Site and seemingly devoid of wildlife. With the removal of the river wall in places, clearance of rubbish and introduction of new river banks, rip rap boulders and planting it is hoped that wildlife will soon return to this ex industrial length of the river.

5.65 The existing river wall will be removed along the northern bank to the east of Union Bridge and reprofiled with terraces and steps, providing a new piece of engaging public realm with strong connectivity to the river, whilst also improving flood alleviation through the removal of the existing wall.

5.66 The influence of Red Bank Terraces will make its way to the river's edge with terraced seating steps and standard steps allowing access down towards the river. The removal of the existing high river walls and the introduction of new river banks and planting will allow wildlife to populate the water's edge.

5.67 Seating terraces and steps will create informal routes down to the water's edge and allow for small groups to congregate and enjoy being by the reinvigorated River Irk. The river banks will be cleaned and planted with a range of biodiverse species to encourage life back to the river and allow wildlife to reach its banks.

5.68 It is envisaged that a bridge could be delivered (albeit this is yet to be determined) as part of the HIF River Works (Application 3) and would allow pedestrian and cycle access from Dantzic Street and the associated new development plots along its route, over the Irk and into the Site. At its entry point a new open plaza would be created with links along the new riverside walk to St Catherine's Wood or to the viaduct linear park and northern development plots via Red Bank Terraces.

## Drainage Solutions including SuDS

5.69 The Proposed Development includes the provision of drainage for the new highway and drainage connections for plots RB01 to RB05b and RB12b. The drainage output for the HIF Infrastructure Works will be a series of sustainable drainage networks, which will collect the required surface and foul water from the Site.

5.70 A large area of the Site is proposed to be expansive areas of planting or permeable hard materials such as bark paths or metal grated and composite decking paths that will be elevated above the planted terrain below. These elevated paths will allow for the protection of existing tree roots and allow water, vegetation and wildlife to pass freely beneath them.

5.71 Alongside areas of hard landscaping, such as the road, service routes and plazas, SuDS will provide a vital tool for absorbing surface water runoff as well as an attractive and urban cooling landscape feature.

5.72 The surface water will discharge at a restricted rate to the River Irk in three locations. The excess water will be stored in a series of SuDS throughout the Site with the primary aim of controlling and storing at source. These SuDS will be in the form of mainly permeable paving but also swales and tree pits. There will be additional SuDS storage for the main run through the Site in the form of a detention basin.

5.73 The foul water will be collected and passed through a proposed network to one of two proposed connection points to the existing combined network (the combined sewer passing through the centre of site or the combined sewer that is present in Roger Street to the west of site).

5.74 The steep 10m gradients from the plateau down to meet the River Irk will be retained yet softened in places and form a dramatic level change through the Site, unusual for Manchester. Planting will help absorb much of the storm-water on its way down to the river.

5.75 Along the river's edge new planting banks will be introduced to help reinvigorate the Irk as well as helping with future flood prevention.

## Utilities and Services Connections and Diversions

5.76 New utilities networks are proposed within the Site, including telecoms, drainage (surface water and foul), electricity (HV&LV) and water. These are routed along the proposed Plateau Avenue, within the proposed parkland, and include upgrades to existing assets within existing streets (Red Bank, Roger Street, Chase Street, Hargreaves Street and Dantzic Street). Utility networks constructed along existing carriageways will be undertaken as Street Works.

### Dantzic Street Works and Utility River Crossings

5.77 New electricity HV network expansion and a new surface water sewer are proposed along Dantzic Street. A new river crossing is proposed to enable utility network expansions. This will be a buried 'u-tube' crossing installed in a trench across the bed of the river. The trench crossing is positioned approximately 50m upstream of Union Bridge to minimise interaction with the downstream river restoration works associated with the prospective Application 3 (HIF Flood Defence and Alleviation Works). The 'u-tube' will be a ducted solution with a chamber on either side, one along Dantzic Street and the other on Union Waterfront.

### Street Works to Queens Park Substation

5.78 The new HV ring mains to supply electricity to the Site will be fed from Queens Park primary substation, approximately 2km north of the Site. It is anticipated that two trenches may be required for this cable routing due to spatial constraints with existing assets. They are likely to be routed along Dalton Street and Rochdale Road. This HV network will be installed as Street Works, in accordance with the New Roads and Street Works Act 1991.

## Temporary Works

1.7 The Proposed Development also includes for temporary works comprising: temporary construction access from the eastern-most point of the Site, adjacent to the Packaging Products site; and temporary site security including gates and fencing to be erected during construction works.

1.8 Pedestrian pathways between the waterfront and Red Bank terraces and Plateau will be lit using temporary equipment, to provide safe routes during construction periods.

## Construction Programme

5.79 It is anticipated that construction will start on site in Q3 2022 and is anticipated to have full site completion by Q3 2024 for those elements included within Application 2. The build out of the wider Development Project will be over the next 15-20 years.

## Site Compounds

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

5.81 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.

## Hours of Work

5.82 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.

5.83 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.

5.84 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.

## Project Execution Plan (PEP)

5.85 A Project Execution Plan (PEP), often referred to as Construction Environmental Management Plan (CEMP), has been prepared and is submitted as a standalone document supporting the planning application. Following the grant of detailed planning permission, the PEP would be further developed to include roles and responsibilities, details of the proposed methodologies and further detailed mitigation measures including monitoring, auditing and training procedures once the Principal Contractor and other contractors that have been appointed. The contents of the PEP would be discussed and agreed with the relevant planning and environmental health officers of the MCC prior to the commencement of the construction works. It is anticipated that the PEP would be secured by planning condition.

## Summary

5.86 This chapter has described the overall development Project and in detail the HIF infrastructure works proposed as part of this full planning application (Application 2) which will be undertaken to prepare the area for future phases of the Red Bank Neighbourhood development, which will be the subject of a separate planning applications submitted to MCC in due course.

# 6. Ecology and Trees

## Introduction

6.1 The Red Bank Neighbourhood project as a whole is the First Phase in respect of the Initial Development Area identified for development within the Northern Gateway SRF (see Chapter 1: Introduction for further details). It is intended that FEC will progress an application for a new residential-led neighbourhood application for approximately 4,000 dwellings on land controlled by the JV. This project is proposed for on an area of land which forms part of Victoria North, located to the northeast of Victoria Station, immediately adjacent to Manchester City Centre (hereafter referred to as 'the Site').

6.2 As noted in Chapter 2: Approach, this ES assesses the Development Project, which is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in 4 planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – planning permission has been granted for the demolition of Creamline diary, tree and shrub clearance and construction of a temporary haul road.
- HIF Infrastructure Works (referred to hereafter as 'Application 2') – the subject of this application. Creation of development platforms, demolition of sections of existing River Wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diversions and provision of green infrastructure including creation of green links and first phase of the new City River Park.
- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within flood zone 3.
- Land under control of the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. As noted in Chapter 2: Approach, the entire Red Bank Neighbourhood within the SRF, including third party land, will deliver up to 5,500 new dwellings.

6.3 Whilst the Applicant has the detail of the early applications, the later parts of the Development Project (and particularly Application 4) are still being designed and the details are not yet available. Therefore, the approach that has been taken in the ES is to break the Development Project into 3 elements, with each element being assessed in a level of detail commensurate with the detail that is available for the relevant part of the Development Project.

6.4 As such, a very full and detailed assessment is undertaken of Application 2, and then reasonable assumptions and judgements have informed and been made to assess Applications 1-4 together, and then Applications 1-4 and SRF.

6.5 This chapter assesses the ecological and nature conservation effects of the HIF Infrastructure Works (hereafter referred to as the 'Proposed Development').

6.6 The chapter also presents a high-level assessment of the ecological and nature conservation effects of the Proposed Development combined with the wider Development Project (inclusive of Applications 1, 3 and 4), and also of the wider SRF for which it is a part. See Chapter 2: Approach for information relating to the available information in respect of the wider development project.

6.7 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 ecology and nature conservation, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects in relation to ecology and nature conservation. It has been written by The Environment Partnership (TEP).

# Planning Policy Context

6.8 This section identifies the planning policies and legislation of relevance to the ecological impact assessment of the Proposed Development.

### International Legislation and Agreements

6.9 The key international legislation and agreements of relevance to nature conservation are summarised as follows:

- Convention on Biological Diversity (CBD), which aims to prevent the further loss of biodiversity whilst using its components sustainably and sharing benefits equitably.
- Ramsar Convention, which aims to protect wetlands of international importance.
- Bern Convention which aims to protect species and habitats of European importance.
- Bonn Convention, which aims to protect migratory species.
- Conservation of Populations of European Bats ('EUROBATS').
- Directive 2009/147/EC on the Conservation of Wild Birds (Birds Directive).
- Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive).

## National Planning Policy

6.10 The principal national statutes relating to ecology and development are summarised as follows:

- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 conveys protection to certain habitats and species[1].
- The Wildlife & Countryside Act 1981 (as amended) conveys protection to certain native animals and plants and controls the release of certain non-native species[2].
- The Countryside & Rights of Way Act 2000 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[3].
- The Natural Environment and Rural Communities (NERC) Act 2006 requires planning authorities to consider impacts on "species of principal importance for the conservation of biodiversity" when determining planning applications[4]. 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 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[5].
- The Protection of Badgers Act 1992 provides protection of badgers from killing, injury and certain acts of cruelty and protection of setts from damage, obstruction or destruction[6].

### National Planning Policy Framework

6.11 A revised National Planning Policy Framework (NPPF)[7] was published in July 2021. The NPPF is relevant in terms of shaping the topics for environmental assessments.

6.12 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

[1] Conservation of Habitats and Species Regulations 2010 (as amended). London: The Stationery Office.
[2] Wildlife & Countryside Act 1981 (as amended). London: The Stationery Office.
[3] Countryside & Rights of Way Act 2000. London: The Stationery Office.
[4] Natural Environment and Rural Communities (NERC) Act 2006. London: The Stationery Office.
[5] Hedgerows Regulations 1997. London: The Stationery Office.
[6] Protection of Badgers Act 1992. London: The Stationery Office.
[7] Department for Communities and Local Government (2021) National Planning Policy Framework, DCLG, London

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.

6.13 Other national policy which supports the NPPF include:

- Circular 06/2005: Biodiversity and Geological Conservation[8].
- Making Space for Nature[9].
- The Natural Environment White Paper (HM Government, 2011)[10].
- Biodiversity 2020: A strategy for England's wildlife and ecosystem services[11].

### Local Planning Policy

6.14 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.

#### Strategic Regeneration Framework (SRF) Manchester Northern Gateway (February 2019)

6.15 The SRF is now a material consideration in the determination of all planning applications relevant to the study area. Whilst 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.

6.16 The Site falls within the 'Northern Gateway' 'Lower Irk Valley' boundary and will form part of the 'Red Bank' neighbourhood. The Site is earmarked for residential-led development.

[8] Office of the Deputy Prime Minister (Circular 06/2005): Biodiversity and Geological Conservation – Statutory Obligations and their Impacts. London: The Stationery Office.
[9] Lawton, J. (2010). Making Space for Nature: A review of England's wildlife sites and ecological network. DEFRA, London.
[10] HM Government (2011) The Natural Choice: Securing the Value of Nature. London: The Stationery Office.
[11] DEFRA (2011). Biodiversity 2020: A strategy for England's wildlife and ecosystem services. London: The Stationery Office

### Other Relevant Policy, Standards and Guidance

6.17 The Greater Manchester Biodiversity Action Plan[12] (GMBAP) is currently managed by Greater Manchester Ecology Unit. 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.
- Bats.

6.18 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.

## Assessment Methodology and Significance Criteria

6.19 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.

6.20 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 Dantzic Street, to the south and includes an area known as 'St. Catherine's Wood'. The River Irk flows through the Site from north-east to south-west.

6.21 This assessment (for Application 2) covers green infrastructure, infrastructure and utilities works to facilitate future development (Applications 3 and 4). As mentioned in the Introduction to this chapter, a high-level assessment will be done of the wider Development Project and the SRF as well.

6.22 The assessment scenarios in respect of the EIA for the Proposed Development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:

[12] https://www.gmwildlife.org.uk/projects/gm_bap/

- Scenario 1a - Assessment of the ecological impacts relating to the Proposed Development only.
- Scenario 1b - Assessment of the ecological impacts relating to the Proposed Development, plus ecological impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
- Scenario 1c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.

- Assessment Stage 2 - Completed Development and Operational Phase:
  - Scenario 2a - Assessment of the ecological impacts relating to the Proposed Development only.
  - Scenario 2b Assessment of the ecological impacts relating to the Proposed Development, plus ecological impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
  - Assessment 2c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.

### Desktop Study

6.23 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 centres from Greater Manchester Ecology Unit (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 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 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

6.24 An extended Phase 1 habitat survey of land within the 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)[13] and the CIEEM Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017)[14]. The survey included habitat assessments for protected and Section 41 (S41) priority species. The Phase 1 habitat survey was undertaken on the 22nd and 29th March 2021. The survey was undertaken by TEP ecologists Steph Davies and Damian Young, qualified as Level 3 and 4 respectively under the Field Identification Skills Certificate scheme (FISC).

[13] JNCC (2010). Handbook for Phase 1 habitat survey – a technique for environmental audit. Peterborough, JNCC.
[14] CIEEM (2017) Guidelines for Preliminary Ecological Appraisal. Chartered Institute of Ecology and Environmental Management

### UKHab Condition Assessment

6.25 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[15]. Following release of Biodiversity Metric 3.0 in July 2021, a desk-based exercise using existing field notes and photographic evidence, was undertaken to update the condition assessment based on the updated criteria presented in the Biodiversity Metric 3.0 - Technical Supplement[16]. 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 3.0 condition assessment.

### Tree Survey

6.26 An arboricultural survey was undertaken by TEP Arborist Angus Blankenstein on the 29th March 2021 in accordance with British Standard BS 5837:2012 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 6.1, further details can be found in the Arboricultural Impact Assessment (AIA) provided at **Appendix 6.4**.

*Table 6.1: 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 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. |

[15] 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

[16] Stephen Panks A, Nick White A, Amanda Newsome A, Jack Potter A, Matt Heydon A, Edward Mayhew A, Maria Alvarez A, Trudy Russell A, Sarah J. Scott B, Max Heaver C, Sarah H. Scott C, Jo Treweek D, Bill Butcher E and Dave Stone A 2021. Biodiversity metric 3.0: Auditing and accounting for biodiversity – Technical Supplement. Natural England.

6.27 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 Bat Tree Assessment*

6.28 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 Steph Davies (2020-44415-CLS-CLS). 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[17].

#### *Daytime Building Inspection for Bats*

6.29 A daytime external bat inspection of ten buildings present within the Site boundary (B1-B10) and two bridge structures (St. Catherine's Wood Bridge and Packaging Products Bridge), was also undertaken by licensed bat surveyor Steph Davies on the 22nd and 29th March 2021. The daytime assessment was carried out in accordance with the Bat Conservation Trust (BCT) Guidelines 2016. However, a precautionary approach to assessment was taken, as no internal access to the buildings was taken due to health and safety concerns surrounding COVID-19 and access to the bridge structures was limited and could only be viewed from the roadside.

#### *Nocturnal Roost Surveys of Trees for Bats*

6.30 Tree T1 (moderate suitability) was identified during the daytime evaluation to have suitability for roosting bats. This tree was therefore subject to further nocturnal surveys in accordance with its evaluation (moderate suitability receiving two nocturnal surveys). The nocturnal roost surveys were carried out in accordance with the Bat Conservation Trust (BCT) Guidelines 2016 and were led by Cameron Campbell and Stephanie Davies (Natural England Licence Ref: 2020-44415-CLS-CLS).

### Badger Survey

6.31 A badger survey of the Site was undertaken on the 22nd and 29th March 2021 by TEP ecologist Damian Young. 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,

[17] Bat Conservation Trust (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). Bat Conservation Trust

Cresswell & Jefferies, 1988)[18]. Where possible and accessible to do so, a 30m buffer zone around the Proposed Development boundary was also surveyed.

### Fish

#### *Fish Habitat Survey*

6.32 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 survey area boundary as well as the upstream reach of the River Irk up 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*

6.33 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 100 $m^2$ 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.

## Valuing Ecological Features

6.34 The CIEEM EcIA guidance (2018) 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 Proposed Development). 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).

6.35 The importance of a feature is identified within a defined geographical context, the scales relevant to the Proposed Development and its ecological features are presented in Table 6.2 below. These criteria provide a

[18] Harris S., Creswell P., & Jefferies, D J. (1988). Surveying Badgers. The Mammal Society.

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 6.2: Evaluation of Ecological Features*

| Level of Importance | Example |
|---|---|
| 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><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><br>A viable area of ancient woodland.<br><br>Species populations or habitat areas of national importance (including legally protected or NERC Act S41 species or habitats) due to relative size, rarity or quality of the feature. |
| Regional | Designated or proposed Site of Biological Importance (SBI), Local Wildlife Sites (LWS), Sites of Nature Conservation Importance (SINC) and their qualifying features where they occur within the designation boundaries.<br><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 regional 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><br>Green infrastructure designations where these contribute to local landscape connectivity and/or buffer other ecological features valued at least this geographic scale.<br><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 |

| Level of Importance | Example |
|---|---|
| | themselves be common and widespread, such as long-established hedgerows, woodlands and ponds. |
| Negligible | Habitats of little or no ecological value or function e.g. densely urbanised environments, amenity grassland, hard standing etc. |

### Characterisation of Effect

6.36 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.

### Likelihood of Effect

6.37 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

6.38 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*

6.39 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.

6.40 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 6.3 provides a framework for transposing the significance of residual ecological effects.

*Table 6.3: Conversion Matrix*

| Characterisation of affects 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>• Loss of a substantial part or key feature of a site of regional importance;<br>• Loss of favourable conservation status (FCS) of a legally protected species;<br>• Loss of or moderate damage to a population of nationally rare or scarce species. | Negative Significant Effect | Major Adverse |
| • Temporary disturbance to a site of international or national | | Moderate Adverse |

| Characterisation of affects using CIEEM scale of significance | Classification of Impact: CIEEM | Classification of Impact: Traditional |
|---|---|---|
| importance, but no permanent damage;<br>• Loss of or permanent damage to any part of a site of regional importance;<br>• Loss of a key feature of local importance;<br>• A substantial reduction in the numbers of legally protected species such that there is no loss of FCS but the population is significantly more vulnerable;<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. | | |
| • Temporary disturbance to a site of regional value, but no permanent damage;<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>• A minor impact on legally protected species but no significant habitat loss or reduction in FCS;<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>• Temporary disturbance or damage to a small part of a feature of local importance;<br>• Loss of or damage to land of negligible nature conservation value;<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 | | Moderate |

| Characterisation of affects using CIEEM scale of significance | Classification of Impact: CIEEM | Classification of Impact: Traditional |
|---|---|---|
| leading to significant measurable gains in relation to the objectives of biodiversity action plans. | | Beneficial |
| • Major gains in new habitats (net gains of at least 10 ha) of 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. | | Major Beneficial |

## Assumptions/Limitations

### Establishing the Baseline

6.41 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. 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.

6.42 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

6.43 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. Climate change has therefore been taken into account in the assessment of operational effects. Effects of climate change are also assessed in Chapter 17: Climate Change.

## Consultation

6.44 Table 6.4 outlines the pre-application consultation currently undertaken with the relevant stakeholders for the Proposed Development.

*Table 6.4: Consultation*

| Consultee | Date and Time | Comments | Actions |
|---|---|---|---|
| Greater Manchester Ecology Unit – Derek Richardson | 16/08/21<br><br>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 & 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 voles, otters amphibians and reptile surveys could be scoped out. |
| Greater Manchester Ecology Unit- Derek Richardson | 02/11/21<br><br>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 | GMEU agreed with the combined BNG approach for all four applications. |

| Consultee | Date and Time | Comments | Actions |
|---|---|---|---|
| | | subsequent application should reflect any design changes in the updated BNG calculations. | |
| MCC Scoping Opinion | 07/01/2022 | MCC request that the following elements are included within the ES:<br>• Provision of extended Habitat Surveys, to UK HAB specifications, and including the River Corridor;<br>• Surveys for Bats and Badgers;<br>• Surveys for invasive plant species, and measures to control the spread of invasive plants;<br>• Calculations using the Defra Biodiversity Metric v 3.0 to assess potential biodiversity losses and gains which may arise from the development proposals;<br>• Proposals for mitigating and compensating for habitat losses and for any impacts on protected or priority species, including proposals for off-site habitat provision where these are considered necessary;<br>• Proposals for enhancing the local natural environment;<br>• Proposals for improving the water quality and habitat value of the River Corridor, including the potential for changing drainage schemes in ways which could benefit the River. | The ecological assessment within the ES considers each of the elements requested. |

# Baseline Conditions

6.45 This section identifies the current baseline environment (i.e. current ecological conditions) of each ecological feature, based on the most recent survey data augmented by desk study information.

### Designated Sites

6.46 Full details of the desk-based assessment and specifically the international, national and local designations are presented in **Appendix 6.1**.

### Internationally Designated Sites

6.47 A data search for internationally designated sites was undertaken within 10km of the Site. One Special Protection Area (SPA) 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 3.1km northeast of the Site. Due to the distance and significant inner city barriers between the 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

6.48 A data search for nationally designated sites was undertaken within 5km of the Site. One Site of Special Scientific Interest (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 3.1km northeast of the Site. Due to the distance and significant inner city barriers between the Site and the SSSI, it is not considered that there are any potential direct or indirect pathways of likely significant effect.

6.49 Although the Site falls within the SSSI Risk Impact Zone for Rochdale 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. It is also unlikely that the Rochdale Canal SSSI will be impacted by the future planning applications, although a detailed assessment will be made through the EIA process.

### Locally Designated Sites

6.50 A data search for statutory locally designated sites was undertaken within 2km of the Site. One Local Nature Reserve (LNR) was found within the search radius; Boggart Hole Clough LNR. Boggart Hole Clough LNR, designated for its woodland habitat, parts of which are classified as ancient woodland, is located 1.6km north of the Site. Due to the distance and significant inner city barriers between the Site and the LNR, it is not considered that there are any potential direct or indirect pathways of likely significant effect. Boggart Hole Clough LNR has therefore been scoped out of further assessment.

6.51 There are four non-statutory Sites of Biological Importance (SBIs) within the 2km search radius, as detailed within Table 6.5.

*Table 6.5: Locally designated sites within 2km*

| Name of Designation | Distance from Site | Designation Reason |
|---|---|---|
| Reservoirs at Harpurhey SBI | 0.8km northwest | The SBI supports reedbed, swamp, fen and pond habitat (LBAP habitat). |
| 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. |
| River Irwell SBI | 1.8km southwest | The SBI is a canal and therefore classifies as Greater Manchester LBAP habitat. Also notable presence of otter. |

6.52 All four SBI's: Rochdale Canal: Scott's Lane to Ducie Street Basin, Ashton Canal (West), Reservoirs at Harpurphey and the River Irwell SBI are all separated from the Proposed Development site by significant inner city residential, commercial and industrial development and infrastructure. There are also no hydrological links between any of the listed SBI's and the Site. Due to the distance and significant barriers between the Proposed Development and the SBI's, it is not considered that there are any potential direct or indirect pathways of likely significant effect. All four SBI's have therefore been scoped out of further assessment.

### Habitats and Flora

6.53 The full extended Phase 1 habitat survey is presented in **Appendix 6.2** and detailed on the Phase 1 habitat survey plan (**Figure 6.1**). The habitats within the Proposed Development are summarised below.

#### Semi-Natural Woodland

6.54 The Red Bank Terrace is dominated by semi-natural broad-leaved woodland. The woodland is predominantly self-seeded silver birch *Betula pendula* regeneration. The age and height structure of the woodland is homogenous and based on the diameter of the tree trunks the majority of the tree stock is approximately 20 years old. Goat willow *Salix caprea* and buddleia *Buddleja davidii* are occasionally noted through the woodland. This young woodland has limited understorey, with areas of bare ground or large stands of Himalayan balsam *Impatiens glandulifera* present. Although classifying as semi-natural woodland in terms of habitat code, it does not meet the necessary criteria to be classified as S41 NERC habitat of principal importance. However, the woodland does 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.

6.55 The complete findings of the arboricultural surveys, assessment and recommendations are presented in the AIA report (**Appendix 6.4**). All trees within the areas of semi-natural woodland have been assessed as either Category B or Category C in accordance with BS5837:2012. None of the trees within the Site are considered to be veteran. Semi-natural woodland has therefore been taken forward in this assessment as an important ecological feature at the Regional Level.

### Plantation Broad-leaved Woodland

6.56 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. 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 S41 NERC habitat of principal importance. However, the woodland does meet the 'Lowland Broadleaved Woodland Greater Manchester BAP' with the plantation woodland criteria.

6.57 The complete findings of the arboricultural surveys, assessment and recommendations are presented in the AIA report (**Appendix 6.4**). All of 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 Site are considered to be veteran. Plantation woodland has therefore been taken forward in this assessment as an important ecological feature at the Regional Level.

### Dense Scrub

6.58 Bramble *Rubus fruticosus agg.* dominated scrub is present in a large area on the northern bank of the River Irk. Other areas of scrub are dominated by buddleia and goat willow.

### Scattered Scrub

6.59 There are small stands of scrub scattered across the Site, which is predominantly buddleia which is associated with areas of hardstanding.

### Scattered Broadleaved Trees

6.60 Small, scattered trees, separate from areas of woodland, are present along the Red Bank Viaduct. Species include balsam poplar *Populus balsamifera*, silver birch and goat willow. All of the scattered trees have been assessed as either Category B or Category C in accordance with BS5837:2012.

### Continuous Bracken

6.61 A large area of continuous bracken *Pteridium aquilinum* is present on the northern bank of the River Irk.

### Running Water (River Irk)

6.62 The River Irk runs throughout the Site, flowing from 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. Within the 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 buddleia, is present throughout the entirety of banks of the watercourse.

6.63 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 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. The River Irk Corridor has therefore been taken forward in this assessment as an important ecological feature at the Local Level.

### Other Habitats

6.64 The remainder of the Site is either hardstanding, hardstanding with ephemeral vegetation growth on previously developed land, or buildings associated with Creamline Dairies and other warehouses. Stands of buddleia are scattered throughout the areas of hardstanding. Detailed building descriptions and photographs are provided within **Appendix 6.3**. Hardstanding, hardstanding 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

6.65 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.

6.66 Giant hogweed *Heracleum mantegazzianum* is an invasive plant species that is listed under the Invasive Alien Species (Enforcement and Permitting) Order 2019. Giant hogweed was found infrequently along the banks of the River Irk.

6.67 Japanese knotweed *Fallopia japonica* is an invasive plant species that is listed under Schedule 9 of the Wildlife and Countryside Act 1981. Japanese knotweed was recorded along the northern banks of the River Irk.

6.68 As invasive plant species Himalayan balsam, giant hogweed and Japanese knotweed are not classified as important ecological features, but mitigation measures in relation to these species will be detailed later in this assessment.

### Protected Plant Species

6.69 No protected plant species (Schedule 8 of the Wildlife and Countryside Act 1981 as amended) were identified within the Site or immediately adjacent.

## Fauna

### Bats

6.70 Full details of the bat assessment can be found within **Appendix 6.3**.

6.71 The ground-based tree assessment found that four trees present within the Proposed Development boundary, offered low potential for roosting bats and one tree within the Proposed Development boundary offered moderate potential for roosting bats. All remaining 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.

6.72 Within the Proposed Development site there are ten buildings; B1-B6 comprise an area previously known as Creamline Dairies, B7- B10 comprise various warehouses and outbuildings located off Roger Street, Faber Street and Dantzic Street. The location of these ten buildings in context of the wider site is shown on **Figure 6.1**. All buildings were subject to an assessment for roosting bat potential, and all were subsequently categorised as offering negligible potential with no suitable features for roosting bats observed.

6.73 It should be noted that B1-B6 will be demolished as part of Application 1, which has already obtained planning consent. For the purpose of this assessment buildings B1-B6 have been described within the baseline for completeness, however from this point forward they will be considered as 'demolished' to ensure no duplication of impact assessment is encountered. The effects of the demolition of B1-B6 can be found in the ES for planning application (planning ref. 132252/VO/2021).

6.74 Two bridge crossings over the River Irk are present within the Site boundary; St. Catherine's Wood and Packaging Products (P&P). These structures were only viewed at a distance, as there was no safe access into the River and limited views from the road side. These structures were 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 & less suitable for roosting bats in the long term.

6.75 Nocturnal roost surveys of tree T1 (moderate potential), within St. Catherine's Wood, identified no roosting bats. As per the BCT Guidelines (2016), no further nocturnal roost surveys of trees T2- T5 (low potential) were necessary. Due to the presence of potential bat roosting features, roosting bats have been taken forward in this assessment as an important ecological feature at the Local level.

6.76 Although no specific bat activity surveys were undertaken across the Site in 2021, a review of the habitat quality and connective importance was made. A review of historic bat activity survey information for the wider Northern Gateway area, which was undertaken by Paul Chester & Associates (PCA) in 2018 and 2019, was also made. The Red Bank area, which includes the Site, was subject to extensive bat surveys on a monthly basis over a six month period. Surveys confirmed a number of bat species to be present in the area including common pipistrelle (equated to >95% of records), soprano pipistrelle (common), noctule (rare) and leisler's (rarer).

6.77 Nocturnal roost surveys of buildings along Dantzic Street (outside the Site boundary) were undertaken by TEP in 2021 a part of the ongoing baseline assessment for Application 4. 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

6.78 No evidence of badger using the 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 Site. Therefore, badgers have been scoped out of further assessment.

### Breeding Birds

6.79 Although no breeding bird surveys were undertaken by TEP in 2021, due to overriding health & safety reasons, the Proposed Development 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, blackcap, bluetit, bullfinch, carrion crow, chaffinch, coal tit, dunnock, goldfinch, long-tailed tit, robin, song thrush, treecreeper, wood pigeon and wren using the Red Bank area, which includes the Proposed Development site. Of these species bullfinch and song thrush both classify as S41 priority species. The woodland habitat within the Site provides an open habitat structure which limits the nesting opportunities for birds. High levels of disturbance from the surrounding area is likely to have a negative effect on successful breeding within the Site. The buildings also offer some nesting potential for breeding birds.

6.80 All of the bird species recorded are typical of the habitats present and are mostly common or widespread in the vicinity of the Site. Following a review of the Manchester local wildlife site criteria, this site would not qualify as a local wildlife site 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 & Otter

6.81 The River Irk is located within the Proposed Development 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

6.82 No potential amphibian breeding habitat was identified within 500m of the Proposed Development boundary and therefore no detailed amphibian surveys were undertaken. Amphibians have been scoped out of further assessment.

6.83 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

6.84 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 any particular value to this group of species. The River Irk, while 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)[19] 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*

6.85 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*

6.86 The range of aquatic habitats present within the 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 & minnow) were captured during the September 2021 surveys. It is suspected that fish species assemblage observed is likely to reflect poor

[19] The Site is contained within the River Irk Lower waterbody.

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 result of the survey indicates 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 but only at the Local level.

### Identification of Ecological Features

6.87 This section summarises the potential ecological features that could be impacted by the Proposed Development and outlines the ecological value assigned to each feature.

6.88 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 Development on the basis of their legal requirements, their implications on nature conservation policies and plans, or for animal welfare reasons.

6.89 Table 6.6 provides a summary of the preceding paragraphs.

*Table 6.6: 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 |
| Boggart Hole Clough LNR | Regional | 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 & Flora** | | |

| Feature | Ecological Value | Scoped in/out of assessment |
|---|---|---|
| Semi-natural Woodland | Regional | **Scoped In** |
| Plantation Woodland | Regional | **Scoped In** |
| River Irk Corridor | Local | **Scoped In** |
| Dense scrub | Local | Scoped Out |
| Scattered scrub | Local | Scoped Out |
| Scattered trees | Local | **Scoped In** |
| Other Habitats: Continuous bracken, Hardstanding & Ephemeral and buildings | Less than Local | Scoped Out |
| Invasive Species: Himalayan balsam, Japanese knotweed & Giant hogweed | N/A | *Requirements relating to control of invasive species considered under semi-natural woodland, plantation woodland and River Irk Corridor* |
| **Fauna** | | |
| Bats: Roosting | Local | **Scoped In** |
| Bats: Foraging & 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 & aquatic) | N/A | Scoped Out |
| Fish assemblage | Local | **Scoped In** |

# Embedded Mitigation

### Demolition and Construction

6.90 The proposed infrastructure works have been designed in such a way to focus on the retention of existing trees and vegetation to minimise negative impacts on the existing ecology and biodiversity. Although some woodland/tree loss is unavoidable, impact has been minimised as far as possible and tree removal has been guided by the results of the arboriculture and ecology surveys.

6.91 St. Catherine's Wood will largely be retained and enhanced within the Proposed Development. The proposed scheme will retain 1.368ha of plantation woodland within the Proposed Development. St. Catherine's Wood will be enhanced through native tree planting, rotational coppicing, woodland management practices to encourage ground flora growth and introduction of a varied vegetation structures (shrub layers). Enhancements to the woodland will improve the overall condition of the woodland and provide biodiversity benefits.

6.92 A 'U-tube' crossing, positioned approximately 50m upstream of Union Bridge, will enable utility network expansions across the River Irk. A temporary dam would be established upstream of the working area to create a dry area for excavation works to take place. The water will be over pumped in this area and the pump fitted with a sieve. The sieve will prevent debris being drawn in and avoid it becoming blocked. The sieve will also avoid any fish being drawn into the pipe and avoid any potential death/injury to fish.

### The Completed and Operational Development

6.93 Formalising foot and cycleways within St. Catherine's Wood will navigate recreational visitors more formally through the woodland. Guided walk and cycleways will allow the rest of the woodland ground flora to recover from the current recreational pressures.

6.94 Re-profiling and re-naturalising discrete sections of the riverbanks will provide biodiversity benefits in the medium and long-term. Not only will re-naturalising these sections improve aquatic habitat but will provide dual benefits for foraging birds and bats.

# Assessment of Likely Significant Effects

### Demolition and Construction

Assessment Scenario 1a – Proposed Development Only

*Semi-Natural Woodland*

6.95 The Proposed Development would result in the direct loss of 1.51ha of semi-natural broadleaved woodland. The area of woodland to be lost has been assessed as poor-quality woodland, due to its young age, lack of species

diversity and poor ground flora. Loss of young semi-natural woodland is a certain impact. Direct loss of 1.51ha of young semi-natural woodland is considered to be a **negative significant effect** at the Regional level.

6.96 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 to be a **negative significant effect** at the Regional level.

6.97 Indirect impacts on the retained adjacent woodland during construction are also possible, with effects as a result of accidental pollution events and the introduction of construction dust. In the absence of mitigation indirect impacts on the retained woodland are considered to be **negative significant effect** at the Regional level.

6.98 The Invasive Alien Species Himalayan balsam is present in various areas throughout the woodland, including in areas due to be lost as a result of the Proposed Development. Vegetation removal and other ground works have the potential to cause the spread of Himalayan balsam within the 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**.

6.99 The proposed scheme will retain 0.15ha of semi-natural woodland within the Proposed Development site. Areas of retained woodland will be enhanced through native tree planting, woodland management practices to encourage ground flora growth and introduction of a varied vegetation structures (shrub layers). Enhancements to semi-natural woodland will provide a **positive significant effect** in the medium to long-term at the Local level.

*Plantation Woodland*

6.100 St. Catherine's Wood will be largely retained within the Proposed Development. Selective tree removal in this area focuses on retention of existing trees to minimise negative impacts. The Proposed Development would result in the direct loss of 0.27ha of plantation broadleaved woodland. The area of woodland to be lost has been assessed as poor-quality woodland. Loss of plantation woodland is a certain impact. Direct loss of 0.27ha of plantation woodland is considered to be a **negative significant effect** at the Local level.

6.101 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 to be a **negative significant effect** at the Regional level.

6.102 Indirect impacts on the retained adjacent woodland during construction are also possible, with effects as a result of accidental pollution events and the introduction of construction dust. In the absence of mitigation indirect impacts on the retained woodland are considered to be **negative significant effect** at the Regional level.

6.103 The Invasive Alien Species Himalayan balsam and Schedule 9 species Japanese knotweed are present in various areas within the woodland, mainly towards the banks of the River Irk. Vegetation removal and other ground works have the potential to cause the spread of Himalayan balsam and Japanese knotweed within the Site. Construction activities also introduce the risk of spread of Himalayan balsam and Japanese knotweed 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**.

*Scattered Trees*

6.104 The Proposed Development would result in the direct loss of 0.35ha trees. Loss of scattered trees is a certain impact. Direct loss of 0.35ha trees is considered to be a **negative significant effect,** but only at the Local level due to the small-scale nature of the loss.

6.105 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 to be a **negative significant** effect at the Local level.

6.106 Indirect impacts on the retained trees during construction are also possible, with effects as a result of accidental pollution events and the introduction of construction dust. In the absence of mitigation indirect impacts on retained trees are considered to be **negative significant effect** at the Local level.

*River Irk Corridor*

6.107 Retaining wall demolition is proposed at three discrete locations along the northern bank of the River Irk: 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.

6.108 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 to be 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.

6.109 Surface water will be discharged at a restricted rate to the River Irk at three outfall locations: P&P, Union Plaza and near RB01/02 slope. Each outfall location will have a concrete headwall. There will be direct loss of bankside habitat as a result of the drainage solution on site. Direct loss bankside habitat is considered to be a **negative significant effect,** but only at the Local level due to the small scale nature of the loss.

6.110 Indirect impacts on the River Irk Corridor during construction are also possible, with effects as a result of accidental pollution events and the introduction of construction dust. In the absence of mitigation indirect impacts on the River Irk Corridor are considered to be **negative significant effect** at the Local level.

6.111 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 Himalayan balsam, giant hogweed and Japanese knotweed within the Site. Construction activities also introduce the risk of spread of Himalayan balsam, giant hogweed and Japanese knotweed 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**.

*Roosting Bats*

6.112 Based on current proposals all five trees with bat roosting potential should be able to be retained in-situ and every effort has been made to ensure their retention. However given the current condition of tree T1 it is possible that it will require removal due to overriding health and safety issues. There is also the potential T2-T4 may require some pruning to improve overall health of these trees. For the purposes of this assessment, a precautionary approach has been taken and trees T1-T5 have been assessed as being impacted either through felling or through pruning works. In the absence of mitigation, direct impacts on potential roosting bat features is considered to have a **negative significant effect** at the Local level on a precautionary basis.

6.113 No direct impacts on P&P bridge are proposed within the design. Proposed works to St. Catherine's Wood bridge include resurfacing and raising of the parapets to a minimum of 1.4m above deck surface. Direct impacts on roosting bats associated with bridge structures is considered to have a negligible effect as a result of these works and considered **not significant.**

6.114 Indirect disturbance impacts on potential roosting bats in bridge structures during construction is possible, through noise and vibration. In the absence of mitigation, impacts on roosting bats is considered to be a **negative significant effect** at the Local level.

6.115 Any proposed construction lighting could have detrimental impact on roosting bats in the absence of mitigation both within and adjacent to the Site. Artificial construction lighting has the potential to light up bridge structures 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 & Commuting*

6.116 Loss of semi-natural and plantation woodland during construction could disrupt bat foraging and commuting behaviour. Loss of woodland would reduce the habitat availability and potentially increase the energetic cost of foraging bats in the local area. However a large proportion of St. Catherine's Wood will be retained which will act

as sufficient bat commuting habitat, ensuring no fragmentation effect is encountered, allowing bats to access potential foraging habitat in the local area. Bat activity was generally low across the Site and the assemblage is restricted to primarily common pipistrelle, with rare occurrences of noctule, soprano pipistrelle and Leisler's. Greater levels of bat activity were associated with the River Irk Corridor within the Proposed Development. Proposed works to River Irk Corridor, including wall demolition and bank reprofiling, will be short-term and temporary, likely be during daytime hours and provide benefits for foraging and commuting bats in the long-term. The loss of bat foraging and commuting habitat is considered a **negative significant effect** at the Local level.

6.117 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 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*

6.118 The Proposed 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 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.

6.119 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 as a result of 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 to be a **negative significant effect** at the Local level.

*Fish*

6.120 During works associated with the 'U-tube' crossing, water will be over pumped to create a dry area for trenching. The pump will be fitted with a sieve which will prevent death/injury to fish, however the sieve will prevent the natural dispersion of fish through the watercourse. If works are undertaken during spawning season the works have the potential to impact spawning fish. The works are anticipated to take 4 – 8 weeks and are therefore considered to be a temporary impact. In the absence of mitigation there is the potential for disturbance of spawning fish and disturbance of fish dispersal. The potential effect of disturbing fish is considered to be a **negative significant effect** at the Local level.

Assessment Scenario 1b – Proposed Development plus impacts associated with Applications 1, 3 and 4

*Semi-Natural Woodland*

6.121 The direct loss of 1.51ha of semi-natural woodland will be in addition to the 1.05ha of semi-natural woodland loss already assessed as lost under Application 1. Based on current information no further woodland loss is anticipated as a result of either Application 3 or 4. Although cumulatively with Applications 1 & 2 there will be an increase in the amount of semi-natural woodland lost, this will not change the assessment of impact of this Chapter, with direct loss of young semi-natural woodland remaining a **negative significant effect** at the Regional level.

6.122 Direct and indirect impacts on adjacent retained woodland during construction are considered a possible impact with all four applications, with accidental encroachment into tree protection areas and effects as a result of accidental pollution events potentially causing further damage to the woodland. In the absence of mitigation direct and indirect impacts on retained woodland during all four applications are considered to be a **negative significant effect** at the Regional level.

6.123 The Invasive Alien Species Himalayan balsam is present in various area throughout the woodland, including in areas due to be lost as a result of the Proposed Development, as well as woodland areas to be cleared under Application 1. Vegetation removal and other ground works have the potential to cause the spread of Himalayan balsam within the Site. Spread of invasive species is contrary to national legislation and therefore in the absence of mitigation is a **negative significant effect**.

*Plantation Woodland*

6.124 No additional loss of plantation woodland is anticipated as a result of Application 1, 3 or 4. Therefore cumulatively there is no change to the assessment of impact on plantation woodland as set out in this Chapter.

*Scattered Trees*

6.125 The Proposed Development would result in the direct loss of 0.35ha of scattered trees. Following a detailed Arboricultural Impact Assessment, no impact on scattered trees was determined under Application 1. Cumulatively it is possible that a small number of additional scattered trees may require removal or pruning as a result of Applications 3 and/or 4, although no detail is available at this stage to confirm. A precautionary cumulative assessment has therefore been made, with a direct loss of scattered trees considered to be a **negative significant effect,** but only at the Local level due to the small-scale nature of the loss.

6.126 Direct and indirect impacts on retained scattered trees during construction are possible and are considered a possible impact with all four applications. In the absence of mitigation direct impacts on retained trees with all four applications are considered to be a **negative significant** effect at the Local level.

*River Irk Corridor*

6.127 No impact on the River Irk was assessed under Application 1 or anticipated under Application 4. However, under Application 3 (HIF Flood Defence Works) there will be significant impacts to the bank of the river for both flood defence and for ecological enhancement reasons. When considered cumulatively with the impacts set out on the River Irk Corridor for Application 2, the direct loss of bankside habitat remains a temporary **negative significant effect** at the Local level and the reprofiling and re-naturalisation of the river under Application 3 will add significant benefit cumulatively adding to the **positive significant effect** at the Local level.

6.128 Indirect impacts on the River Irk Corridor during construction during Application 3 are also possible, with effects as a result of 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 to be **negative significant effect** at the Local level.

6.129 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 river banks under both Application 2 and 3 have the potential to cause the spread of Himalayan balsam, giant hogweed and Japanese knotweed within the Site. Construction activities also introduce the risk of spread of Himalayan balsam, giant hogweed and Japanese knotweed 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**.

*Roosting Bats*

6.130 It is not anticipated that any bat roosting habitat will be directly impacted as a result of Application 1 or 3. However, two common pipistrelle day roosts were identified within Noyek Plywood building, located on Travis Island and to be demolished under Application 4, during nocturnal roost surveys in 2021. Permanent loss of two common pipistrelle day roosts and risk of killing/injuring/disturbing roosting bats are anticipated as a result of Application 4. When considered cumulatively with the impacts set out for Application 2, the impacts on roosting bats 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.

6.131 Given the location of the bat potential features within the Site, there is the potential that under Applications 2, 3 and 4 construction lighting could have detrimental impact on roosting bats in the absence of mitigation. Cumulatively the potential impact of lighting on roosting bats is considered a **negative significant effect** at the Local level.

*Bat Foraging & Commuting*

6.132 Cumulatively the additional woodland loss when considering both Applications 1 & 2 will increase the impact on bat foraging and commuting, albeit marginally given the small scale predicated losses. Temporary loss of vegetation along the banks of the river during Application 3 works is also likely to be necessary to facilitate works,

which is also likely to have an impact on bat foraging and commuting. However, proposals under Application 3 also include the enhancement of sections of the River Irk, specifically for ecological benefit. Works are temporary and therefore no change in the medium to long term is anticipated, with potential for positive effects when riverine biodiversity increases as a result of the works. No additional impact on bat foraging and commuting is anticipated as a result of Application 4. Overall the cumulative assessment on bat foraging and commuting remains a **negative significant effect** at the Local level.

6.133 Any proposed construction lighting for any of the four applications could have detrimental impact on bat 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*

6.134 During the construction phase it is likely that loss of breeding bird habitats would increase, but cumulatively with Application 1 and 3 this will not increase the significance of effect from the Local level currently predicted, due to the small scale increase anticipated. It is not anticipated that any additional breeding bird habitat will be lost as a result of Application 4. In the absence of mitigation the cumulative loss of bird feeding, roosting and nesting habitat is considered a **negative significant effect** at the Local level.

6.135 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 as a result of vegetation clearance. The cumulative potential effect of killing, injuring or disturbing breeding birds for 1, 2 and 3 is considered to be a **negative significant effect** at the Local level.

*Fish*

6.136 No impact on the River Irk and therefore on the fish assemblage was assessed under Application 1 or anticipated under Application 4. However, under Application 3 (HIF Flood Defence Works) there will be significant impacts to the bank of the river for both flood defence and for ecological enhancement reasons. When considered cumulatively with the impacts set out on fish for Application 2, the potential effect of killing, injuring or disturbing fish is considered to be a **negative significant effect** at the Local level albeit only in the short-term.

### Assessment Scenario 1c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

*Woodland/scattered trees*

6.137 No effects on woodland habitat are likely to arise from Applications 3 or 4. Application 1 and Application 2 would have cumulative effects on woodland loss. The significance of effect from the cumulative losses would not increase from the Regional level currently predicted.

6.138 There is likely to be additional woodland loss across the SRF area, specifically within the South Collyhurst and Vauxhall Gardens areas. However, a commitment has been made to increase the area of native woodland within the Northern Gateway development, taking into account key woodland types. However, due to the commitment to achieving 10% BNG, losses arising from both these applications would in the long term be mitigated or compensated via Application 2. Furthermore, the significance of effect from the cumulative losses would not increase from the level currently predicted.

6.139 Cumulative woodland losses from the wider SRF alongside Applications 1 and 2 could increase the significance of effect depending on the timing and extent of tree removal and allowing for establishment periods of any new planting.

*River Irk Corridor*

6.140 The cumulative direct and indirect impacts on the River Irk Corridor associated with Applications 2 and 3 are considered a temporary **negative significant effect** at the Local level in the short term. However proposed works to the river include significant ecological enhancement and re-naturalisation of section of the banks, specifically as part of Application 3. These enhancement and re-naturalisation works are likely to have a cumulative **positive significant effect** on the ecological value of the River Irk corridor in the medium to long term.

6.141 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). Any enhancement of the River Irk is likely to include riverbank works which would have a potential temporary **negative significant effect**.

*Roosting Bats*

6.142 No direct effects on roosting bats are likely to arise from Applications 1 or 3. The cumulative direct impacts on roosting bats associated with Applications 2 and 4 and indirect impacts on roosting bats associated with Application 2, 3 and 4 are considered a **negative significant effect** at the Local level. The potential for the significance of effect to increase would only be likely if the wider SRF works were timed to coincide with the other applications which is unlikely.

*Bat Foraging & Commuting*

6.143 Impacts on the bat community can arise from habitat loss including foraging and commuting. It can also result from disturbance in this case primarily likely due lighting preventing bats from utilising retained habitats. Loss of bat foraging and commuting habitats would result from Applications 1, 2 and 3 and from the wider SRF. These could cumulatively create increased negative effects on bats during the construction phase, but the potential for this to arise depends on the timing and extent of bat habitat loss. The potential for the significance of effect to

increase would only be likely if the wider SRF works were timed to coincide with the other applications which is unlikely. The potential for cumulative effects to arise is further decreased by the retention and enhancement of the River Irk within the strategic masterplan. Construction phase lighting impacts would likely be avoided through standard bat-friendly working methods for Applications 1, 2, 4 and the wider SRF and at least minimised for Application 3.

6.144 Given the low activity levels of bats in the landscape and the commitments within the Northern Gateway Biodiversity Planit is likely there would be an overall increase in quality and/or quantity of bat foraging and commuting habitats during the operational phase. With good design within the wider SRF there should be no cumulative increase in fragmentation of bat habitats. As a result, it is likely there would be a positive effect on bats in the long term.

*Breeding Birds*

6.145 Construction phase injury or killing of birds during construction phase will be avoided through standard bird friendly working methods. Loss of bird habitats would result from Applications 1, 2 and 3 and from the wider SRF. These could cumulatively create increased negative effects on birds during the construction phase but the potential for this to arise depends on the timing and extent of bird habitat loss. The potential for the significance of effect to increase would only be likely if the wider SRF works were timed to coincide with the other applications which is unlikely. The potential for cumulative effects to arise is further decreased by the retention and enhancement of the River Irk within the strategic masterplan. Given the existing structure and use of the local landscape and generally urban nature of the bird community, operational phase fragmentation and disturbance effects on bird populations are unlikely to arise. Given the commitments within the Northern Gateway Biodiversity Planit is likely there would be an overall increase in quality and/or quantity of bird habitats during the operational phase. As a result, it is likely there would be a cumulatively positive effect on birds in the long term.

*Fish*

6.146 Further works along the River Irk and therefore impacting the associated fish assemblage are likely as part of the wider SRF scheme. However, as per the impact anticipated on fish under Applications 2 and 3 these works are likely to be temporary and much of the anticipated works will create a positive significant effect in the medium to long term. When considering the SRF cumulatively with the impacts set out on fish for Application 2 and 3, the potential effect of disturbing fish is not likely to increase the level of impact currently assessed.

### The Completed and Operational Development

#### Assessment Scenario 2a – Proposed Development Only

*Semi-Natural & Plantation Woodland*

6.147 St. Catherine's Wood and areas of semi-natural woodland are already used recreationally by visitors from the local area. During the operational phase, it is possible there will be an increase in public pressure within the retained sections of woodland habitats. The Proposed Development will not introduce any more local residents to the area, but it is possible that recreational pressure may increase due to the provision of formal and informal play areas and formalised foot and cycleways making the area more attractive to visitors already in the local 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 undesirables species as set out in the Technical Supplement-Biodiversity Metric 3.0[20]. However, the extent and range of these effects should be reduced through the introduction of designated foot and cycleways. The effect of an increase in public pressure on woodland habitat is likely to be neutral and therefore **not significant**.

*Roosting Bats*

6.148 During operation, artificial light sources include street lighting and external lighting of foot and cycleways. 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 & Commuting*

6.149 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.

#### Assessment Scenario 2b – Proposed Development plus impacts associated with Applications 1, 3 and 4

*Semi-natural and Plantation Woodland*

6.150 During the operational phase there will be no impacts during Application 1 and 3 and neutral impacts associated with Application 2; as a result of making the woodland area more attractive to existing residents in the local area. During the operation of Application 4 there is likely to be an increase in recreational pressure on the existing and enhanced areas of woodland, specifically St Catherine's Wood. The most significant associated effect is likely to

[20] Stephen Panks A, Nick White A, Amanda Newsome A, Jack Potter A, Matt Heydon A, Edward Mayhew A, Maria Alvarez A, Trudy Russell A, Sarah J. Scott B, Max Heaver C, Sarah H. Scott C, Jo Treweek D, Bill Butcher E and Dave Stone A 2021. Biodiversity metric 3.0: Auditing and accounting for biodiversity – Technical Supplement. Natural England.

be floral diversity through trampling or increased nutrient enrichment (e.g., by dog-fouling) and the introduction of non-native invasive or undesirable species. However, the extent and range of these effects should be reduced through the introduction of designated foot and cycleways. The cumulative effect of an increase in public pressure on woodland habitat is likely to be **not significant.**

*Roosting bats*

6.151 Prior to mitigation during the operational phase, there is potential impact of artificial lighting on bat roosting habitat associated with Application 2 and 4. 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.

*Bat Foraging & Commuting*

6.152 Prior to mitigation during the operational phase, there is potential impact of artificial lighting on bat foraging/commuting habitat associated with Application 2 and 4. 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.

Assessment Scenario 2c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

*Semi-natural & Plantation Woodland*

6.153 Other areas of woodland are included within the wider SRF proposal, and as set out within the SRF vision document, will include both ecological enhancements and public rights of way through these woodland blocks. The introduction of additional residents as a result of the implementation of the SRF into these woodland areas may have the consequence of increasing recreational pressure however, the extent and range of these effects should be reduced through the introduction of designated foot and cycleways in the same way that has been seen within Application 2. The cumulative effect of an increase in public pressure on woodland habitat within Application 2, 4 and the SRF are likely to be neutral and therefore **not significant**.

*Roosting Bats*

6.154 During operation of the wider SRF, artificial light sources include street lighting and external lighting of foot and cycleways has the potential to light up tree canopies and other bat roosting features. However, the extent of the SRF lies within an urban setting and therefore any bat roosts present are likely to have an existing tolerance for artificial lighting to some extent. Prior to mitigation measures during the operational phase, the cumulative potential impact of lighting on bat roosting is considered a **negative significant effect** at the Local level on a precautionary basis.

*Foraging and Commuting Bats*

6.155 During operation of the wider SRF, artificial light sources include street lighting and external lighting of foot and cycleways has the potential to light habitat suitable for bats to forage and disperse. However, the extent of the SRF lies within an urban setting and therefore any bats using this area for foraging and commuting are likely to

have an existing tolerance for artificial lighting to some extent. Prior to mitigation measures during the operational phase, the cumulative potential impact of lighting on bat foraging and commuting is considered a **negative significant effect** at the Local level on a precautionary basis.

## Additional Mitigation / Enhancement Measures

6.156 Mitigation or compensation is required for each ecological feature which experiences negative significant effects, in order to reduce or offset the specific impacts of the Proposed 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.

6.157 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.

6.158 For legally protected species within the Proposed Development, any specific legal requirements for works affecting them would be met in addition to the proposed mitigation measures for the reduction of effects.

6.159 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

*Semi-Natural, Plantation Woodland & Scattered Trees*

6.160 Construction activities for the infrastructure works would result in the loss of 1.78ha of woodland and 0.35ha scattered trees within the red line boundary. Retained woodland and trees 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 in an Arboricultural Method Statement (AMS).

6.161 A Project Execution Plan (PEP) will be produced for the Site which will include standard construction working practices. The PEP will include an Emergency Spill Response Plan and Dust Management Plan. Implementation of

the PEP will ensure no accidental direct or indirect effects on the retained/adjacent woodland and trees is encountered as a result of the Proposed Development.

6.162 An Invasive Species Method Statement (ISMS) would be produced which would provide details on the protocols for controlling and eradicating Himalayan balsam, and Japanese knotweed from the ground flora within the woodland, in advance of and during construction works.

6.163 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.

6.164 Measures to be implemented during construction activities, including landscaping, to avoid impact on the retained pockets of semi-natural and plantation woodland across the Site will be detailed in the PEP. Retained woodland blocks will be managed to maximise biodiversity value, details of which will be provided within the LEMP.

*River Irk Corridor*

6.165 The PEP will include an Emergency Spill Response Plan and Dust Management Plan. Implementation of the PEP will ensure no accidental direct or indirect effects on the River Irk Corridor are encountered as a result of the Proposed Development.

6.166 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.

6.167 The LEMP will provide long-term management and monitoring objectives for the reprofiled areas and newly created habitats along the River Irk.

*Roosting Bats*

6.168 If deemed necessary, removal/pruning of trees with roost suitability (T1-T5) will be required to be undertaken under Reasonable Avoidance Measures including:

- Tree felling/pruning must be supervised by a licenced bat consultant;
- Inspection of potential roosting features (PRFs), by the licenced bat consultant, will be undertaken prior to cutting or felling of the tree;
- Soft felling any limbs with PRFs and leaving the for 24 hours before disposal to allow any bats potentially present to escape;
- If, in the unlikely event a roosting bat is found during works, all works must stop and a bat Mitigation Licence from Natural England will be obtained.

6.169 The direct and indirect impacts on roosting habitat will be mitigated through the provision of alternative roosting habitat (bat boxes). A suitable bat box, for every tree with bat features impacted, will be installed on a retained tree within the Site and with a focus on retained trees away from construction activities and any proposed construction or operation lighting.

6.170 The use/need of construction lighting would be minimal. 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 & Commuting*

6.171 The use/need of construction lighting would be minimal. 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.

6.172 Existing bat foraging/commuting habitats will be protected through implementation of AMS and PEP. Enhancements to bat foraging/commuting habitats will be provided through the LEMP.

*Breeding Birds*

6.173 Prior to vegetation clearance, a range of bird boxes shall be installed onto retained trees within undisturbed areas within the Site. This will include a variety of nest boxes of mixed specification to suit species that occur locally such as blackbird, blackcap, bluetit, bullfinch, chaffinch, coal tit, dunnock, goldfinch, long-tailed tit, robin, song thrush and treecreeper.

6.174 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.

6.175 Existing bird nesting habitats will be protected through implementation of AMS and PEP. Enhancements to bird nesting habitats will be provided through the LEMP.

*Fish*

6.176 Prior to dewatering the proposed dammed area of the River Irk, associated with U-tube pipe installation, a fish rescue/relocation will be undertaken to avoid the risk of fish being killed/injured. Regular monitoring of the sieved over-pump will also be undertaken for the duration of these works. Any fish present at the sieve will be relocated downstream to avoid the risk of fish being killed/injured.

6.177 River works including wall demolition and installation of U-tube pipe would be timed to avoid disturbance of spawning fish. For species encountered during detailed fish surveys this period is April- July.

### The Completed and Operational Development

*Roosting & Foraging/Commuting Bats*

6.178 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 take into account the sensitivity of the ecological features on-site. Light sources selected should emit zero ultra-violet light wherever possible. Bat Conservation Trust (2016) guidance 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

6.179 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 (see Table 6.7).

*Table 6.7: Residual Effects Summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| ***Construction and Demolition*** | | | | |
| *Assessment Scenario 1a – proposed development only* | | | | |
| **Semi-Natural Woodland**<br><br>**(Regional Value)** | Certain loss of 1.51ha of young semi-natural woodland is considered to be a **negative significant effect** at Regional level. | Management and enhancement of retained semi-natural woodland habitat.<br><br>Compensation required- biodiversity net gain offsetting (not included within this assessment of residual effects) | **Negative significant effect** *at the* Reigional level (in the absence of compensation). | **Moderate adverse** (in the absence of compensation). |
| | Possible direct impact on adjacent retained woodland is considered to be 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 to be a **negative significant effect** at Regional level. | Implementation of PEP. | **No significant effect.** | **Negligible** |
| | Likely spread of Himalayan balsam during clearance works across site and wider | Implementation of invasive species mitigation strategy. | **Positive significant effect.** | **Minor beneficial** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | area is considered to be a **negative significant effect.** | | | |
| | Retention of 0.15ha of semi-natural broadleaved woodland is considered to be a p**ositive significant effect** at Local level. | Management and enhancement of retained semi-natural woodland habitat. | **Positive significant effect.** | **Minor beneficial.** |
| **Plantation Woodland**<br><br>**(Regional Value)** | Certain loss of 0.27ha of plantation woodland is considered to be a **negative significant effect** at Local level. | Management and enhancement of retained plantation woodland habitat.<br><br>Compensation required- biodiversity net gain offsetting (not included within this assessment of residual effects) | **Negative significant effect** at the Local level (in the absence of compensation). | **Moderate adverse** (in the absence of compensation). |
| | Possible direct impact on adjacent retained woodland is considered to be 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 to be a **negative significant effect** at Regional level. | Implementation of PEP. | **No significant effect.** | **Negligible** |
| | Likely spread of Himalayan balsam and Japanese knotweed during clearance works across site and wider area is considered to be a **negative significant** | Implementation of invasive species mitigation strategy. | **Positive significant effect.** | **Minor beneficial** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | **effect.** | | | |
| | Retention of 1.368ha of plantation broadleaved woodland is considered to be a **positive significant effect** at Regional level. | Management and enhancement of retained plantation woodland habitat. | **Positive significant effect.** | **Minor beneficial.** |
| **Scattered Broadleaved Trees**<br><br>**(Local Value)** | Certain loss of 0.35ha scattered trees is considered to be a **negative significant effect** at Local level. | Management and enhancement of retained scattered trees.<br><br>Enhancement of retained woodland habitat includes tree planting. | **Negative significant effect** in the immediate term at the Local level, changing to **no significant effect** in the to medium to long term. | **Minor adverse** in the immediate term, changing to **Negligible** in the medium to short term. |
| | Possible direct impact on adjacent retained trees is considered to be 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 woodland is considered to be a **negative significant effect** at Local level. | Implementation PEP. | **No significant effect.** | **Negligible** |
| **River Irk Corridor**<br><br>**(Local Value)** | De-engineering in three discrete sections of the River Irk corridor & reprofiling riverbanks leading to certain loss of bankside habitat is considered to be a **negative significant effect** at Local level. | Enhancement of reprofiled sections of River Irk through aquatic marginal planting. | **Negative significant effect** in the immediate term at the Local level, changing to **positive significant** effect in the short to medium term. | **Minor adverse** in the immediate term, changing to **Minor beneficial** in the short to medium term. |
| | Certain loss of bankside habitat at three drainage outfall | Enhancement of reprofiled sections of River Irk through | **Negative significant** effect in the immediate | **Minor adverse** in the immediate |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | locations is considered to be a **negative significant effect** at Local level. | aquatic marginal planting. | term, changing to **positive significant** effect in the short to medium term. | term, changing to **Minor beneficia**l in the short to medium term. |
| | Possible indirect impact on River Irk (pollution/ construction dust) is considered to be a **negative significant effect** at Local level. | Implementation o***f*** PEP. | **No significant effect.** | **Negligible** |
| | Likely spread of Himalayan balsam, giant knotweed and Japanese knotweed during construction works across site and wider area is considered to be a **negative significant effect.** | Implementation of invasive species mitigation strategy. | **Positive significant effect.** | **Minor beneficial** |
| **Roosting Bats**<br><br>**(Local Value)** | Direct loss of potential roost habitat (up to 5 x trees) is considered to be a **negative significant effect** at Local level on a precautionary basis. | If necessary, removal of trees with roost potential will be undertaken under Reasonable Avoidance Measures (RAMS).<br><br>Provision of alternative roosting habitat to mitigate for the loss of available roosting habitat. | **No significant effect.** | **Negligible** |
| | Possible indirect impact on roosting bats through disturbance during construction (Noise, vibration, light) is considered to be a **negative significant effect** at Local level. | Bat box strategy.<br><br>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) |
|---|---|---|---|---|
| **Bat Foraging & Commuting**<br><br>**(Local Value)** | Loss of available bat foraging/commuting habitat is considered to be a **negative significant effect** at Local level. | Management and enhancement of retained woodland habitat and River Irk corridor. | **Negative significant effect** in the immediate term, changing to **no significant effect** in the short to medium term. | **Minor adverse** in the immediate term, changing to **Negligible** in the short to medium term. |
| | Construction lighting impact on offsite retained commuting corridors and foraging habitat is considered to be 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 to be a **negative significant effect** at Local level. | Bird box strategy.<br><br>Management and enhancement of retained woodland habitat. | **Negative significant effect** in the immediate term, changing to **no significant effect** in the short to medium term. | **Minor adverse** in the immediate term, changing to **Negligible** in the short to medium term. |
| | Potential for killing or injuring birds/nests through vegetation clearance is considered to be a **negative significant effect** at Local level. | Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined within PEP. | **No significant effect.** | **Neutral.** |
| **Fish**<br><br>**(Local Value)** | Potential for disturbing spawning fish and fish dispersion during dewatering and trenching of U-tube utilities pipe and wall demolition is considered to be a **negative significant effect** at Local level. | Restrictions on river works during spawning season (April -July for species encountered during surveys). Outlined within PEP.<br><br>Fish rescue/relocation during dewatering and over-pumping. Outlined in PEP. | **No significant effect.** | **Negligible** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| *Assessment Scenario 1b – proposed development plus Applications 1, 3 and 4* | | | | |
| **Semi-Natural Woodland**<br><br>**(Regional Value)** | Applications 1 and 2 would have certain loss of semi-natural woodland is considered to be a **negative significant effect** at Regional level.<br><br>No effects on semi-natural woodland habitat are anticipated to arise from Applications 3 or 4. | Commitment to achieve 10% BNG for the combined applications, losses arising from Applications 1 & 2 will be adequately mitigated or compensated. | **Negative significant effect** at the Regional level in the short-term changing to **positive significant effect** in the medium to long term. | **Minor Adverse** changing to **minor beneficial** in the medium to long term. |
| | Direct & indirect impacts on adjacent retained woodland during all four Applications (1-4) is considered to be a **negative significant effect** at Regional level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible** |
| | Likely spread of Himalayan balsam during clearance works during Applications 1 & 2 is considered to be a **negative significant effect.** | Implementation of invasive species mitigation strategy. | **Positive significant effect.** | **Minor beneficial** |
| **Plantation Woodland**<br><br>**(Regional Value)** | No effects on plantation woodland habitat are anticipated to arise from Applications 1, 3 or 4. There are no cumulative effects on plantation woodland. | | | |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| **Scattered Trees**<br><br>**(Local Value)** | No effects on scattered trees are anticipated to arise from Application 1.<br><br>Application 2 would have certain loss of scattered trees.<br><br>Possible loss of small number of trees under Application 3 & 4 is considered to be a **negative significant effect** at Local level. | Commitment to achieve 10% BNG for the combined applications, losses arising from Application 2 will be adequately mitigated or compensated. | **Negative significant effect** but only at the Local level in the short-term changing to **positive significant effect** in the medium to long term. | **Minor Adverse** changing to **minor beneficial** in the medium to long term. |
| | Direct & indirect impacts on adjacent retained trees during all four Applications (1-4) is considered to be a **negative significant effect** at Local level. | Implementation of tree protection measures as outlined within AMS. | **No significant effect.** | **Negligible** |
| **River Irk Corridor**<br><br>**(Local Value)** | No effects on River Irk Corridor are anticipated to arise from Applications 1 or 4.<br><br>Direct impacts on River Irk Corridor under Applications 2 & 3 is considered to be a **negative significant effect** at Local level. | Enhancement of reprofiled sections of River Irk through aquatic marginal planting. | **Negative significant** effect in the immediate term, changing to **positive significant** effect in the short to medium term. | **Minor adverse** in the immediate term, changing to **Minor beneficia**l in the short to medium term. |
| | Indirect impact on River Irk (pollution/ construction dust) under Applications 2 & 3 is considered to be a **negative significant effect** at Local level. | Implementation PEP. | **No significant effect.** | **Negligible** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | Likely spread of Himalayan balsam, giant knotweed and Japanese knotweed during construction works across site and wider area during Application 2 & 3 is considered to be a **negative significant effect**. | Implementation of invasive species mitigation strategy. | **Positive significant effect.** | **Minor beneficial** |
| **Roosting Bats**<br><br>**(Local Value)** | No effects on roosting are anticipated to arise from Applications 1.<br><br>Application 2 and 4 would result in the direct loss of confirmed/potential roosting habitat and potentially kill/injure/disturb roosting bats is considered to be a **negative significant effect** at Local level. | Implementation of RAMS during tree felling/ pruning.<br><br>Provision of alternative roost habitat. | **No significant effect.** | **Negligible** |
| | Application 2, 3 & 4 has the potential to indirectly disturb roosting bats through construction lighting is considered to be a **negative significant effect** at Local level. | Implementation of lighting strategy which would include bat sensitive measures. | **No significant effect.** | **Negligible** |
| **Bat Foraging & Commuting**<br><br>**(Local Value)** | Loss of available bat foraging & commuting habitat as a result of Applications 1, 2 and 3 is considered to be a **negative significant effect** at Local level.<br><br>No loss of bat foraging or commuting habitat is | Commitment to achieve 10% BNG for the combined applications, losses of bat foraging and commuting habitat arising from Applications 1, 2 & 3 will be adequately mitigated or | **No significant effect** | **Negligible** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | anticipated as a result of Application 4. | compensated. The River Irk will be enhanced under Application 3 which will improve the quality of existing bat foraging and commuting habitat. | | |
| | Construction lighting impact on offsite retained commuting corridors and foraging habitat during all four Applications (1-4) is considered to be 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 habitat as a result of Applications 1, 2 and 3 is considered to be a **negative significant effect** at Local level.<br><br>No loss of nesting bird habitat is anticipated as a result of Application 4. | Commitment to achieve 10% BNG for the combined applications, losses of nesting bird habitat arising from Applications 1, 2 & 3 will be adequately mitigated or compensated habitat. | **No significant effect.** | **Negligible** |
| | Potential for killing or injuring birds/destroying active nests through vegetation clearance during Applications 1, 2, and 3 is considered to be a **negative significant effect** at Local level.<br><br>Potential for killing or injuring birds/destroying active nests through vegetation clearance | Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined within PEP | **No significant effect** | **Negligible** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | during is not anticipated as a result of Application 4. | | | |
| **Fish**<br><br>**(Local Value)** | No effects on fish are anticipated to arise from Applications 1 or 4.<br><br>Direct impacts on fish under Applications 2 & 3 is considered to be a **negative significant effect** at Local level. . | Restrictions on river works during spawning season (April -July for species encountered during surveys). Outlined within PEP.<br><br>Fish rescue/relocation during dewatering and over-pumping. Outlined in PEP. | **No significant effect.** | **Negligible** |
| *Assessment Scenario 1c – proposed development plus Applications 1, 3 and 4 and wider SRF* | | | | |
| **Semi-Natural Woodland**<br><br>**(Regional Value)** | No effects on semi-natural woodland habitat are anticipated to arise from Applications 3 or 4.<br><br>Applications 1 and 2 would have certain loss of semi-natural woodland.<br><br>It is anticipated there will be woodland losses in the wider SRF. | Commitment to achieve 10% BNG for the combined applications, losses arising from Applications 1 & 2 will be adequately mitigated or compensated.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated | **Negative significant effect** at the Regional level in the short-term 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)** | No effects on plantation woodland habitat are anticipated to arise from Applications 1, 3 or 4.<br><br>Application 2 would have certain loss of | Commitment to achieve 10% BNG for the combined applications, losses arising from Application 2 will be adequately mitigated or compensated. This will be secured | **Negative significant effect** at the Regional level in the short-term changing to **positive significant effect** in the medium to | **Minor Adverse** 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) |
|---|---|---|---|---|
| | plantation woodland.<br><br>It is anticipated there will be woodland losses in the wider SRF. | through a carefully worded planning condition.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | long term. | |
| **Scattered Trees**<br><br>**(Local Value)** | No effects on scattered trees are anticipated to arise from Applications 1.<br><br>Application 2 would have certain loss of scattered trees.<br><br>Possible loss of small number of trees under Application 3 & 4.<br><br>It is anticipated there will be tree losses in the wider SRF. | Commitment to achieve 10% BNG for the combined applications, losses arising from Application 2 will be adequately mitigated or compensated.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **Negative significant effect** but only at the Local level in the short-term changing to **positive significant effect** in the medium to long term. | **Minor Adverse** changing to **minor beneficial** in the medium to long term. |
| **River Irk Corridor**<br><br>**(Local Value)** | No effects on River Irk Corridor are anticipated to arise from Applications 1 or 4.<br><br>Direct impacts on River Irk Corridor under Applications 2 & 3.<br><br>It is anticipated there will be direct impacts on River Irk in the wider SRF. | Enhancement of reprofiled sections of River Irk through aquatic marginal planting.<br><br>It is anticipated commitments within the 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 short to medium term. | **Minor adverse** in the immediate term, changing to **Minor beneficia**l in the short to medium 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)** | No effects on roosting are anticipated to arise from Applications 1.<br><br>Application 2 and 4 would result in the direct loss of confirmed/potential roosting habitat and potentially kill/injure/disturb roosting bats.<br><br>Application 2, 3 & 4 has the potential to indirectly disturb roosting bats through construction lighting.<br><br>It is anticipated there will be impacts on roosting bats in the wider SRF. | Implementation of RAMS during tree felling/ pruning.<br><br>Provision of alternative roost habitat.<br><br>Implementation of lighting strategy which would include bat sensitive measures.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **No significant effect.** | **Negligible** |
| **Bat Foraging & Commuting**<br><br>**(Local Value)** | Loss of available bat foraging & commuting habitat as a result of Applications 1, 2 and 3.<br><br>No loss of bat foraging or commuting habitat is anticipated as a result of Application 4.<br><br>It is anticipated there will be losses of bat commuting & foraging habitat in the wider SRF. | Commitment to achieve 10% BNG for the combined applications, losses of bat foraging and commuting habitat arising from Applications 1, 2 & 3 will be adequately mitigated or compensated.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **No significant effect** | **Negligible** |
| | Construction lighting impact on offsite retained commuting | Implementation of lighting strategy which would include bat | **No significant effect.** | **Negligible** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | corridors and foraging habitat during all four Applications (1-4) and in wider SRF. | sensitive measures. | | |
| **Breeding Birds**<br><br>**(Local Value)** | Loss of available bird nesting habitat as a result of Applications 1, 2 and 3.<br><br>No loss of nesting bird habitat is anticipated as a result of Application 4.<br><br>It is anticipated there will be losses of nesting bird habitat in the wider SRF. | Commitment to achieve 10% BNG for the combined applications, losses of nesting bird habitat arising from Applications 1, 2 & 3 will be adequately mitigated or compensated habitat.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | **No significant effect.** | **Negligible** |
| | Potential for killing or injuring birds/destroying active nests through vegetation clearance during Applications 1, 2, and 3.<br><br>Potential for killing or injuring birds/destroying active nests through vegetation clearance during is not anticipated as a result of Application 4.<br><br>It is anticipated there will be potential for killing or injuring birds/destroying active nests through vegetation clearance in | Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined within PEP. | **No significant effect** | **Negligible** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | the wider SRF. | | | |
| **Fish**<br><br>**(Local Value)** | No effects on fish are anticipated to arise from Applications 1 or 4.<br><br>Direct impacts on fish under Applications 2 & 3 and wider SRF. | Restrictions on river works during spawning season (April -July for species encountered during surveys). Outlined within PEP.<br><br>Fish rescue/relocation during dewatering and over-pumping. Outlined in PEP. | **No significant effect.** | **Negligible** |
| ***Completed Development*** | | | | |
| *Assessment Scenario 2a – proposed development only* | | | | |
| **Semi-Natural Woodland**<br><br>**(Regional Value)** | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives is considered **not significant.** | A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora.<br><br>Appropriate woodland management (detailed in LEMP). | **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 is considered **not significant.** | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & 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) |
|---|---|---|---|---|
| | | flora. | | |
| **Roosting Bats**<br><br>**(Local Value)** | Potential lighting impact on potential roosting habitat is considered to be a **negative significant effect** at Local level. . | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible** |
| **Bat Foraging & Commuting**<br><br>**(Local Value)** | Potential lighting impact on foraging/commuting routes is considered to be a **negative significant effect** at Local level. . | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible** |
| *Assessment Scenario 2b – proposed development plus Applications 1, 3 and 4* | | | | |
| **Semi-Natural Woodland**<br><br>**(Regional Value)** | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives associated with Applications 2 & 4 is considered **not significant**.<br><br>No operational impacts during Applications 1 & 3. | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora. | **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 associated with Applications 2 & 4 is considered **not significant**.<br><br>No operational impacts during Applications 1 & 3. | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora. | **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) |
|---|---|---|---|---|
| **Roosting Bats**<br><br>**(Local Value)** | Potential lighting impact on potential roosting habitat associate with Applications 2 & 4 is considered to be a **negative significant effect** at Local level. .<br><br>No potential lighting impact on roosting bats associated with Applications 1 & 3. | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible** |
| **Bat Foraging & Commuting**<br><br>**(Local Value)** | Potential lighting impact on foraging/commuting routes associated with Applications 2 & 4 is considered to be a **negative significant effect** at Local level. .<br><br>No potential lighting impact on foraging/commuting routes associated with Applications 1 & 3. | Operational lighting strategy will include bat sensitive measures. | **No significant effect.** | **Negligible** |
| *Assessment Scenario 2c – proposed development plus Applications 1, 3 and 4 and wider SRF* | | | | |
| **Semi-Natural Woodland**<br><br>**(Regional Value)** | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives associated with Applications 2 & 4 is considered **not significant**.<br><br>No operational impacts during Applications 1 & 3.<br><br>It is anticipated there will be an increase in public pressure entering woodlands in the wider | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will | **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) |
|---|---|---|---|---|
| | SRF. | ensure impacts from public pressure are mitigated. | | |
| **Plantation Woodland**<br><br>**(Regional Value)** | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives associated with Applications 2 & 4 is considered **not significant**..<br><br>No operational impacts during Applications 1 & 3.<br><br>It is anticipated there will be an increase in public pressure entering woodlands in the wider SRF. | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora.<br><br>It is anticipated commitments within the 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. |
| **Roosting Bats**<br><br>**(Local Value)** | Potential lighting impact on potential roosting habitat associate with Applications 2 & 4 and the wider SRF.<br><br>No potential lighting impact on roosting bats associated with Applications 1 & 3. | Operational lighting strategy will include bat sensitive measures.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure impacts from artificial lighting on roosting bats are mitigated or compensated. | **No significant effect.** | **Negligible** |
| **Bat Foraging & Commuting**<br><br>**(Local Value)** | Potential lighting impact on foraging/commuting routes associated with Applications 2 & 4 and | Operational lighting strategy will include bat sensitive measures. It is anticipated | **No significant effect.** | **Negligible** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance (CIEEM) | Residual Effect including significance (Traditional) |
|---|---|---|---|---|
| | the wider SRF.<br><br>No potential lighting impact on foraging/commuting routes associated with Applications 1 & 3. | commitments within the Northern Gateway Biodiversity Plan will ensure impacts from artificial lighting on commuting/foraging bats are mitigated or compensated. | | |

6.180 The significance of the anticipated residual effects for Scenarios 1b, 1c, 2b and 2c are based on the information available at the time of writing. Specific mitigation measures required in respect of any issues pertinent to those future applications will be identified and agreed within the scope of the assessments prepared and submitted with those applications.

## Biodiversity Net Gain Assessment

6.181 Full details of the UKHAB survey and condition assessment is provided within the BNG Assessment at **Appendix 6.5**.

6.182 After consultation with Greater Manchester Ecology Unit (GMEU), a bespoke approach to the BNG assessment was agreed, which will consider associated future applications (Application 4) for the wider site alongside this Proposed Development (Application 2) and approved development (Application 1). Initially river units were proposed to be calculated separately under Application 3, when additional details would be available. However, due to elements of river works now associated with Application 2, river baseline units will be included, and post intervention scores will be calculated based on proposed works associated with Application 2. It is anticipated that the river units will still be re-calculated separately under Application 3 and is expected to involve significant ecological enhancement.

6.183 This strategy seeks to avoid a piecemeal approach to BNG. The BNG assessment identifies the habitat unit deficit of the Proposed Development, taking into account the mitigation that has already been delivered on Site (as described within this Chapter). and therefore identifies the off site compensation required to ensure no net loss and a measurable gain can be achieved.

6.184 The UKHAB survey and condition assessment information has been inputted into the Defra 3.0 metric, covering the combined site area required for Application 1, 2 and 4. This metric serves as a tool to quantify the biodiversity value of the Site in the form of a biodiversity unit (BU) score. There are no irreplaceable habitats present within this combined site area. A baseline score of 32.84 habitat biodiversity units (bu), 1.58 river bu and 0.00 hedgerow bu were derived from the biodiversity metric.

6.185 Given that detailed masterplans for the later applications are still emerging at the time of assessment, a high-level landscape scheme has been produced for the combined site, which is considered to be a reasonable worst-case scenario. This high-level landscape scheme has been used to determine both the impact and the habitat creation and enhancement within the Site. An onsite post intervention score of 30.86 habitat bu, 1.84 river bu and 0.33 hedgerow bu was achieved based on the reasonable worst-case position.

6.186 In order to achieve 10% BNG (for terrestrial habitats), off site compensation will be agreed to make up the biodiversity unit deficit. This off site compensation will be within the Northern Gateway SRF area, which will ensure that the compensation habitat will be provided in close proximity to the Site. Given the majority of habitat loss on site and the majority of deficit in the 'Trading summary' in the Metric is attributed to loss of woodland, compensation would seek to create or enhance areas of woodland within the SRF area.

6.187 Following consultation with MCC it was agreed that a carefully worded condition can be included, where in the event that the redevelopment of the HIF site does not take place within a certain period of time of the completion of the enabling works, the land will be restored in line with a strategy submitted for approval in writing by MCC. The strategy will outline measures to facilitate the commitment to at least 10% net gain across the completed Red Bank Neighbourhood development (Application 4), and the restoration of the Site shall take place in accordance with timescale agreed in writing with MCC.

## Conclusions

6.188 The assessment identified two regionally important ecological features: semi-natural and plantation woodland. A further six locally important ecological features were also identified, these were scattered broadleaved trees, River Irk corridor, roosting bats, bat foraging/commuting, breeding birds and fish.

6.189 The potential for disturbance effects and unintended habitat loss or damage resulting from clearance, demolition and construction activities were identified through the assessment. The majority of these can be avoided through mitigation measures including the production of a PEP, LEMP, invasive species mitigation strategy, lighting strategy and tree protection measures.

6.190 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.

6.191 Assessment of the Development project i.e. associated Applications 1, 3 and 4 and the wider SRF is provided via a high level combined assessment. It is predicted that the significance effect from the cumulative losses of semi-natural woodland, 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 the 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.

6.192 Habitat loss has been minimised as far as is possible, but some loss is unavoidable. Negative significant residual impacts as a results of the Proposed Development include a small area of loss of relatively young semi-natural and plantation woodland. However off site compensation for woodland loss through the combined Biodiversity Net Gain Assessment will ensure at least 10% Biodiversity Net Gain will be achieved across the Red Bank Neighbourhood development (Application 4). Negative significant effects associated with the impact on scattered trees, bat foraging/commuting, breeding birds and the River Irk are all adequately mitigated for and become not significant and with respect to the River Irk change to a positive significant effect in the short to medium term. Enhancement of retained woodland blocks, both semi-natural and plantation, also generate a positive significant residual effect.

## Assessment of Cumulative Effects and their Significance

6.193 The Cumulative Impact Assessment (CIA) is presented as three scenarios. This is to ensure that the assessment is as robust as possible. The scenarios to be considered are as follows:

- Scenario 3a - Assessment of the cumulative ecological impacts relating to the Proposed Development plus ecological impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative ecological impacts relating to the Proposed Development, plus ecological impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
- Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 1 (Enabling works works), 3 (Flood alleviation works) and 4 (Red Bank built development), the wider SRF, and the agreed cumulative sites.

6.194 In Scenario 3a the cumulative sites include for those approved projects within 1km of the Site considered as having potential for cumulative ecological impact with the Proposed Development. This is the typical approach to CIA undertaken for an EIA. The proposed sites have been identified by Avison Young from MCC's and SCC's planning portal, as applicable, and agreed with MCC as part of the EIA Scoping process. [

6.195 Scenario 3b considers the cumulative ecological impacts of the Proposed Development, Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development), and all of the relevant cumulative sites.

This ensures that all potential impacts of the Northern Gateway SRF are considered as part of this EIA. Wherever possible, definitive and fixed information relating to each application has been used, despite the applications progressing at different rates. Where definitive information is not available, a maximum, upper quantum and / or worst-case position has been agreed between the consultant team and regulatory authority. This will ensure that the CIA presented assesses the absolute worst case and is as robust as possible.

6.196 Scenario 3c ensures that the potential impacts of the wider SRF are considered, acknowledging that the applications are only the first phase. Assumptions will be based on the detail included in the SRF.

*Table 6.8: Cumulative Sites*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| *Assessment 3a - proposed development plus ecological impacts associated with agreed cumulative sites* | | | | | | |
| 1 | 129393/VO/2021 | 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 | Approved Jun 2021 | 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 0.61ha 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 as a result of the development. No bat roosts were identified during the nocturnal roost survey. Mitigation for the loss of available roosting habitat will be implemented |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | 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 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 Development. |
| 2 | 127971/FO/2020 | Erection of a 6-storey building to form 90 residential apartments (Use Class C3a) following demolition of existing | 950m east | Approved May 2021 | Scoped out | The assessment concluded that there will be no adverse effects on any designated sites within range of the Site, including |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | structures with associated access, car parking, amenity space, landscaping and other associated works | | | | 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 as a result of 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 Development. |
| 3 | 128248/FO/2020 | Erection of 9 buildings ranging from 8 to 34 stores in height to form 1202 residential apartments (Use Class C3a) and ground floor commercial uses (Use | 150m south | Approved June 2021 | 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– |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | 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 | | | | 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 pipistrelle hibernation and common pipistrelle day roost. Disturbance/destruction to these roosts will be licenced 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 Development. |
| 4 | 116366/FO/2017 | Erection of four residential buildings (22 storey building, 17 storey building, 40 | 150m south | Approved | Scoped | The ecological appraisal concluded that there will be no adverse effects on any |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | 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 | | Aug 2017<br><br>Under construction | out | 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 Development. |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<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, including Rochdale Canal SBI: Scott's Lane to Ducie Street Basin and Ashton Canal (West) SBI. The Site is dominated by hardstanding with three buildings. All buildings to be demolished were found to offer 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 |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | | | | | result in a cumulative effect on ecology when considered alongside the Proposed Development. |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 | 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 effects on any receptors were identified in the assessment.<br>It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development. |
| 7 | 124973/FO/2019 | 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 | 350m south | Approved Feb 2016 | 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 |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | pedestrian route between Angel Street and Miller Street. \| Land Bounded By Co-op Headquarters Miller Street And Angel Street Manchester | | | | vegetation clearance. Biodiversity enhancement measures detailed including bat and bird boxes.<br>No residual significant effects on any receptors were identified in the assessment.<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 Development. |
| 8 | 111777/FO/2016 /C1 | 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 | 250m south east | Approved Sep 2016<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. No bat roosting potential habitat was identified within the Site. The surrounding vegetation was identified as offering low value for foraging and commuting bats. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process.<br><br>It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | Development. |
| 9 | 121375/FO/2018 | 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. | 840m south | Approved Oct 2020 | 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 Development. |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | 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 |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | | | | | 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 Development. |
| 11 | 20/76134/FUL | 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 | 1000m south west | Approved Feb 2020 | 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 |
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| | | | | | | 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 Development. |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br><br>Under construction | Scoped out | The ecology briefing note concluded that there will be no adverse effects on any designated sites within range of the Site, including River Irwell SBI and Ashton Canal (West) SBI. The Site consisted of predominantly hardstanding, small areas of young trees and scrub and therefore of low ecological value. No invasive plant species were identified. The Site was found to offer some nesting habitat for black redstart however no suitable foraging habitat was found on site or nearby and therefore considered unlikely to be using the Site. A brick vaulted tunnel complex was considered to have moderate bat roosting potential and following surveys a single non-breeding common pipistrelle bat roost was identified. Disturbance/destruction of this roost will be licenced and appropriately mitigated. Due to the low status of the roost mitigation in the form of the provision of bat boxes was proposed as adequate |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | | | | | mitigation.<br><br>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 Development. |
| 13 | 19/74465/HYBEIA | 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; | 960m south west | Validated Nov 2019 | 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 |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | 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 | | | | anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development. |
| 14 | 126944/FO/2020 | 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 | 140m south east | Approved Sep 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 Development. |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential | 145m south | Approved October | Scoped | The ecological assessment concluded that there will be no adverse effects on any |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | east | 2017 | out | designated sites within range of the Site. The Site consists of hardstanding, four buildings and a linear strip of leylandii trees offering little ecological value. The Site offers negligible potential for roosting bats and foraging habitat is of low value. RAMS measures proposed for bats and birds during demolition and 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 Development. |
| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 | 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 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 |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | demolition of existing buildings and structures | | | | 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 Development. |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | 635m south west | Approved June 2018 | Scoped out | The ecological appraisal concluded that there will be no adverse effects on any designated sites within range of the Site. Walls within the Site were identified as offering low potential for roosting bats. Records of black redstart were obtained from the wider area, and the Site offers suitable habitat. The invasive plant species, Japanese knotweed and Cotoneaster species were identified within the Site. 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 |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development. |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | Scoped out | The ecological appraisal concluded that there will be no adverse effects on any designated sites within range of the Site. The Site consists of bare ground, with small areas of ephemeral/short perennial species. The buildings on site were assessed as offering negligible potential for roosting bats. 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 standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development. |
| 19 | 124888/FO/2019 | 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, | 665m south | Approved January 2020<br><br>Under | 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 |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | cycle storage, an internal landscaped courtyard and improvements to the adjacent footways | | Construction | | 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 Development. |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | 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.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | | | | | cumulative effect on ecology when considered alongside the Proposed Development. |
| *Assessment 3b- proposed development plus ecological impacts associated with agreed cumulative sites plus Applications 1, 3 and 4* | | | | | | |
| 1 | 129393/VO/2021 | 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 | Approved Jun 2021 | Scoped out | Loss 0.61ha of higher quality semi-natural woodland would result from development of the Site.<br><br>No effects on semi-natural woodland are anticipated as a result of Applications 3 or 4. Applications 1 and 2 have certain loss of semi-natural woodland. 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>The woodland within the cumulative site and woodland to be lost within Application 1 and 2 are not intrinsically connected. No cumulative impacts on commuting/foraging bats are anticipated.<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 |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | | | | | considered alongside the Proposed Development and Applications 1, 3 and 4. |
| 2 | 127971/FO/2020 | 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 | Scoped out | 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 Development and Applications 1, 3 and 4. |
| 3 | 128248/FO/2020 | Erection of 9 buildings ranging from 8 to 34 stores 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 | 150m south | Approved June 2021 | Scoped out | Two bat roosts were identified within brick archways; common pipistrelle hibernation and common pipistrelle day roost. Disturbance/destruction to these roosts will be licenced and appropriately mitigated.<br><br>Application 4 would result in the direct loss of two confirmed common pipistrelle day roost. Disturbance/destruction to these roosts will be licenced and appropriately mitigated. The additional loss of two roosts of a common species of low conservation value would not be large enough to change the significance of effect for this feature.<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 |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | | | | | Development and Applications 1, 3 and 4. |
| 4 | 116366/FO/2017 | 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 | 150m south | Approved Aug 2017<br><br>Under construction | Scoped out | It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development and Applications 1, 3 and 4. |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<br><br>Under construction | Scoped out | It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development and Applications 1, 3 and 4. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | \| Land Bounded By Thompson Street / Mason Street / Bendix Street And Rochdale Road Manchester | | | | |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 | Scoped out | It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development and Applications 1, 3 and 4. |
| 7 | 124973/FO/2019 | 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 | 350m south | Approved Feb 2016 | Scoped out | 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 Development and Applications 1, 3 and 4. |
| 8 | 111777/FO/2016 /C1 | 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 | 250m south east | Approved Sep 2016<br><br>Under | Scoped out | It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development and Applications 1, 3 and 4. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | 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 | | construction | | |
| 9 | 121375/FO/2018 | 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. | 840m south | Approved Oct 2020 | Scoped out | 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 Development and Applications 1, 3 and 4. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | Approved Oct 2018<br><br>Under construction | Scoped out | 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 Development and Applications 1, 3 and 4. |
| 11 | 20/76134/FUL | 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 | 1000m south west | Approved Feb 2020 | Scoped out | 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 Development and Applications 1, 3 and 4. |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br><br>Under construction | Scoped out | A brick vaulted tunnel complex was considered to have moderate bat roosting potential and following surveys a single non-breeding common pipistrelle bat roost was identified. Disturbance/destruction of this roost will be licenced and appropriately mitigated.<br><br>Application 4 would result in the direct loss of two confirmed common pipistrelle day roost. Disturbance/destruction to these roosts will be licenced and appropriately mitigated. The additional loss of two roosts of a common species of low conservation value would not be large enough to change the significance of effect for this feature. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | | | | | 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 Development and Application 1, 3, and 4. |
| 13 | 19/74465/HYBEIA | 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 | 960m south west | Validated Nov 2019 | Scoped out | 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 Development and Applications 1, 3 and 4. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | Gravel Lane M3 7BN | | | | |
| 14 | 126944/FO/2020 | 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 | 140m south east | Approved Sep 2020<br><br>Under Construction | Scoped out | 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 Development and Applications 1, 3 and 4. |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | 145m south east | Approved October 2017 | Scoped out | 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 Development and Applications 1, 3 and 4. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 | Scoped out | 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 Development and Application 1, 3 & 4. |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | 635m south west | Approved June 2018 | Scoped out | 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 Development and Applications 1, 3 and 4. |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | Scoped out | 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 Development and Applications 1, 3 and 4. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | landscaping, with supporting infrastructure and associated works following demolition of existing building | | | | |
| 19 | 124888/FO/2019 | 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 | It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development and Applications 1, 3 and 4. |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | Scoped out | The chimney structure was found to support a day roost of small numbers of common pipistrelle bats. Disturbance/destruction of this roost will be licenced and appropriately mitigated.<br><br>Application 4 would result in the direct loss of two confirmed common pipistrelle day roost. Disturbance/destruction to these roosts will be licenced and appropriately mitigated. The additional loss of two roosts of a common species of low conservation value would not be large enough to change the significance of effect for this feature.<br><br>Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | | | | | cumulative effect on ecology when considered alongside the Proposed Development and Applications 1, 3 and 4. |
| *Assessment 3c- proposed development plus ecological impacts associated with agreed cumulative sites plus Applications 1, 3 and 4 and wider SRF* | | | | | | |
| 1 | 129393/VO/2021 | 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 | Approved Jun 2021 | Scoped out | Loss 0.61ha of higher quality semi-natural woodland would result from development of the Site.<br><br>No effects on semi-natural woodland are anticipated as a result of Applications 3 or 4. Applications 1 and 2 have certain loss of semi-natural woodland. It is anticipated there will be woodland losses in the wider SRF.<br><br>Timescales of loss are likely to overlap, and mitigation may not occur immediately, but this additional loss of woodland in the wider area is unlikely to be large enough to change the significance of effect for this feature.<br><br>The woodland within the cumulative site and woodland to be lost within Application 1 and 2 are not intrinsically connected. Woodland losses within the wider SRF may have intrinsic connectivity to the woodland on site, however commitments within the |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | | | | | Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated and is unlikely would not be large enough to change the significance of effect for commuting/foraging bats.<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 Development and Applications 1, 3, 4 and wider SRF. |
| 2 | 127971/FO/2020 | 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 | Scoped out | 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 Development and Applications 1, 3, 4 and wider SRF. |
| 3 | 128248/FO/2020 | Erection of 9 buildings ranging from 8 to 34 stores 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 | 150m south | Approved June 2021 | Scoped out | Two bat roosts were identified within brick archways; common pipistrelle hibernation and common pipistrelle day roost. Disturbance/destruction to these roosts will be licenced and appropriately mitigated.<br><br>Application 4 would result in the direct loss of two confirmed common pipistrelle day |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | following demolition of existing structures and buildings \| Land Bound By Gould Street, Williamson Street, Bromley Street And Bilbrook Street Manchester M4 4DD | | | | roost. Disturbance/destruction to these roosts will be licenced and appropriately mitigated. The additional loss of two roosts of a common species of low conservation value would not be large enough to change the significance of effect for this feature.<br><br>It is possible there will be impacts on roosting bats within the wider SRF, however commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated and is unlikely would not be large enough to change the significance of effect for roosting bats.<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 Development and Applications 1, 3, 4 and wider SRF. |
| 4 | 116366/FO/2017 | 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 | 150m south | Approved Aug 2017<br><br>Under construction | Scoped out | It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development and Applications 1, 3, 4 and wider SRF. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | 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 | | | | |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<br><br>Under construction | Scoped out | It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development and Applications 1, 3, 4 and wider SRF. |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 | Scoped out | It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development and Applications 1, 3, 4 and |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | \| 25 Rochdale Road Manchester M4 4HT | | | | wider SRF. |
| 7 | 124973/FO/2019 | 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 | 350m south | Approved Feb 2016 | Scoped out | 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 Development and Applications 1, 3, 4 and wider SRF. |
| 8 | 111777/FO/2016 /C1 | 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 | 250m south east | Approved Sep 2016<br><br>Under construction | Scoped out | It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development and Applications 1, 3, 4 and wider SRF. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | associated works. \| New Victoria Land At Corporation Street Manchester M3 1NX | | | | |
| 9 | 121375/FO/2018 | 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. | 840m south | Approved Oct 2020 | Scoped out | 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 Development and Applications 1, 3, 4 and wider SRF. |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | Approved Oct 2018<br><br>Under construction | Scoped out | 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 Development and Applications 1, 3, 4 and wider SRF. |
| 11 | 20/76134/FUL | Erection of 16-storey building plus plant comprising a hotel (Use Class C1) with | 1000m | Approved | Scoped | Assuming the standard mitigation measures were implemented, it is not |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
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| | | ancillary bar and restaurant uses, access, servicing, landscaping and other associated works | south west | Feb 2020 | out | anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development and Applications 1, 3, 4 and wider SRF. |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br><br>Under construction | Scoped out | A brick vaulted tunnel complex was considered to have moderate bat roosting potential and following surveys a single non-breeding common pipistrelle bat roost was identified. Disturbance/destruction of this roost will be licenced and appropriately mitigated.<br><br>Application 4 would result in the direct loss of two confirmed common pipistrelle day roost. Disturbance/destruction to these roosts will be licenced and appropriately mitigated. The additional loss of two roosts of a common species of low conservation value would not be large enough to change the significance of effect for this feature.<br><br>It is possible there will be impacts on roosting bats within the wider SRF, however commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated and is unlikely would not be large enough to change the significance of effect for roosting bats. |

| 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 Development and Application 1, 3, 4 and wider SRF. |
| 13 | 19/74465/HYBEIA | 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 | 960m south west | Validated Nov 2019 | Scoped out | 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 Development and Application 1, 3, 4 and wider SRF. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | Gravel Lane M3 7BN | | | | |
| 14 | 126944/FO/2020 | 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 | 140m south east | Approved Sep 2020<br><br>Under Construction | Scoped out | 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 Development and Application 1, 3, 4 and wider SRF. |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | 145m south east | Approved October 2017 | Scoped out | 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 Development and Application 1, 3, 4 and wider SRF. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 | Scoped out | 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 Development and Application 1, 3, 4 and wider SRF. |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | 635m south west | Approved June 2018 | Scoped out | 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 Development and Application 1, 3, 4 and wider SRF. |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | Scoped out | 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 Development and Application 1, 3, 4 and |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | landscaping, with supporting infrastructure and associated works following demolition of existing building | | | | wider SRF. |
| 19 | 124888/FO/2019 | 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 | It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the Proposed Development and Application 1, 3, 4 and wider SRF. |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | Scoped out | The chimney structure was found to support a day roost of small numbers of common pipistrelle bats. Disturbance/destruction of this roost will be licenced and appropriately mitigated.<br><br>Application 4 would result in the direct loss of two confirmed common pipistrelle day roost. Disturbance/destruction to these roosts will be licenced and appropriately mitigated. The additional loss of two roosts of a common species of low conservation value would not be large enough to change the significance of effect for this feature.<br><br>It is possible there will be impacts on roosting bats within the wider SRF, however commitments within the |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated and is unlikely would not be large enough to change the significance of effect for roosting bats.<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 Development and Application 1, 3, 4 and wider SRF. |

### Likely Residual Cumulative Effects and their Significance

6.197 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 amenity 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 also limited.

6.198 Due to the heavily developed nature of the landscape, the potential for fragmentation or disturbance effects to accumulate is limited to only those sites in close proximity to this application and only where they contain features of relevance to the habitats and species within this application. Of the Sites scoped out of potentially having a cumulative effect with this application only one had semi-natural woodland (Site Ref 1) and it would result in the loss of 0.61ha. This area of loss would not change the significance of woodland loss currently identified in this chapter. The geographical separation would avoid a functional cumulative effect and the combined loss of woodland resource for the wider area would not increase the significance from Regional even if there was a temporal overlap of loss before mitigation (via BNG 10% gain commitment) was implemented.

# 7. Archaeology and Heritage

## Introduction

7.1 This chapter assesses the likely significant effects of the Proposed Development (which is part of a wider Developer Project, as explained below) on the historic environment. In particular it considers effects that may arise as a result of the Proposed Development on designated and non-designated heritage assets and potential below-ground archaeology which may survive at the Site.

7.2 The chapter describes the methods used to assess the likely significant effects, the baseline conditions currently existing at the Site, located immediately to the northeast of the Manchester city centre and Victoria Station (**Figure 7.1**), and in its surroundings, the potential direct and indirect effects of the Proposed Development arising from the construction and the operational phase, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It has been written by Arup/BAM.

7.3 As noted in Chapter 2: Approach, this ES assesses the Development Project, which is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in 4 planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – planning permission has been granted for the demolition of Creamline diary, tree and shrub clearance and construction of a temporary haul road.
- HIF Infrastructure Works (referred to hereafter as 'Application 2') – the subject of this application. Creation of development platforms, demolition of sections of existing River Wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diversions and provision of green infrastructure including creation of green links and first phase of the new City River Park.
- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within flood zone 3.
- Land under control of the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. As noted in Chapter 2: Approach, the entire Red Bank Neighbourhood within the SRF, including third party land, will deliver up to 5,500 new dwellings.

7.4 Whilst the Applicant has the detail of the early applications, the later parts of the Development Project (and particularly Application 4) are still being designed and the details are not yet available. Therefore, the approach

that has been taken in the ES is to break the Development Project into 3 elements, with each element being assessed in a level of detail commensurate with the detail that is available for the relevant part of the Development Project.

7.5 As such, a very full and detailed assessment is undertaken of Application 2, and then reasonable assumptions and judgements have informed and been made to assess Applications 1-4 together, and then Applications 1-4 and SRF.

# Planning Policy Context

### The Ancient Monuments and Archaeological Areas Act 1979 (AMAAA) (subsequently amended by the National Heritage Acts of 1983 and 2002)

7.6 The AMAAA provides for a schedule of monuments which are protected and sets out measures for their safeguarding and management. Scheduling is the selection of nationally important archaeological sites. Heritage assets which appear on the schedule are known as scheduled monuments. Scheduled monuments include a wide range of archaeological sites and are not always ancient or visible above ground. Scheduled monuments may include any deliberately created structures, features and remains which fulfil the criteria for scheduling set out by the Secretary of State for Digital, Culture, Media and Sport. Scheduled monument protection is offered not only to the known structures and remains of a site but also to the soil under and around them in order to protect any archaeological interest.

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

7.6.1.1 The Planning (Listed Buildings and Conservation Areas) Act 1990 is relevant to this HEBA, as the Proposed Development has the potential to have impacts on listed buildings in the study area. Section 1 defines a listed building as *"…a building which is for the time being included in a list compiled or approved by the Secretary of State under that section. For the purpose of the Act any object or structure fixed to the building, which, since on or before 1 July 1948, has formed part of the land and is comprised within the curtilage of the building is treated as part of the building*." 'Building' is defined as including any structure or erection and any part of a building. The key elements of this Act relevant to this assessment are outlined below:

- Section 66 places a responsibility upon the decision-maker in determining applications for planning permission for a scheme that affects a listed building or its setting to have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses; and
- Section 72 of the Act places a duty upon the decision maker in determining applications for planning permission within conservation areas to pay special attention to the desirability of preserving or enhancing the character or appearance of that area.

## National Planning Policy

### National Planning Policy Framework

7.7 National Planning Policy in England is set out in the National Planning Policy Framework (NPPF). The NPPF was published on 27th March 2012 and updated on 20th July 2021, replacing all previous Planning Policy Statements (MHCLG, 2021).

7.8 Non-designated heritage assets as well as those designated under the above legislation are given protection under the NPPF. Policies dealing with the conservation and enhancement of the historic environment are set out principally in Section 16 of the NPPF, which directs local planning authorities to set out "*a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats*" (MHCLG, 2021: 55). Also of relevance is the planning practice guidance for the NPPF provided by the Ministry of Housing, Communities and Local Government, National Planning Policy Guidance for the Historic Environment (https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment).

7.9 Key policies in the NPPF regarding the historic environment are summarised in Table 7.1.

*Table 7.1: Summary of key NPPF historic environment policies relevant to the Site*

| NPPF Paragraph | Summary |
|---|---|
| **Paragraph 189** | This paragraph highlights 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*." |
| **Paragraph 190** | Paragraph 190 states that plans should set out a positive strategy for the conservation and enjoyment of the historic environment. This paragraph also specifies that local planning authorities should take into account:<br><br>a) the desirability of sustaining and enhancing the significance of heritage assets, and putting them to viable uses consistent with their conservation;<br><br>b) the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;<br><br>c) the desirability of new development making a positive contribution to local character and distinctiveness; and<br><br>d) opportunities to draw on the contribution made by the historic environment to the character of a place. |
| **Paragraph 194** | This paragraph lays out the requirements for applicants to describe the significance of any heritage assets affected, including any contribution made by their setting. It further specifies requirements for sites which include or have the potential to include heritage assets with archaeological interest that the LPA should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation. |

| NPPF Paragraph | Summary |
|---|---|
| **Paragraph 195** | This paragraph outlines that LPA's should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) and which should be taken into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal. |
| **Paragraph 197** | In determining applications, local planning authorities should take account of:<br><br>(a) the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;<br><br>(b) the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and<br><br>(c) the desirability of new development making a positive contribution to local character and distinctiveness. |
| **Paragraph 199** | This paragraph outlines the approach when considering the impact of a proposed development on the significance of a designated heritage asset. It is specified that great weight should be given to the asset's conservation and that the more important the asset, the greater the weight should be, irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance. |
| **Paragraph 200** | Paragraph 200 considers harm, significance and designated assets. This paragraph states that any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification.<br><br>Substantial harm to or loss of:<br><br>a) grade II listed buildings, or grade II registered parks or gardens, should be exceptional;<br><br>b) assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional. |
| **Paragraph 201** | This paragraph sets out requirements where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset. This paragraph specifies that local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:<br><br>(a) the nature of the heritage asset prevents all reasonable uses of the Site; and<br><br>(b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and<br><br>(c) conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and |

| NPPF Paragraph | Summary |
|---|---|
| | (d) the harm or loss is outweighed by the benefit of bringing the Site back into use. |
| **Paragraph 202** | This paragraph highlights that where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use. |
| **Paragraph 203** | This paragraph details how the effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset. |
| **Paragraph 205** | This paragraph sets out requirements for developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted. |

### Local Planning Policy

7.10 The MCC Local Plan covers the location of the Site. Contained within the MCC Local Plan is its Core Strategy Development Plan Document that was adopted 11th July, 2012.

7.11 The Site is located immediately to the northeast of the city centre, on the boundary between the North Manchester and East Manchester Regeneration Areas. The 'Ancoats' district of the City Centre Fringe lies to the south and east. In paragraph 2.52 of the Core Strategy Development Plan Document, it is noted that "*A number of historic mill and warehouse buildings concentrated in the Ancoats area are now being brought back into use. Other elements of the area's industrial heritage, reflected in a number of other clusters of industrial activity and extensive railway lines and sidings, present an ongoing challenge*" (MCC, 2012: 17).

7.12 Key local planning policies relating to the historic environment are summarised in Table 7.2.

*Table 7.2: Summary of key local planning historic environment policies relevant to the Site*

| Policy reference | Summary |
|---|---|
| **Core Strategy Development Plan Document (2012)**<br><br>**Policy EC5** | This policy underlines that industrial heritage assets in the study area should be specifically considered in regards to development proposals. The policy states that the Council will promote development which…has regard to listed buildings and conservation areas including Ancoats and the industrial heritage of the area (MCC, 2012: 69). |
| **Core Strategy Development Plan** | This policy is specific to the City Centre and states that the design of new buildings will need to be of the highest standard in terms of appearance and function. The standards |

| Policy reference | Summary |
|---|---|
| **Document (2012)**<br><br>**Policy CC9** | 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.<br><br>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.<br><br>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 (MCC, 2012: 63). |
| **Core Strategy Development Plan Document (2012)**<br><br>**Policy EN3** | This policy highlights that, throughout the City, the Council will encourage development that complements and takes advantage of the distinct historic and heritage features of its districts and neighbourhoods, including those of the City Centre.<br><br>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.<br><br>Proposals which enable the re-use of heritage assets will be encouraged where they are considered consistent with the significance of the heritage asset" (MCC, 2012: 172). |
| **Core Strategy Development Plan Document (2012)**<br><br>**Policy DM1** | This policy on Development Management specifies that all new developments should follow the 'development principles' and accord with the design guidance set out in the supplementary planning documents.<br><br>This policy also states that all development should have regard to the specific issues of effects relating to archaeology or built heritage. |

## Other Relevant Policy, Standards and Guidance

7.13 Other relevant policy, standards and guidance documents include:

- CIfA (2021) Code of Conduct.
- Historic England (2015) Managing Significance in Decision-Taking in the Historic Environment. Historic Environment Good Practice Advice in Planning: 2. This guidance document gives an overview of how assessing the significance of heritage assets should be approached and the factors affecting the nature of impacts from development or industry.
- Historic England (2017) The Setting of Heritage Assets. Good Practice Advice in Planning Note 3 (Second Edition). This document lays out a five-stage approach to assessing the setting of heritage assets and the impacts of developments on them. Step 1 is to identify which heritage assets and their settings are affected;

Step 2 is to assess the degree to which these settings and views contribute to the significance of the heritage asset(s) or allow significance to be appreciated; Step 3 is to assess the effects of the Proposed Development on the significance, or on the ability to appreciate it; Step 4 is to explore ways to maximise enhancement or minimise harm; Step 5 is to make and document the decision and monitor the outcomes.

- English Heritage (2008) Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment. There is a revised version of this document currently being prepared but it still forms an important source of guidance on how the value and significance of heritage assets should be understood. Four particular categories of heritage value are identified: evidential, historical, aesthetic and communal.

## Assessment Methodology and Significance Criteria

7.14 The assessment scenarios in respect of the EIA for the Proposed Development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
    - Scenario 1a - Assessment of the archaeological and heritage impacts relating to the Proposed Development only.
    - Scenario 1b - Assessment of the archaeological and heritage impacts relating to the Proposed Development, plus archaeological and heritage impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
    - Scenario 1c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.
- Assessment Stage 2 - Completed Development and Operational Phase:
    - Scenario 2a - Assessment of the archaeological and heritage impacts relating to the Proposed Development only.
    - Scenario 2b Assessment of the archaeological and heritage impacts relating to the Proposed Development, plus archaeological and heritage impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
    - Assessment 2c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.

### Study Area

7.15 The study area was agreed with the planning authority at scoping and includes the Site and a surrounding study area extending 350m from the red line boundary. Within the study area all heritage assets, designated and non-designated, as listed by Historic England or identified by the Greater Manchester Historic Environment Records

(GMHER), have been mapped and included in a gazetteer as part of the Historic Environment Baseline Assessment (**Figures 7.1 to 7.5**).

### Survey and Data Sources

7.16 Baseline information has been collected using the following sources:

- A site walkover was conducted on 19th January 2022;
- Historic England's National Heritage List for England (NHLE);
- Non-designated heritage asset and historic archaeological investigations and discovery data held by the Greater Manchester Archaeological Advisory Service (GMAAS) and the GMHER;
- Historic Landscape Characterisation (HLC) data from the Greater Manchester Urban Historic Landscape Characterisation Project;
- Reports of past archaeological investigations from GMAAS and GMHER, and also held by the Archaeology Data Service (ADS);
- British Geological Survey (BGS) bedrock and superficial geology mapping;
- Historic maps and other archival sources held by Manchester City Archives;
- Historic Ordnance Survey data (Groundsure); and
- The Northwest Regional Research Framework (NWRRF, 2021) including the regional resource assessment and period summaries.

### Construction Phase

7.17 The methodology for undertaking the archaeology and built heritage construction effects assessment uses a significance-based approach following guidance, industry best practice and professional judgement. This approach measures the hierarchy of significance against the magnitude of impact to reach a conclusion regarding the effect.

7.18 Using the historic environment baseline data, designated and non-designated archaeology and built heritage assets within the Site or study area are identified along with their sensitivity to change, including both currently known heritage assets and the potential to encounter previously unknown archaeology at the Site.

### Operational Phase

7.19 The approach to the operational phase assessment for archaeology and built heritage follows the same significance-based approach as that outlined for the construction phase.

### Identification of Sensitive Receptors

7.20 Heritage assets that were deemed to be sensitive receptors were chosen based on two factors:

- Their location within the Proposed Development, which was extrapolated from baseline data
- The significance of the asset based on several defining values as set out by Historic England and CIfA in their guidance documents and described below.

### Defining the Value of Heritage Assets

7.21 The significance or value of a heritage asset is defined as *"The value of a heritage asset to this and future generations because of its heritage interest; that interest may be archaeological, architectural, artistic or historic"*[1]. Historic England defines 'significance' and 'heritage values' as being a collective term for the sum of all the heritage values attached to a place, be it a building, an archaeological site or a larger historic area such as a whole village or landscape.

7.22 Heritage assets can be designated or non-designated. Designated assets are so designated in accordance with national or international criteria and have statutory protection; conservation areas are a local authority designation, though determined through legislation. In assessing the significance of an asset, Historic England has outlined values which contribute to overall significance. These include archaeological, architectural, artistic and historic value[2]. Non-designated heritage assets may exhibit equivalent values to those which have been granted statutory protection.

7.23 Setting can also contribute to significance. Setting is not simply a visual consideration and specific guidance on the analysis of setting is set out by Historic England[3]. Buried archaeological remains may have a setting which contributes to their significance, for example a setting which can be appreciated in historic street or boundary patterns, in relation to their surrounding topography or other heritage assets or through the long-term continuity in the use of the land that surrounds them. The setting of built heritage assets includes the surroundings in which an asset may be experienced and may include the surrounding landscape or urban townscape and any significant views towards or from the heritage asset.

7.24 Taking these criteria into account, each identified baseline heritage asset has been assigned a level of significance in accordance with a five-point scale as shown in Table 7.3.

*Table 7.3: Definition of heritage asset value*

| Value | Rationale | Example asset class |
|---|---|---|
| **Very High** | Asset has significance for an outstanding level of archaeological, architectural, artistic and/or historic interest. | World Heritage Site |

[1] Ministry of Housing, Communities and Local Government. 2021. National Planning Policy Framework (NPPF) Annex 2: Glossary. [online]. Available at: https://www.gov.uk/guidance/national-planning-policy-framework/annex-2-glossary
[2] Historic England. 2008. Conservation Principles: Policies and Guidance for the Sustainable Management of the Historic Environment.
[3] Historic England. 2017. The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (2nd Edition).

| Value | Rationale | Example asset class |
|---|---|---|
| **High** | Asset has significance for a high level of archaeological, architectural, artistic and/or historic interest. | Scheduled monument.<br><br>Grade I, II* or II listed building or registered park and garden.<br><br>Non-designated archaeological assets of schedulable quality and importance. |
| **Medium** | Asset has significance for a moderate level of archaeological, architectural, artistic and/or historic interest. | Sites of high archaeological resource value as identified through consultation or research.<br><br>Regionally significant non-designated archaeological sites. |
| **Low** | Asset has significance for elements of archaeological, architectural, artistic or historic interest. | Locally significant non-designated archaeological sites or locally listed buildings. |
| **Negligible** | Assets identified as being of no archaeological, architectural, artistic or historic interest.<br><br>Due to the nature of the asset's form/condition/survival, cannot be considered as an asset in its own right. | Assets whose values are compromised by poor preservation or survival or of contextual associations to justify inclusion into a higher grade.<br><br>Non-extant Historic Environment Record (HER). |

### Characterisation of Effect

7.25 Impacts can be direct or indirect, and can be characterised in terms of timing, scale, duration, reversibility and the likelihood of the impact occurring. Impacts can be permanent or temporary and can be positive (beneficial) or negative (adverse).

7.26 Permanent impacts arising from the physical presence of the development, including the complete or partial removal of archaeological deposits, may give rise to construction effects. For example, archaeology may experience impacts due to the disturbance or removal of below ground deposits for the construction of infrastructure works which would remove known or potential below ground archaeological deposits.

7.27 The potential impacts arising from the construction of the proposed scheme have been described and assigned a value using a scale which ranges from no change to major and includes beneficial and adverse impacts. These are set out in

Table 7.4.

*Table 7.4: Magnitude of change to heritage assets*

| Magnitude of impact (change) | Summary rationale (adverse) | Summary rationale (beneficial) |
|---|---|---|
| **Major** | Change such that the significance of the heritage asset is totally altered or destroyed.<br><br>Comprehensive change to setting affecting significance, resulting in changes in our ability to understand and appreciate the resource and its historical context and setting. | Change such that an at-risk or otherwise degraded heritage asset and/or its setting is sympathetically restored and contribute to bringing into sustainable use with robust long-term management secured. |
| **Moderate** | Change such that the significance of the heritage asset is affected.<br><br>Changes such that the setting of the heritage asset is noticeably different, effecting significance resulting in changes in our ability to understand and appreciate the resource and its historical context and setting. | Appropriate stabilisation and/or enhancement of a heritage asset and/or its setting that better reveal the significance of the heritage asset or contribute to a long-term sustainable use or management regime. |
| **Minor** | Change such that the significance of the heritage asset is slightly affected.<br><br>Changes to the setting that have a slight impact on significance resulting in changes in our ability to understand and appreciate the resource and its historical context and setting. | Minor enhancements to a heritage asset and/or its setting that that better reveal its significance or contribute to sustainable use and management. |
| **Negligible** | Changes to the heritage asset that hardly affect significance.<br><br>Changes to the setting of an heritage asset that have little effect on significance and no real change in our ability to understand and appreciate the resource and its historical context and setting. | Minor alteration of a heritage asset which does not affect its significance in any discernible way.<br><br>Minor and short term or reversible change to setting which does not affect the significance of the heritage asset. |
| **No change** | The development does not affect the significance of the heritage asset.<br><br>Changes to the setting that do not affect the significance of the heritage asset or our appreciation of the heritage asset. | |

## Significance Criteria

7.28 The assessment of the level of overall significance of the effect, taking into consideration mitigation, is determined by cross-referencing the significance value of the asset (Table 7.3) and the magnitude of change (

Table 7.4). Professional judgment has been used in assessing significance of effects, allowing for judgments which are reasonable and balanced with respect to the outcomes of significance of effect, but which is not mechanistic.

7.29 Heritage assets with a very high value experiencing major impacts would experience the highest effect. The significance of effects uses a scale which ranges from neutral to major. Major or moderate effects are considered significant and therefore material or likely to be material in the decision-making process. The significance of effect is shown in Table 7.5.

*Table 7.5: Significance of Effect for heritage assets*

| | | Magnitude of change | | | | |
|---|---|---|---|---|---|---|
| | | **No Change** | **Negligible** | **Minor** | **Moderate** | **Major** |
| **Value** | **Very High** | Neutral | Minor | Moderate or major | Major | Major |
| | **High** | Neutral | Minor | Minor or moderate | Moderate or major | Major |
| | **Medium** | Neutral | Neutral or minor | Minor | Moderate | Moderate or major |
| | **Low** | Neutral | Neutral or minor | Neutral or minor | Minor | Minor or moderate |
| | **Negligible** | Neutral | Neutral | Neutral or minor | Neutral or minor | Minor |

## Assumptions/Limitations

7.30 GMHER data is continually updated as the results of new archaeological investigations and finds are included. The archaeological baseline is accurate at the time of compilation.

7.31 It is considered that the baseline data provides a reasonable indication of the archaeological heritage assets present within the Site and permits a reasonable assessment of the potential for encountering previously unknown below ground archaeological remains. However, the risk remains that as yet undetected and previously wholly unknown archaeological assets that were not identified within the archaeological baseline may be encountered. Nevertheless, this risk is considered remote, and the assessment is considered to be robust.

## Consultation

7.32 Consultation was undertaken with GMAAS to agree the scope and study area for the ES assessment and collect the GMHER data. GMAAS highlighted the Regional Research Framework and the need to incorporate opportunities to address relevant research framework questions in any assessment, especially those relating to the Industrial period in Manchester.

*Table 7.6: Consultation*

| Consultee | Date and Time | Comments | Actions |
|---|---|---|---|
| **GMAAS** | 2nd December 2021 | GMAAS agreed the scope and the study area for the ES assessment | GMHER data was collected using the agreed study area. |
| **GMAAS** | 2nd December 2021 | GMAAS highlighted the Regional Research Framework and the need to include relevant research framework questions. | Opportunities to address relevant research framework questions have been included in the baseline and assessment. |

# Baseline Conditions

7.33 This section presents a summary of the archaeology and built heritage baseline of the study area, based upon the Historic Environment Baseline Assessment (**Appendix 7.1**). The Historic Environment Baseline Assessment includes the detailed archaeological and built heritage baseline, the gazetteers of heritage assets, figures and the historic map regression for the study area. GMHER data is referenced throughout the baseline using the format (MGM(number)).

### General History and Development

7.34 The underlying bedrock geology of the Site and study area from west to east is sandstone of the Chester Formation, mudstone of the Manchester Marls formation and sandstone of the Collyhurst Sandstone Formation. Superficial deposits of Alluvium are recorded along the course of the River Irk at the northern end of the study area and are likely to follow the course of the River Irk through the Site. Alluvium is a silt and organic rich clay floodplain deposit which may contain lenses of silt, sand and peat, and has good potential to preserve palaeoenvironmental remains as well as organic archaeological remains, if present. Superficial deposits of Devensian till partly overlie the Site, on either side (east and west) of the River Irk. Devensian till has limited potential to contain palaeolithic material. Both Alluvium and Devensian till deposits have palaeoenvironmental potential to contain evidence of past climate and environment at the Site.

7.35 Made ground across the Site may include archaeological structural remains relating to the post-medieval and industrial period. However, later industrial developments across the Site are likely to have significantly truncated archaeological deposits relating to earlier periods.

### Prehistoric

7.36 Early prehistoric hunters and gatherers of the Palaeolithic and Mesolithic were largely nomadic, collecting resources across a wide environment and leaving mainly ephemeral traces of their passage. Later prehistoric populations of the Neolithic, Bronze and Iron Age periods were more settled with the development of farming and pastoralism. Along with evidence of past human settlement and subsistence activities, archaeological remains from these later prehistoric periods may include monumental landscapes such as henges, and burial sites such as barrows and cemeteries.

7.37 There is limited evidence of prehistoric human activity or settlement within the study area. There are records of a sizeable cave being observed along the River Irk potentially within the Site boundary around the turn of the 20th century (MGM11114), which was speculated to have been utilised during Prehistory, but no further archaeological evidence has been found to support this assertion. Isolated findspots of stone tools dating to the Bronze Age have been recorded within the study area, including a stone implement found in 1899 during excavations along the southern bank of the Irk (MGM951) and a stone hammer described in the GMHER record as being found '3ft from the surface in clay' opposite Queen's Park (MGM1935).

7.38 There is low potential to encounter archaeological remains dating to the prehistoric period within the Site.

7.39 There is potential for paleoenvironmental data to be present within the Site boundary due to its proximity to the River Irk and evidence of geoarchaeological deposits identified in historic borehole data.

### Roman

7.40 The Site and study area lies approximately 2.5 km to the north of the known areas of Roman occupation of Manchester, centred around the confluence of the Rivers Medlock and Irwell. Roman GMHER records within the study area are limited to chance finds, including a stone quern and coin found in 1904 (MGM1767) as well as a cache of Roman coins found in the riverbed of the River Irk between Scotland and Ducie Bridges in 1899-1900 during works for diverting the river (MGM1928).

7.41 As a result, there is overall low potential for Roman evidence to be present within the Site boundary with the exception of isolated finds of low significance.

### Early Medieval

7.42 Evidence of early medieval settlement within central Manchester is limited, although a fortified settlement is thought to have been present at this time and may have been located near the cathedral roughly 800m

southwest of the Site (Millet et al, 2010: 5). Early Medieval development may have spanned both sides of the River Irk, close to the confluence with the River Irwell, likely connected with a wooden bridge.

7.43 The sole GMHER record dating to this period from the study area is a funerary urn decorated with a motif thought to date to the 6th century, which was found in 1850 just to the north of Red Bank (MGM1768).

7.44 There is low potential for archaeological remains from the Early Medieval period within the Site.

### Medieval

7.45 The southern and eastern extent of Medieval occupation of Manchester is thought to have been bounded by a watercourse known as the Hanging Ditch while the northern extent has been extrapolated to include the southwestern corner of the study area, with the northern boundary roughly coinciding with the River Irk in an area currently occupied by Manchester Victoria station (MGM17985) (Morris, 1983: 36; Millet et al, 2010: 6; UMAU, 1997: 13).

7.46 A road known as Long Millgate was constructed along the southern bank of the River Irk in order to connect the town centre with riverside mills and burgages (MGM17942) (Farrer and Brownbill, 1911: 174). There was also at least one bridge recorded during this period at Hunt's Bank, following the route of the earlier Roman Road roughly 400m southwest of the Site.

7.47 A majority of the study area would have been located on the north-eastern periphery of settlement in Manchester during the Medieval period, likely set amidst open or agricultural land. However, documentary evidence indicates that the River Irk was being exploited for industrial purposes at this time suggesting that evidence of early milling activity may be present on the Site. At the turn of the 14th century, fullers, dyers, tanners, and various traders are already recorded as working in the town (Farrer and Brownbill, 1911: 174). A number of mills also existed along the River Irk at this time:

- A fulling mill approximately 230m southwest of the Site, recorded in the Manor Survey of 1320-1322 (MGM11065);
- Another fulling mill known as Upper Mill approximately 135m southwest of the Site (MGM11064), which was also recorded in 1320-1322 and continued to operate through the 19th century; and
- A mill built by 1510 approximately 325m southwest of the Site (MGM11063), which became known as the Lower Mill.

7.48 Other industry present within the study area during this period includes quarrying, documentary evidence for which has been attested to at Collyhurst sandstone quarry (MGM1084), located approximately 90m northwest of the Site.

7.49 There is low potential to encounter archaeological remains from the Medieval period at the Site.

### Post medieval

7.50 At least three estates were located in the study area during this period, including a possible demesne farm known as Peel's Farm (MGM425), located approximately 200m northwest of the Site, and another known as Mile House (MGM11096), located approximately 300m northwest of the Site, which was present from the early 18th century through the 20th century. The most notable, however, was Collyhurst Hall (MGM1738, MGM1739), a possible moated manor house located approximately 100m east of the Site that was present by the mid-17th century though subsequently rebuilt in the Georgian period.

7.51 Industrial activity continued along the banks of the River Irk during the early Post Medieval period. Lease records from the mid-17th century show a water corn mill known as Travis Mill being operated in Cheetham (MGM11058), which was located within the central extent of the Site boundary. This mill continued in use until the early 20th century.

7.52 There is low potential to encounter archaeological remains from the Post Medieval period at the Site.

### Industrial

7.53 Technological advancements in both industrial equipment and transportation during the late 18th century led to the transition of weaving into a factory-based trade, with notable mills being constructed in the city in the early 1780s including Arkwright's Mill at Shudehill (MGM11068, MGM18397), approximately 300m south of the Site, and William Edge's mill along the River Irk, just outside the south-western boundary of the study area. The demands of these led to an exponential increase in the city's population: from 40,000 in the 1780s to 142,000 by 1831 (Briggs, 1993: 88; Miller et al, 2010: 9).

7.54 Increased urbanisation is already visible within the study area by the turn of the 19th century as shown on Green's map from 1794, with open areas in central Manchester being almost fully built over including along Long Millgate on the southern bank of the River Irk. North of the river is shown as being slower to urbanise, though a solid ribbon of development is visible on the eastern side of Red Bank. The Grade II listed Union Bridge (MGM12800) and Scotland Bridge (MGM16895) have been constructed by this time. Areas north of the river are shown as being occupied by a number of domestic properties fronting onto Red Bank with associated rear gardens and small areas of open land, some of which border or are within the Site boundary (MGM17196, MGM17188, MGM17191, MGM17189, MGM17192, MGM17195). The Site itself is depicted as largely open land on Green's map, with the exception of Travis Isle Mill, a small building fronting onto present-day Roger Street, Little Green Brewery on the western bank of the River Irk, and four unlabelled buildings located between the southern bank of the river and Portland Street (present-day Dantzic Street).

7.55 Industrialisation of the Irk Valley began in earnest, however, during the first decades of the 19th century with the area around the Site being a focus for textile finishing (including dyeing, bleaching, and printing) powered by the water of the nearby river and manmade leats. The high volume of demand necessitated the construction of dedicated dyeworks complexes, which typically consisted of bleaching and dying crofts housed in long narrow

one- or two-storey buildings or large free-standing vats housed in tall single-storey buildings (Nevell, 2008: 43). One such works was located within the central part of the Site known as Collyhurst Dyeworks (MGM10846). A number of other dye works are recorded in the study area, immediately neighbouring the Site and further afield (MGM10849, MGM10838, MGM10842, MGM10843).

7.56 Over the course of the 18th and 19th centuries, the Site was occupied by a number of different industrial buildings, particularly concentrated in the south-western corner, including:

- Clough mill, logwood mill and dye works (MHM10851);
- Little Green Brewery (MGM11058);
- An iron and red liquor Works (MGM17185);
- Two sets of workers' housing (MGM17445, MGM17449);
- A Plaster of Paris works (MGM17447);
- Various iterations of rope manufacturers (MGM17448);
- An oil and tallow factory (MGM17450);
- Union Bridge Iron Works (MGM17194);
- And an L-shaped building of probable but uncertain industrial function visible on Green's map (MGM17195).

7.57 By the time of the 1891 OS map, the Red Bank plateau has been created out of made ground and expanded, with much of the northern-central part of the Site now occupied by a large carriage shed connected to railways proceeding west along the Site boundary (MGM11014). Travis Isle Mill and Travis Isle House are still extant and neighboured to the south by a school and St Catherine's church. The south-western corner remains occupied by industrial buildings.

7.58 There is high potential to encounter archaeological remains from the Industrial period at the Site, especially related to the various industrial factories and works within the Site, and the remains of the railway.

### Modern

7.59 Manchester in the 20th century continued its urban expansion. The Site area remained strongly industrial in nature. Little change to the Site is shown on the 1909 OS map.

7.60 The 1923 OS map shows the expansion of the railway line and sidings of the Lancashire and Yorkshire Railway (L&YR) Manchester, Whitefield and Radcliffe Line across most of the central part of the Site as well as the addition of terraced housing east of Travis Isle Mill and a gasworks along the western and southern boundaries.

7.61 The industrial nature of the Site and its close proximity to Victoria Station resulted in the Site being a target for bombing during WWII, with at least nine recorded bomb strikes and the potential for further unrecorded strikes within the Site boundary.

7.62 The only notable change on the 1956 OS map is the demolition of Travis Isle Mill.

7.63 Historic aerial photography indicates the majority of the Site has experienced demolition and land clearance by 2000, including the removal of the railway lines, sidings and carriage shed.

7.64 There is high potential to encounter below-ground remains relating to the 20th century at the Site.

## Baseline Survey Information

### Designated heritage assets

7.65 There one designated heritage asset within the Site, the Grade II listed Union Bridge (HE List No: 1255163). Union Bridge is a small public road bridge over River Irk located at the southern boundary of the Site. Union Bridge is shown on the 1794 map. The current bridge is built of sandstone ashlar, consisting of a single low segmental arch with plain voussoirs and no parapet, but iron railings to south side. The bridge is no longer open to traffic.

7.66 There are 25 further designated heritage assets located within the study area which are all high value, including:

- Shudehill Conservation Area (approximately 340m south of the Site)
- Queen's Park Grade II Registered Park and Garden (approximately 100m north of the roadworks extension redline boundary and 1km north of the main site area)
- 23 listed buildings, including one Grade II* listed building, the Manchester Jewish Museum (1208472), and 22 Grade II listed buildings

7.67 A small portion of Shudehill Conservation Area falls within the southernmost part of the study area, 340m to the south of the Site, with the main part of the conservation area centred on Shudehill and Withy Grove which rise up the incline of one of the Irwell river terraces. Up to the mid-18th century, the Shudehill area had been semi-rural with limited residential development but by the end of the century the whole of Shudehill had been developed including a number of commercial properties. The conservation area can be broadly divided into 20th century structures to the west and older, small-scale fine-grained development with narrow frontages to the east. The large scale property developed along Corporation Street includes the headquarters of the Co-operative Wholesale Society and the national newspaper publisher buildings on the corner of Withy Grove and Corporation Street. Due to the topography of the Site and the wider built environment this asset is not visible from the Site.

7.68 The Grade II Registered Park & Garden of Queen's Park (MGM1763) is located 150m to the northwest of the Rochdale Road extension of the Site boundary and over 1km north from the main area of the Site. Queen's Park is an early public park designed by Joshua Major in the grounds of Hendham Hall and opened in 1846. Major's controversial design was altered in the 1850s and 1860s by John Shaw. Together with Peel Park, Salford and Philips Park, Queen's Park is one of the first public parks in a major industrial city and is an important site in the history of public parks. Queen's Park has architectural, artistic and historic interest. Its urban and riverside setting makes a positive contribution to its significance as an urban public park.

7.69 The Grade II* listed Manchester Jewish Museum (1208472) is located at 190 Cheetham Hill Road over 340m west of the Site. The museum was originally built as a Spanish and Portuguese Synagogue in 1889 by Edward Salomons. The Manchester Jewish Museum is of red brick with sandstone dressings and slate roofs in a T-shaped plan. The façade includes elaborate Spanish and Saracenic motifs. The Manchester Jewish Museum has architectural, artistic and historic interest. The synagogue is slightly separated from its dense urban roadside setting by low redbrick walls which makes a positive contribution to the significance of this asset.

7.70 There are a further seven Grade II listed buildings located along Cheetham Hill Road 200m to the west of the Site:

- Knowsley Hotel (1197784), a late 19th century three storey hotel which is now a public house and shop.
- The Roman Catholic Church of St Chad and Presbytery (1208542) and the Churchyard Walls (1197786). The Church and walls were built in 1846 by Weightman and Hadfield and made of coursed sandstone rubble with slate roofs. The enclosed churchyard setting makes a positive contribution to the Church.
- The former Cheetham Town Hall (1208440) and Cheetham Town Hall Annexe (1283065). The former Cheetham Town Hall was built in the Italianate style in 1853 by T. Bird of red brick in Flemish bond, with sandstone dressings and slate roofs. The former Cheetham Town Hall Annexe was originally built as the Poor Law Union office in 1861 and is also in the Italianate style built of red brick in Flemish bond with sandstone dressings and hipped slate roofs.
- The Former Free Library (1293124) was a public library but is now derelict following fire damage. The library is built in the Italianate style of yellow brick with gritstone dressings although it is now roofless. The date on the frieze indicates it was constructed in 1876.
- Former Synagogue (1208420). This building was originally a Methodist chapel, subsequently used as a synagogue and now a retail warehouse. The two storey building was originally built around 1840 in the Classical style of sandstone ashlar.

7.71 These Grade II listed heritage assets are listed for their architectural, artistic and historic interest. They share a dense urban roadside setting along Cheetham Hill Road, which makes a positive contribution to their shared urban historic high street character.

7.72 There are thirteen Grade II listed buildings which are located to the south of and separated from the Site by the railway line and viaduct to the south of the Site area. These built heritage assets lie between 150 m and 350 m south of the Site.

7.73 This includes the group of 20th century Grade II listed buildings associated with the historic headquarters location of the Cooperative Society, 340m to the south of the Site. The group includes Holyoake House (1291969), the Cooperative Wholesale Society Building (1197765), the Cooperative Society Building (1247472), New Century House and attached Conference Hall (1255052) and the Cooperative Insurance Society Building (1270494). Holyoake House dates from 1911, while the Cooperative Wholesale Society Building was built in 1928 and the

Cooperative Society Building dates to 1937; these early 20th century office buildings range in height from two to five storeys. New Century House and the Cooperative Insurance Society Building however both date from 1959 and include towers of 14 and 26 storeys. These buildings employed state of the art construction techniques and features for their time period, including being some of the earliest large commercial buildings in England to be air-conditioned. Together the buildings share a strong visual, contextual and stylistic relationship with one another and form impressive skyline features within Manchester city centre.

7.74 Additional Grade II listed buildings south of the railway line and viaduct to the south of the Site include:

- Parkers Hotel (1208963) is located on an island site between Corporation Street and the railway, these former commercial offices (now a hotel) were built between 1900 to 1910 of red brick and Portland stone with a rear range of sandstone ashlar and a slate roof.
- Ashton House (1197764) was built as a Women's hostel in 1910 by the City Architect H R Price. The four storey building is in the Arts and Crafts style built of red brick and common brick, with dressings of buff and white terracotta and a slate roof.
- Charter Street Mission (formerly Charter Street Ragged School and Working Girls' Home) (1461979) was built as a working girls' home, ragged school and mission hall in 1892 and 1900 by Maxwell and Tuke. Charter Street Mission is a three-and-four-storey courtyard-plan building of red brick with slate roofs. The Charter Street Mission is a relatively early example of social welfare provision of girls' accommodation, unusually combined with a ragged school.
- Sharp Street Ragged School (1254650) was originally a Ragged School and now mission, Sunday School and Boys' Club and still occupied by the charitable institution which founded it. The Sharp Street Ragged School was established in 1853 and rebuilt in 1869. The two storey building is of red brick with a slate roof.
- Warehouse on the West Corner of Junction with Simpson Street (1270681) is a small four storey warehouse now in use as a handbag workshop. The warehouse is probably of mid-19th century date and slightly altered, built of brick with a corrugated sheet roof.
- Cooperative Press (1291013) is a late 19th century industrial building or warehouse with alteration of c.1905. The four storey warehouse is of brown brick with red brick dressings, and red brick with yellow terracotta dressings.
- Marble Arch Inn (1247604) is a public house dated 1888 in the gable to Gould Street. The two storey building is of buff brick with polished pink granite and a hipped slate roof. The interior retains original decorative features including much faience work.
- Roman Catholic Church of St Patrick (1283012) which was built in 1936 by H. Greenhalgh. The church is in a Romanesque style with red brick with white stone dressings and a slate roof and includes a nave with north and south aisles, west tower and an apsidal sanctuary. The church directly faces onto Livesey Street and has an urban street setting.

7.75 These Grade II listed heritage assets are listed for their architectural, artistic and historic interest. They share a dense urban townscape setting which makes a positive contribution to their significance.

### Non-designated heritage assets

7.76 There are 98 records of non-designated heritage assets within the Site and study area, ranging in date from prehistory to the modern period. However, later industrial and 20th century developments across the Site are likely to have significantly truncated archaeological deposits relating to earlier periods. The majority of non-designated HER data within the Site relate to the industrial developments at the Site such as mills and factories from the Post Medieval, Industrial and Modern periods.

7.77 Non-designated archaeological remains which may be encountered at the Site include:

- Palaeoenvironmental evidence: Superficial geological deposits of both Alluvium and Devensian till are found within the Site. These deposits have geoarchaeological and palaeoenvironmental potential to contain evidence of past climate and environment at the Site.
- Archaeological remains from the Prehistoric, Roman and Early Medieval periods: There is limited evidence for activity from the Prehistoric, Roman and Early Medieval periods within the Site and study area. In addition, later industrial developments across the Site are likely to have significantly truncated archaeological deposits relating to Prehistoric, Roman and Early Medieval periods.
- Archaeological remains from the Medieval and Post-Medieval periods: There is limited evidence for activity from the Medieval and Post-Medieval period within the Site. Archaeological deposits from these periods, if encountered, are most likely to relate to industrial uses of the River Irk, particularly the sites of early mills and burgages. However, later industrial developments across the Site are likely to have significantly truncated archaeological deposits relating to the Medieval and Post-Medieval periods.
- The site of Travis Mill (MGM11058): A mill has been present at this location from at least the mid-17th century (and possibly earlier) and cartographic regression shows it remained extant until the mid-20th century. There is high potential for related evidence to be present, particularly remains of structures and manmade watercourses visible on OS mapping. As a pre-Industrial and also long-lasting example of milling in the Greater Manchester area, such evidence would be of evidential and historic value, as they would contribute to the research goals outlined in Ind04 and Ind58 of the Northwest Regional Research Framework (NWRRF) (NWRRF, 2022). The significance of this evidence would likely depend on the nature and extent of any surviving archaeological deposits related to the Travis Mill but could be of low to medium significance.
- Structural remains from the Industrial Period: Aside from the long-lived mill at Travis Mill, the Site has potential to contain archaeological remains from the many industrial developments at the Site during the 18th, 19th and 20th centuries, such as mills, factories and railway related infrastructure. There may also be surviving archaeological evidence of St Catherine's Church or the neighbouring school. The significance of these remains would be of low significance.

7.78 Non-designated built heritage remains which are located within the Site include the Lowry Footbridge, the River Irk walls and the northern retaining walls:

- The Lowry Footbridge: This heritage asset consists of a viaduct and footbridge which first appears on the 1891 OS map spanning the railway across the western boundary of the Site. The footbridge is constructed of dark grey brick bonded with a hard, concrete like mortar. It comprises four large arches and buttresses at its southern and northern extents. The bridge remains accessible and is used by the public to connect Collyhurst with Cheatham via a stairway at its southern extent. Views from the footbridge are relatively unobstructed due to the lack of modern development on the Site and provide clear viewpoints of central Manchester to the southwest.
- River Irk walls: Various phases of river walls are visible alongside both sides of the River Irk. These represent different flood mitigation measures that have been implemented over time as well as structures possibly associated with former riverside activities. The river wall materials and construction dates are variable with some extents of the walls concrete-built and clearly of a Modern date, while other stretches are constructed using a mix of red brick, rusticated stone, and flagstones and are most likely of an Industrial to Modern date. Subsequent redevelopment of the Site has disconnected these riverine features from their historic industrial origins. The condition of the river walls varies, though broadly the historic Industrial era walls are generally in moderate to poor condition.
- Northern retaining walls: Slopes in the north-western extent of the Site are reinforced by a series of brick masonry retaining walls of varying date. The eastern end of the retaining walls consist of historic red brick walls which are likely of an Industrial date while farther to the west (a stretch known as the Creamline Dairy) is a dark grey brick wall of a Modern date. It was unclear during the Site visit if the Industrial and Modern walls were keyed together or abutted one another. A secondary retaining wall is also present that separates the car park area in the southwestern corner of the Site from the higher elevation of the surrounding plateau. This wall is similarly constructed of a dark grey brick and was likely built at the same time as the Creamline Dairy wall. This second wall is visible on the 1909 OS map. The fabric of the historic red brick walls was observed to be in moderate condition, showing evidence of damage and decay with much of the mortar missing.

### Value/Importance of Archaeological and Heritage Assets

7.79 There are no designated archaeological assets within the Site, but there is potential to encounter non-designated archaeology within the Site.

7.80 Palaeoenvironmental evidence: Alluvium and Devensian till deposits may contain significant paleoenvironmental data of evidential and historic interest which would contribute towards a greater understanding of the landscape of Prehistoric Manchester in line with PH18 and PH19 of the NWRFF, which focus on capturing data about the palaeoenvironment in Prehistory particularly through the analysis of buried soils (NWRRF, 2022). Paleoenvironmental data could potentially be of medium significance.

7.81 Archaeological remains from the Prehistoric, Roman and Early Medieval periods: There is low potential for encountering archaeological remains from the Prehistoric, Roman and Early Medieval periods within the Site and any deposits from these time periods are likely to have experienced significant disturbance and truncation from later industrial developments across the Site. These remains are assessed to be of low significance.

7.82 Archaeological remains from the Medieval and Post-Medieval periods: There is low potential for encountering archaeological remains from the Medieval and Post-Medieval periods within the Site. Archaeological deposits from these periods, if encountered, are most likely to relate to industrial uses of the River Irk, particularly the sites of early mills. However, deposits from these time periods are likely to have experienced significant disturbance and truncation from later industrial developments across the Site. These remains are assessed to be of low significance.

7.83 The site of Travis Mill (MGM11058): As a pre-Industrial and also long-lasting example of milling in the Greater Manchester area, such evidence would be of evidential and historic value, as they would contribute to the research goals outlined in Ind04 and Ind58 of the Northwest Regional Research Framework (NWRRF) (NWRRF, 2022). Archaeological remains associated with the Travis Mill site could range from low to medium significance, dependant on the nature and extent of surviving evidence.

7.84 Structural remains from the Industrial Period: Several research goals of the NWRRF are focused on the textile industry and its evolution, as well as the transition from rural/suburban landscapes to townscape and the diversity of industries present in Greater Manchester. Further investigation on this site could therefore potentially capture data that would contribute to several of these research areas and would be of evidential and historic value. Such evidence would likely be of low significance.

7.85 The Grade II listed Union Bridge is of high evidential value, representing the increase in crossing and connectivity created by the development pressure of industrial expansion of this area of Manchester. Many of these crossings have now been lost. The existing setting is currently very poor due to the development of the surrounding banks. Views from the bridge and from the banks and the relative lack of obscuring structures from vantage points on the pedestrian paths enable the bridge to be read in relation to the river course and walls which make a positive contribution to the setting of this heritage asset.

7.86 Shudehill Conservation Area is designated for its architectural, artistic and historic interest and is of high value. However, due to the topography of the study area, distance from the Site and the wider built environment, this asset is not visible from the Site.

7.87 Queen's Park is of high value and has architectural, artistic and historic interest as one of the first public parks in a major industrial city. Its urban and riverside setting makes a positive contribution to its significance as an urban public park. This asset is not visible from the Site.

7.88 There are a further 23 listed buildings within the study area which are all of high value. These have been grouped as:

- The Grade II* listed Manchester Jewish Museum and seven Grade II listed buildings located along Cheetham Hill Road 200m to the west of the Site. These listed buildings share a dense urban roadside setting along Cheetham Hill Road, which makes a positive contribution to their shared urban historic high street character.
- The 20th century Grade II listed buildings associated with the historic headquarters location of the Cooperative Society, located adjacent to Shudehill Conservation Area 300m to the south of the Site. These listed buildings include two tall buildings, New Century House and the Cooperative Insurance Society Building, which share a strong visual, contextual and stylistic relationship with one another and form impressive skyline features within Manchester city centre.
- Eight Grade II listed buildings located to the south of the Site and which are visually separated from the Site by the railway line and viaduct. These heritage assets are listed for their architectural, artistic and historic interest. They share a dense urban townscape setting which makes a positive contribution to their significance.

7.89 Non-designated built heritage within the Site includes:

- The Lowry Footbridge is locally significant and of low value. Remains of the railway and its associated structures have both local architectural and historic interest. This interest is underscored by the fact that the footbridge is the only surviving above-ground asset related to the former railway within the Site boundary.
- River Irk walls are locally significant and of low value. These walls contribute to the understanding of the expansion and evolution of industry along the River Irk and are therefore of local archaeological, architectural and historic value and of low significance.
- Northern retaining walls are of negligible value. Though they pertain to the Industrial development of the Site and its immediately surrounding area, the historic stretches of retaining walls are of some historic value but overall are of negligible significance.

# Embedded Mitigation

### Demolition and Construction

7.90 There is no embedded inherent archaeological mitigation at the demolition and construction stage for the Proposed Development. Additional mitigation measures to assess the presence, absence, and significance of previously unrecorded archaeological remains are proposed.

7.91 The Principal Contractor (BAM Nuttall Ltd) will develop a methodology to carry out the Infrastructure Works which will be described in a method statement and Construction Environmental Management Plan (CEMP). This

will include provision for appropriate screening or hoarding around the Site during demolition or construction activity. The poor condition of Union Bridge will be taken into account during any demolition or construction activity which may cause vibration.

### Completed Development

7.92 There is no embedded archaeological or built heritage mitigation for the completed development.

## Assessment of Likely Significant Effects

### Demolition and Construction

Assessment Scenario 1a – Proposed Development Only

7.93 There is potential for archaeological remains to be encountered within the Site. These potential below-ground archaeological deposits and structural remains would experience impacts as a result of the construction of the Proposed Development. Permanent impacts include the complete or partial removal of archaeological deposits at the Site as a result of infrastructure works construction activities such as:

- Demolition of retaining wall.
- Remediation and earthworks across site.
- Construction of internal access roads and junctions.
- Utility and services connections and diversions.
- Provision of green infrastructure (creation of green links and new City River Park).

7.94 The depths of groundworks associated with these activities will be variable across the Site. However, these impacts which extend deeper than the made ground across the Site are likely to wholly or partially remove any surviving archaeological deposits such that the significance of the heritage asset is adversely altered or destroyed. These impacts would be permanent adverse major impacts to non-designated archaeology assets which may be encountered within the Site.

7.95 There is high potential to encounter palaeoenvironmental and geoarchaeological deposits of Alluvium and Devensian Till within the Site. These remains may provide palaeoenvironmental data on past climate and ecology. These remains would be of low to medium significance while the magnitude of change would be a permanent major adverse impact, resulting in a **moderate adverse** effect.

7.96 There is low potential to encounter archaeological remains relating to the prehistoric, Roman and Early Medieval periods at the Site. Later industrial developments across the Site are likely to have significantly truncated archaeological deposits relating to earlier periods. However, if encountered, these remains are likely to be of low

significance while the magnitude of change would be a permanent major adverse impact, resulting in a **minor adverse** effect.

7.97 There is low potential to encounter archaeological remains relating to the Medieval and Post Medieval periods at the Site. Archaeological deposits from these periods, if encountered, are most likely to relate to industrial uses of the River Irk, particularly the Sites of early mills. However, deposits from these time periods are likely to have experienced significant disturbance and truncation from later industrial developments across the Site. These remains would be of low significance while the magnitude of change would be a permanent major adverse impact, resulting in a **minor adverse** effect.

7.98 There is a high potential to encounter below-ground and structural archaeological remains associated with the Site of the Travis Mill. These remains are assessed as being of low to medium significance, dependant on the nature and extent of surviving evidence, while the magnitude of change would be a permanent major adverse impact, resulting in a **moderate adverse** effect.

7.99 There is a high potential to encounter below-ground and structural archaeological remains from the Industrial period across the Site, including remains associated with mills, factories and railway related infrastructure. These remains are assessed as being of low significance while the magnitude of change would be a permanent major adverse impact, resulting in a **minor adverse** effect.

7.100 The Grade II listed Union Bridge is the only designated built heritage asset within the Site and will not be altered as part of the demolition or construction of the Proposed Development. However, the setting of the Union Bridge will experience temporary impacts as a result of the demolition and construction activities across the Site and adjacent to the bridge. The magnitude of these impacts would be minor temporary adverse to the setting of the Grade II listed Union Bridge. The Union Bridge is of high significance resulting in a temporary **minor adverse** effect to its setting.

7.101 The non-designated Lowry Footbridge will also not be altered as part of the demolition or construction of the Proposed Development. However, the setting of the Lowry Footbridge will also experience temporary impacts as a result of the demolition and construction activities on the Site. The magnitude of these impacts would be minor temporary adverse to the setting of the locally significant Lowry Footbridge. The Lowry Footbridge is of low significance and the minor temporary changes to its setting result in a **neutral** effect.

7.102 The historic River Irk walls and northern retaining walls may experience some change as a result of the demolition and construction activities on the Site which may alter or remove some of their historic material. The magnitude of these impacts may be moderate permanent adverse impacts to sections of the river and retaining walls across the Site. The river walls are of low significance, resulting in a permanent **minor adverse** effect. The retaining walls are of negligible value, resulting in a **neutral** effect.

7.103 The historic River Irk walls and northern retaining walls may also experience temporary impacts to their settings as a result of the demolition and construction activities on the Site. These impacts would be minor temporary adverse impacts to their settings and would result in a **neutral** effect.

7.104 Designated heritage assets within the study area would not experience any significant change to their settings as a result of demolition and construction activities on the Site, as a result of their distance from site and lack of intervisibility of the heritage assets and the Site.

### Assessment Scenario 1b – Proposed Development plus impacts associated with Applications 1, 3 and 4

7.105 There is potential for archaeological remains to be encountered within the Site. These potential below-ground archaeological deposits and structural remains would experience impacts as a result of the construction of the Proposed Development. Permanent impacts include the complete or partial removal of archaeological deposits at the Site as a result of infrastructure works construction activities, as well as the works proposed under Applications 1, 3 and 4 which would involve:

- Application 1: the demolition of existing structures at Creamline Dairies, the partial removal of an existing retaining wall and construction of a new access onto Red Bank Plateau and vegetation clearance.
- Application 3: flood mitigation and defence work along the River Irk.
- Application 4: main development works.

7.106 The infrastructure works construction impacts, plus further impacts associated with Applications 1, 3 and 4, would be permanent adverse major impacts to non-designated archaeology assets which may be encountered within the Site.

7.107 There is high potential to encounter palaeoenvironmental and geoarchaeological deposits within Alluvium and Devensian Till within the Site. These remains may provide palaeoenvironmental data on past climate and ecology. These remains would be of medium significance while the magnitude of change would be a permanent major adverse impact, resulting in a **moderate adverse** effect.

7.108 There is low potential to encounter archaeological remains relating to the prehistoric, Roman and Early Medieval periods at the Site. Later industrial developments across the Site are likely to have significantly truncated archaeological deposits relating to earlier periods. However, if encountered, these remains are likely to be of low significance while the magnitude of change would be a permanent major adverse impact, resulting in a **minor adverse** effect.

7.109 There is low potential to encounter archaeological remains relating to the Medieval and Post Medieval periods at the Site. Archaeological deposits from these periods, if encountered, are most likely to relate to industrial uses of the River Irk, particularly the sites of early mills. However, deposits from these time periods are likely to have experienced significant disturbance and truncation from later industrial developments across the Site. These

remains would be of low significance while the magnitude of change would be a permanent major adverse impact, resulting in a **minor adverse** effect.

7.110 There is a high potential to encounter below-ground and structural archaeological remains associated with the site of the Travis Mill. These remains are assessed as being of low to medium significance, dependant on the nature and extent of surviving evidence, while the magnitude of change would be a permanent major adverse impact, resulting in a **moderate adverse** effect.

7.111 There is a high potential to encounter below-ground and structural archaeological remains from the Industrial period across the Site, including remains associated with mills, factories and railway related infrastructure. These remains are assessed as being of low significance while the magnitude of change would be a permanent major adverse impact, resulting in a **minor adverse** effect.

7.112 Built heritage assets within the Site may experience changes to their settings as a result of the demolition and construction activities of the Proposed Development as well as further demolition and construction impacts to setting associated with Applications 1, 3 and 4. These impacts would be temporary minor adverse impacts to the settings of built heritage assets within the Site.

7.113 The high value Grade II listed Union Bridge would experience a temporary minor adverse impact to its setting resulting in a temporary **minor adverse** effect to its setting. There would be no direct impacts to the Union Bridge during demolition or construction activities.

7.114 The low value Lowry Footbridge would experience a temporary minor adverse impact to its setting resulting in a temporary **neutral** effect to its setting. There would be no direct impacts to the Lowry Footbridge during demolition and construction activities.

7.115 The low value River Irk walls would experience a temporary minor adverse impact to their setting resulting in a temporary **neutral** effect to their setting. The River Irk walls may also experience moderate permanent adverse impacts to sections of the river walls across the Site as a result of demolition and construction activities of the Proposed Development as well as further demolition and construction impacts associated with Applications 1, 3 and 4, especially the flood mitigation and defence work along the River Irk in Application 3 which may remove or alter some sections of the river walls. These moderate permanent adverse impacts would result in permanent **minor adverse** effects.

7.116 The negligible value northern retaining walls would experience temporary **neutral** effects to their settings. The retaining walls may also experience moderate permanent adverse impacts to sections of wall as a result of demolition and construction activities to the Proposed Development as well as further demolition and construction impacts associated with Applications 1, 3 and 4, especially the partial removal of an existing retaining wall in Application 1 which may remove or alter some sections of the northern retaining walls. These moderate permanent adverse impacts would result in a **neutral** effect.

7.117 Designated heritage assets within the study area would not experience any significant change to their settings as a result of demolition and construction activities on the Site and those associated with Applications 1, 3 and 4, as a result of their distance from site and lack of intervisibility of the heritage assets and the Site.

### Assessment Scenario 1c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

7.118 There is potential for archaeological remains to be encountered within the Site. These potential below-ground archaeological deposits and structural remains would experience impacts as a result of the construction of the Proposed Development. Permanent impacts include the complete or partial removal of archaeological deposits at the Site as a result of infrastructure works construction activities, as well as the works proposed under Applications 1, 3 and 4, and the wider SRF, which is the residential-led regeneration scheme (Approx.15,000 dwellings), which includes employment and commercial uses, retail provision, additional infrastructure and increased access and transport.

7.119 These impacts, plus further impacts associated with Applications 1, 3 and 4 and the wider SRF, would be permanent major adverse impacts to non-designated archaeology assets which may be encountered within the Site.

7.120 There is high potential to encounter palaeoenvironmental and geoarchaeological deposits within Alluvium and Devensian Till within the Site. These remains may provide palaeoenvironmental data on past climate and ecology. These remains would be of medium significance while the magnitude of change would be a permanent major adverse impact, resulting in a **moderate adverse** effect.

7.121 There is low potential to encounter archaeological remains relating to the prehistoric, Roman and Early Medieval periods at the Site. Later industrial developments across the Site are likely to have significantly truncated archaeological deposits relating to earlier periods. However, if encountered, these remains are likely to be of low significance while the magnitude of change would be a permanent major adverse impact, resulting in a **minor adverse** effect.

7.122 There is low potential to encounter archaeological remains relating to the Medieval and Post Medieval periods at the Site. Archaeological deposits from these periods, if encountered, are most likely to relate to industrial uses of the River Irk, particularly the sites of early mills. However, deposits from these time periods are likely to have experienced significant disturbance and truncation from later industrial developments across the Site. These remains would be of low significance while the magnitude of change would be a permanent major adverse impact, resulting in a **minor adverse** effect.

7.123 There is a high potential to encounter below-ground and structural archaeological remains associated with the site of the Travis Mill. These remains are assessed as being of low to medium significance, dependant on the nature and extent of surviving evidence, while the magnitude of change would be a permanent major adverse impact, resulting in a **moderate adverse** effect.

7.124 There is a high potential to encounter below-ground and structural archaeological remains from the Industrial period across the Site, including remains associated with mills, factories and railway related infrastructure. These remains are assessed as being of low significance while the magnitude of change would be a permanent major adverse impact, resulting in a **minor adverse** effect.

7.125 Built heritage assets within the Site may experience changes to their settings as a result of the demolition and construction activities of the Proposed Development as well as further demolition and construction impacts to setting associated with Applications 1, 3 and 4 and the wider SRF. These impacts would be temporary minor adverse impacts to the settings of built heritage assets within the Site.

7.126 The high value Grade II listed Union Bridge would experience a temporary minor adverse impact to its setting resulting in a temporary **minor adverse** effect to its setting. There would be no direct impacts to the Union Bridge during demolition or construction activities.

7.127 The low value Lowry Footbridge would experience a temporary minor adverse impact to its setting resulting in a temporary **neutral** effect to its setting. There would be no direct impacts to the Lowry Footbridge during demolition and construction activities.

7.128 The low value River Irk walls would experience a temporary minor adverse impact to their setting resulting in a temporary **neutral** effect to their setting. The River Irk walls may also experience moderate permanent adverse impacts to sections of the river walls across the Site as a result of demolition and construction activities of the Proposed Development as well as further demolition and construction impacts associated with Applications 1, 3 and 4 and the wider SRF which may remove or alter some sections of the river walls. These moderate permanent adverse impacts would result in permanent **minor adverse** effects.

7.129 The negligible value northern retaining walls would experience a temporary minor adverse impact to their setting resulting in temporary neutral effects to their setting. The retaining walls may also experience moderate permanent adverse impacts to sections of wall as a result of demolition and construction activities to the Proposed Development as well as further demolition and construction impacts associated with Applications 1, 3 and 4 and the wider SRF which may remove or alter some sections of the northern retaining walls. These moderate permanent adverse impacts would result in a **neutral** effect.

7.130 Designated heritage assets within the study area would not experience any significant change to their settings as a result of demolition and construction activities on the Site and those associated with Applications 1, 3 and 4 and the wider SRF, as a result of their distance from site and lack of intervisibility of the heritage assets and the Site.

### Completed Development

#### Assessment Scenario 2a – Proposed Development Only

7.131 There would be no operational impacts to archaeology as a result of the Proposed Development, resulting in a **neutral** effect.

7.132 Impacts to built heritage assets as a result of the completed development would include changes to their settings as a result of the completion of infrastructure works across the Site including:

- Demolition of other selected structures.
- Remediation and earthworks across site.
- Construction of internal access roads and junctions.
- Utility and services connections and diversions.
- Provision of green infrastructure (creation of green links and new City River Park).

7.133 The completed development including new green infrastructure would improve the built realm of the Site. These would be permanent minor beneficial enhancements to the settings of heritage assets that better reveal their significance and contribute to their sustainable use and management as the surrounding site will no longer be vacant land.

7.134 The high value Grade II listed Union Bridge would experience a permanent minor beneficial enhancement to its setting resulting in a permanent **minor beneficial** effect to its setting.

7.135 The low value Lowry Footbridge would experience a permanent minor beneficial enhancement to its setting resulting in a permanent **minor beneficial** effect to its setting.

7.136 The low value River Irk walls would experience a permanent minor beneficial enhancement to their setting resulting in a permanent **minor beneficial** effect to their setting.

7.137 The negligible value northern retaining walls would experience a permanent minor beneficial enhancement to their setting resulting in a **neutral** effect to their setting.

7.138 Designated heritage assets within the study area would not experience any significant change to their settings resulting from the completed infrastructure development, as a result of their distance from site and lack of intervisibility of the heritage assets and the Site.

#### Assessment Scenario 2b – Proposed Development plus impacts associated with Applications 1, 3 and 4

7.139 There would be no operational impacts to archaeology as a result of the Proposed Development, resulting in a **neutral** effect.

7.140 Impacts to built heritage assets as a result of the completed development and Applications 1, 3 and 4 would include changes to their settings as a result of the completion of the infrastructure works described above along with the completion of the Enabling works, Flood alleviation works and Red Bank built development. The Red Bank development design has not been finalised but will include areas of housing, employment and commercial uses, retail provision and may include tall buildings.

7.141 Given what is currently understood regarding the nature of works that will be undertaken as part of Applications 1, 3 and 4, the likelihood of significant effects to the settings of built heritage assets occurring will be greater. Significant effects associated with the works undertaken as part of Applications 3 and 4 will be re-assessed once the design has been developed.

7.142 The completed development including new green infrastructure would improve the built realm of the Site. These would be permanent minor beneficial enhancements to the settings of heritage assets that better reveal their significance and contribute to their sustainable use and management as the surrounding site will no longer be vacant land.

7.143 The high value Grade II listed Union Bridge would experience a permanent minor beneficial enhancement to its setting resulting in a permanent **minor beneficial** effect to its setting.

7.144 The low value Lowry Footbridge would experience a permanent minor beneficial enhancement to its setting resulting in a permanent **minor beneficial** effect to its setting.

7.145 The low value River Irk walls would experience a permanent minor beneficial enhancement to their setting resulting in a permanent **minor beneficial** effect to their setting.

7.146 The negligible value northern retaining walls would experience a permanent minor beneficial enhancement to their setting resulting in a **neutral** effect to their setting.

7.147 However, the introduction areas of housing, employment and commercial uses, retail provision and especially of tall buildings within the Site may adversely impact the settings of sensitive built heritage receptors within the study area as they may be visible above the valley topography to the surrounding areas. In the absence of detailed design for the Red Bank development, including exact building heights, visibility and surface treatments which would all influence the degree and nature of impact, impacts must be assumed to be moderate adverse impacts to the settings of surrounding built heritage assets. This would be due to the change in view and setting from undeveloped land with no intervisibility with built heritage assets in the study area to developed tall buildings visible in the view.

7.148 The high value Shudehill conservation area, Queen's Park and Grade II* and Grade II listed buildings within the study area would experience moderate adverse impacts to their settings resulting in permanent **moderate adverse** effects to their settings as a result of the completed development and completed Applications 3 and 4.

Assessment Scenario 2c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

7.149 There would be no operational impacts to archaeology as a result of the Proposed Development, resulting in a **neutral** effect.

7.150 Impacts to built heritage assets as a result of the completed development and Applications 1, 3 and 4 and wider SRF would include changes to their settings as a result of the completion of the infrastructure works described above along with the completion of the Enabling works, Flood alleviation works and Red Bank built development along with the wider SRF, which is the residential-led regeneration scheme (Approx.15,000 dwellings), which includes employment and commercial uses, retail provision, additional infrastructure and increased access and transport.

7.151 Given what is currently understood regarding the nature of works that will be undertaken as part of Applications 3 and 4 and the wider SRF, the likelihood of significant effects to the settings of built heritage assets occurring will be greater. Significant effects associated with the works undertaken as part of Applications 3 and 4 and the wider SRF will be re-assessed once the design has been developed.

7.152 The completed development including new green infrastructure would improve the built realm of the Site. These would be permanent minor beneficial enhancements to the settings of heritage assets that better reveal their significance and contribute to their sustainable use and management as the surrounding site will no longer be vacant land.

7.153 The high value Grade II listed Union Bridge would experience a permanent minor beneficial enhancement to its setting resulting in a permanent **minor beneficial** effect to its setting.

7.154 The low value Lowry Footbridge would experience a permanent minor beneficial enhancement to its setting resulting in a permanent **minor beneficial** effect to its setting.

7.155 The low value River Irk walls would experience a permanent minor beneficial enhancement to their setting resulting in a permanent **minor beneficial** effect to their setting.

7.156 The negligible value northern retaining walls would experience a permanent minor beneficial enhancement to their setting resulting in a **neutral** effect to their setting.

7.157 However, the introduction areas of housing, employment and commercial uses, retail provision and especially of tall buildings within the Site along with the wider residential-led regeneration scheme including approximately 15,000 dwellings, may adversely impact the settings of sensitive built heritage receptors within the study area as the area is transformed from vacant valley site to a dense urban form. The development, especially any tall buildings, may be visible above the valley topography to the surrounding areas. In the absence of detailed design for the Red Bank development and wider SRF, including exact building heights, visibility and surface treatments

which would all influence the degree and nature of impact, impacts must be assumed to be moderate adverse impacts to the settings of surrounding built heritage assets. This would be due to the change in view and setting from undeveloped land with no intervisibility with built heritage assets in the study area to developed tall buildings visible in the view.

7.158 The high value Shudehill conservation area, Queen's Park and Grade II* and Grade II listed buildings within the study area would experience moderate adverse impacts to their settings resulting in permanent **moderate adverse** effects to their settings as a result of the completed development and completed Applications 3 and 4 and the wider SRF.

## Additional Mitigation / Enhancement Measures

### Demolition and Construction

7.159 Additional mitigation measures to assess the presence, absence, and significance of previously unrecorded archaeological remains which may exist within the Site are proposed.

7.160 Additional mitigation in the form of a geoarchaeological watching brief during ground investigation works and the creation of a geoarchaeological deposit model at the Site is recommended. This would provide palaeoenvironmental data on past climate and ecology at the Site, and allow for a better understanding of the below-ground archaeological potential of the Site and the extent and depth of disturbance from modern Made Ground. A geoarchaeological watching brief and creation of a geoarchaeological deposit model would contribute to the research goals outlined in PH18 and PH19 of the Northwest Regional Research Framework (NWRRF, 2022).

7.161 Additional mitigation in the form of a targeted programme of archaeological strip, map and sample investigation at the former site of the Travis Mill designed in consultation and agreed with GMAAS is recommended. This would enable the assessment of the presence, absence, significance and extent of any previously unrecorded archaeological remains associated with the Travis Mill site which was in operation from at least the mid-17$^{th}$ to the 20$^{th}$ century. This would contribute to the research goals outlined in Ind04 and Ind58 of the Northwest Regional Research Framework (NWRRF, 2022).

7.162 Dependent on the results of the proposed archaeological mitigation measures, and in consultation with GMAAS, further stages of archaeological investigation may be required such as targeted archaeological excavation.

7.163 Additional mitigation in the form of a level 2 descriptive historic building record of the historic river walls and retaining walls at the Site prior to any alteration is proposed allowing for the historic wall sections to be seen, described and photographed.

7.164 Opportunities to improve the condition and setting of built heritage assets should be utilised. Based upon the significance of Union Bridge and its Grade II Listed status, the original material should be retained and repaired

where feasible. Upstream elements that have been lost and replaced with modern materials and design may be changed with an appropriate mitigation strategy. The views afforded the bridge from the pedestrian access should be retained. Further aspects of development within the setting at the detailed design stage should be assessed to determine their likely impact.

### Completed Development

7.165 There are no additional mitigation measures for archaeology and built heritage proposed for the completed development.

## Likely Residual Effects of the Development and their Significance

7.166 Residual demolition and construction effects on archaeology would be **minor adverse**. These are not considered significant effects.

7.167 Residual effects on archaeology from the completed development would be **neutral**. These are not considered significant effects.

7.168 Residual demolition and construction effects on built heritage would be **neutral**. These are not considered significant effects.

7.169 Residual effects from the completed development on the settings of built heritage within the Site would be **neutral** to **minor beneficial**. These are not considered significant effects.

7.170 Residual effects from the completed development on the settings of high value heritage assets in the study area would be **moderate adverse** effects. Further information on detailed design of the Red Bank development and the wider SRF is required to clarify likelihood of significant effects to the settings of high value heritage assets.

*Table 7.7: Residual Effects Summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| *Assessment Scenario 1a – proposed development only* | | | |
| Complete or partial removal of potential below ground archaeological deposits ranging from low to | Minor to moderate permanent adverse effect | Geoarchaeological watching brief during ground investigations<br><br>Geoarchaeological | **Minor adverse effect** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| medium value. | | deposit modelling<br><br>Programme of archaeological strip, map and sample investigation of the former Travis Mill site | |
| Partial removal of or alterations to sections of historic river walls and retaining walls ranging from negligible to low value. | Neutral to minor permanent adverse effect | Level 2 historic building recording of river and retaining walls | **Neutral effect** |
| Temporary change to the settings of built heritage assets ranging from negligible to high value as a result of demolition and construction activities. | Neutral to minor temporary adverse effect | Use of appropriate screening during demolition and construction | **Neutral effect** |
| *Assessment Scenario 1b – proposed development plus Applications 2, 3 and 4* | | | |
| Complete or partial removal of potential below ground archaeological deposits ranging from low to medium value | Minor to moderate permanent adverse effect | Geoarchaeological watching brief during ground investigations<br><br>Geoarchaeological deposit modelling<br><br>Programme of archaeological strip, map and sample investigation of the former Travis Mill site | **Minor adverse effect** |
| Partial removal of or alterations to sections of historic river walls and retaining walls ranging from negligible to low value. | Neutral to minor permanent adverse effect | Level 2 historic building recording of river and retaining walls | **Neutral effect** |
| Temporary change to the settings of built heritage assets ranging from negligible to high value as | Neutral to minor temporary adverse effect | Use of appropriate screening during demolition and | **Neutral effect** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| a result of demolition and construction activities. | | construction | |
| *Assessment Scenario 1c – proposed development plus Applications 2, 3 and 4 and wider SRF* | | | |
| Complete or partial removal of potential below ground archaeological deposits ranging from low to medium value | Minor to moderate permanent adverse effect | Geoarchaeological watching brief during ground investigations<br><br>Geoarchaeological deposit modelling<br><br>Programme of archaeological strip, map and sample investigation of the former Travis Mill site | **Minor adverse effect** |
| Partial removal of or alterations to sections of historic river walls and retaining walls ranging from negligible to low value. | Neutral to minor permanent adverse effect | Level 2 historic building recording of river and retaining walls | **Neutral effect** |
| Temporary change to the settings of built heritage assets within the Site ranging from negligible to high value as a result of demolition and construction activities. | Neutral to minor temporary adverse effect | Use of appropriate screening during demolition and construction | **Neutral effect** |
| ***Completed Development*** | | | |
| *Assessment Scenario 2a – proposed development only* | | | |
| There would be no operational impacts to archaeology. | Neutral effect | None proposed | **Neutral effect** |
| Permanent beneficial change to the settings of built heritage assets within the Site ranging from negligible to high value as a result of the | Neutral to minor permanent beneficial effect. | None proposed | **Neutral to minor permanent beneficial effect** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| improvement to the built realm of the Site. | | | |
| *Assessment Scenario 2b – proposed development plus Applications 2, 3 and 4* | | | |
| There would be no operational impacts to archaeology | Neutral effect | None proposed | **Neutral effect** |
| Permanent change to the settings of built heritage assets within the Site ranging from negligible to high value as a result of the as a result of the improvement to the built realm of the Site | Neutral to minor permanent beneficial effect | None proposed | **Neutral to minor permanent beneficial effect** |
| Permanent change to the settings of high value heritage assets within the study area as a result of the Proposed Development plus Applications 1, 3 and 4 | Permanent moderate adverse effects | None proposed | **Permanent moderate adverse effects** |
| *Assessment Scenario 2c – proposed development plus Applications 2, 3 and 4 and wider SRF* | | | |
| *There would be no operational impacts to archaeology* | *Neutral effect* | *None proposed* | *Neutral effect* |
| Permanent change to the settings of built heritage assets within the Site ranging from negligible to high value as a result of the improvement to the built realm of the Site | Neutral to minor permanent beneficial effect | None proposed | **Neutral to minor permanent beneficial effect** |
| Permanent change to the settings of high value heritage assets within the study area as a result of the Proposed Development plus | Permanent moderate adverse effects | None proposed | **Permanent moderate adverse effects** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Applications 1, 3 and 4 | | | |

## Conclusions

7.171 There is a high potential to encounter archaeology related to the Industrial period at the Site, particularly remains associated with the former Travis Mill on the River Irk which was in use from at least the mid-17th century to the 20th century. There is low potential to encounter archaeology related to earlier periods, and the widespread past industrial use of the Site is likely to have significantly truncated or removed any archaeological deposits related to earlier periods.

7.172 There is also high potential for palaeoenvironmental and geoarchaeological evidence within the Alluvium and Devensian Till superficial deposits at the Site which may provide evidence of past climate and environment at the Site.

7.173 Additional mitigation to record potential archaeological deposits at the Site and to collect palaeoenvironmental data is recommended. Proposed archaeological and palaeoenvironmental investigation at the Site would be designed and agreed with GMAAS. Proposed additional mitigation at the Site includes:

- Geoarchaeological watching brief during ground investigations
- Geoarchaeological deposit modelling
- Archaeological investigation using a strip, map and sample approach at the former Travis Mill site

7.174 Dependent on the results of the proposed additional archaeological mitigation and in consultation with GMAAS, further archaeological investigation may be required.

7.175 Residual demolition and construction effects on archaeology would be **minor adverse** effects.

7.176 Residual effects on archaeology from the completed development would be **neutral** effects.

7.177 The built heritage assets within the Site include the Grade II listed Union Bridge, and the non-designated low value Lowry Footbridge, River Irk walls and the negligible value northern retaining walls.

7.178 Significant heritage assets in the study area include Shudehill Conservation Area, Queen's Park, the Grade II* listed Manchester Jewish Museum and 22 Grade II listed buildings.

7.179 The River Irk walls and the northern retaining walls will experience partial removal of or alterations to sections of their length. Additional mitigation is proposed in the form of a Level 2 descriptive historic building record of the historic river walls and retaining walls at the Site prior to any alteration which will allow for the historic wall sections to be seen, described and photographed.

7.180 Residual demolition and construction effects on built heritage would be **neutral** effects.

7.181 Residual effects from the completed development on the settings of built heritage within the Site would be **neutral** to **minor beneficial** effects.

7.182 Residual effects from the completed development on the settings of high value heritage assets in the study area would be **moderate adverse** effects. Further information on detailed design of the Red Bank development and the wider SRF is required to clarify likelihood of significant effects to the settings of built heritage assets.

## Assessment of Cumulative Effects and their Significance

7.183 The Cumulative Impact Assessment (CIA) is presented as three scenarios. This is to ensure that the assessment is as robust as possible. The scenarios to be considered are as follows:

- Scenario 3a - Assessment of the cumulative archaeological and heritage impacts relating to the Proposed Development plus archaeological and heritage impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative archaeological and heritage impacts relating to the Proposed Development, plus archaeological and heritage impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
- Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 1 (Enabling works works), 3 (Flood alleviation works) and 4 (Red Bank built development), the wider SRF, and the agreed cumulative sites.

7.184 In Scenario 3a the cumulative sites include for those approved projects within 1km of the Site considered as having potential for cumulative archaeological and heritage impact with the Proposed Development. This is the typical approach to CIA undertaken for an EIA. The proposed sites have been identified by Avison Young from MCC's and SCC's planning portal, as applicable, and have been agreed with MCC as part of the EIA Scoping process.

7.185 Scenario 3b considers the cumulative archaeological and heritage impacts of the Proposed Development, Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development), and all of the relevant cumulative sites. This ensures that all potential impacts of the Northern Gateway SRF are considered as part of this EIA. Wherever possible, definitive and fixed information relating to each application has been used, despite the applications progressing at different rates. Where definitive information is not available, a maximum,

upper quantum and / or worst-case position has been agreed between the consultant team and regulatory authority. This will ensure that the CIA presented assesses the absolute worst case and is as robust as possible.

7.186 Scenario 3c ensures that the potential impacts of the wider SRF are considered, acknowledging that the applications are only the first phase. Assumptions will be based on the detail included in the SRF.

7.187 Developments to be included within the cumulative sites assessment are presented in Table 7.8.

*Table 7.8: Cumulative Sites*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | 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 | Approved Jun 2021 | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets. |
| 2 | 127971/FO/2020 | 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 | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 3 | 128248/FO/2020 | 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, | 150m south | Approved June 2021 | Archaeology scoped out<br><br>Built heritage | Scoped out: Archaeology within the Site would not experience any |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | | scoped in | significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 4 | 116366/FO/2017 | 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 | 150m south | Approved Aug 2017<br><br>Under construction | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<br><br>Under construction | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | settings effects on high value heritage assets |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 7 | 124973/FO/2019 | 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 | 350m south | Approved Feb 2016 | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 8 | 111777/FO/2016/C1 | 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 | 250m south east | Approved Sep 2016 | Archaeology scoped out | Scoped out: Archaeology within the Site would not |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | Under construction | Built heritage scoped in | experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 9 | 121375/FO/2018 | 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 Café), 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. | 840m south | Approved Oct 2020 | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | Approved Oct 2018<br><br>Under construction | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | settings effects on high value heritage assets |
| 11 | 20/76134/FUL | 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 | 1000m south west | Approved Feb 2020 | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br><br>Under construction | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 13 | 19/74465/HYBEIA | 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 | 960m south west | Validated Nov 2019 | Archaeology scoped out | Scoped out: Archaeology within the Site would not |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | (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 7BN | | | Built heritage scoped in | experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 14 | 126944/FO/2020 | 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 | 140m south east | Approved Sep 2020<br><br>Under Construction | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other | 145m south east | Approved October 2017 | Archaeology scoped out<br><br>Built heritage | Scoped out: Archaeology within the Site would not experience any significant change as a |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | associated works following demolition of existing buildings | | | scoped in | result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | 635m south west | Approved June 2018 | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | value heritage assets |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 19 | 124888/FO/2019 | 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 | Archaeology scoped out<br><br>Built heritage scoped in | Scoped out: Archaeology within the Site would not experience any significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | Archaeology scoped out<br><br>Built heritage | Scoped out: Archaeology within the Site would not experience any |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | chimney including the introduction of a light box; disabled car parking, highways, landscaping and other associated works | | | scoped in | significant change as a result of development outside the Site.<br><br>Scoped in: Potential for settings effects on high value heritage assets |

### Approach

7.188 Cumulative effects are defined as those effects which arise from the combination of the Proposed Development and other developments not yet constructed or currently under construction in the vicinity acting together to generate elevated or altered levels of effects, such as the complete removal of a significant archaeological deposit extending beyond the Site or the introduction of the development into the view of heritage assets in combination with other existing and proposed developments.

7.189 Relevant developments have been reviewed to identify where cumulative effects may occur, e.g. where there may be impacts from the Proposed Development and other developments on a particular archaeological feature or to the settings of heritage assets. The potential for cumulative effects has then been considered in accordance with the methodology set out above.

### Likely Residual Cumulative Effects and their Significance

#### Construction

7.190 Archaeology within the Site would not experience any change resulting in a likely significant effect as a result of development construction outside the Site, therefore there would be no cumulative effects on archaeology during the construction phase.

7.191 Scenario 3a - The cumulative built heritage impacts relating to the Proposed Development plus built heritage impacts associated with agreed cumulative sites have been assessed but does not generate elevated or altered levels of construction effects to the settings of built heritage assets.

7.192 Scenario 3b – The cumulative built heritage impacts relating to the Proposed Development, plus built heritage impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development) and the agreed cumulative sites have been assessed but does not generate elevated or altered levels of construction effects to the settings of built heritage assets.

7.193 Scenario 3c – The cumulative built heritage impacts relating to the Proposed Development, plus built heritage impacts associated with Application 1 (Enabling works works), 3 (Flood alleviation works) and 4 (Red Bank built development), the wider SRF, and the agreed cumulative sites have been assessed but does not generate elevated or altered levels of construction effects to the settings of built heritage assets.

#### The Completed and Operational Development

7.194 Archaeology within the Site would not experience any change resulting in a likely significant effect as a result of the operation of developments outside the Site, therefore there would be no cumulative effects on archaeology during the operational phase.

7.195 Scenario 3a - The cumulative built heritage impacts relating to the Proposed Development plus built heritage impacts associated with agreed cumulative sites have been assessed but does not generate elevated or altered levels of operational effects to the settings of built heritage assets.

7.196 Scenario 3b – The cumulative built heritage impacts relating to the Proposed Development, plus built heritage impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development) and the agreed cumulative sites have been assessed but does not generate elevated or altered levels of operational effects to the settings of built heritage assets.

7.197 Scenario 3c – The cumulative built heritage impacts relating to the Proposed Development, plus built heritage impacts associated with Application 1 (Enabling works works), 3 (Flood alleviation works) and 4 (Red Bank built development), the wider SRF, and the agreed cumulative sites have been assessed but does not generate elevated or altered levels of operational effects to the settings of built heritage assets.

# 8. Ground Conditions

## Introduction

8.1 It is intended that the Applicant will progress a full planning application (referred to as 'Application 2') to obtain permission for infrastructure works within the Red Bank Neighbourhood project. As described in **Chapter 1: Introduction**, The Red Bank Neighbourhood project is part of the first phase of the Victoria North Strategic Regeneration Framework (SRF) area to be brought forward. The Proposed Development covered by Application 2 will include the construction of new internal access roads, remediation and earthworks, utility and services connections, demolition of existing structures and the provision of new green infrastructure.

8.2 This chapter describes the methods used to assess the likely significant effects, the baseline conditions currently existing at the Site and surrounding area, the potential direct and indirect effects of the Proposed Development, exposure to potentially contaminated material, the potential for groundwater and surface water contamination during construction and the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects.

8.3 This chapter also presents a high-level assessment of the ground conditions and contamination effects of the Proposed Development in-combination with the other schemes related to the Red Bank Neighbourhood, as well as the wider SRF. As noted in **Chapter 2: Approach** and supporting **Figures 2.1 – 2.4b**, the Development Project is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in 4 planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1') - planning permission has been granted for the demolition of Creamline Dairy, tree and shrub clearance and construction of a temporary haul road;
- HIF Infrastructure Works (referred to hereafter as 'Application 2') – the subject of this application. Creation of development platforms, demolition of sections of existing river wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diverstions and provision of green infrastructure including creation of green links and first phase of the new City River Park;
- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within Flood Zone 3, and
- Land under control of the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. As noted in Chapter 2:

Approach, the entire Red Bank Neighbourhood within the SRF, including third party land, will deliver up to 5,500 new dwellings.

8.4 Whilst the Applicant has the detail of the early applications, the later parts of the Development Project (particularly Application 4) are still being designed and the details are not yet available. Therefore, the approach that has been taken in the ES is to break the Development Project into 3 elements, with each element being assessed in a level of detail commensurate with the detail that is available for the relevant part of the Development Project.

8.5 A detailed assessment has been undertaken of Application 2, and then reasonable assumptions and judgements have informed and been made to assess Applications 1-4 together, and then Applications 1-4 and SRF.

8.6 The following information has been provided in the appendices to this report as part of the assessment:

- **Appendix 8.1:** Arup 2019. Northern Gateway Ground Conditions Desk Study, Ref. MNG-ARP-SW-RP-CG-102
- **Appendix 8.2:** Arup 2022. Victoria North Infrastructure Works. Ground Investigation Interpretative Report. Ref. NVIF-ARP-ZZ-YYY-RP-CG-0009.

# Planning Policy Context

## National Legislation

8.7 Part 2A of the Environmental Protection Act 1990[1] (as amended) (EPA 1990) establishes the legal framework for dealing with land contamination in England and is the primary UK legislation specifically relating to land contamination. It provides a means of dealing with unacceptable risks posed by land contamination to human health and the environment.

8.8 Contaminated land is defined in the legislation as land which is in such condition by reason of substances in, on or under land on which:

- Significant harm is being caused, or there is a significant possibility of such harm being caused; or
- Significant pollution of controlled water is being or is likely to be caused.

8.9 The potential for harm is based on the presence of three factors:

- Source: substances that are potential contaminants,
- Pathways that link contaminants to receptors, and
- Receptors.

[1] Environmental Protection Act Part IIA (1990) Accessed via: Environmental Protection Act 1990 (legislation.gov.uk) Date Accessed: January 2022

8.10 For the land to be determined as 'contaminated' in a regulatory sense, and thereby require remediation (or a change to a less sensitive use), all three elements (source-pathway-receptor) of a significant pollutant linkage must be present.

8.11 Government objectives with respect to land contamination policy and the Part 2A regime are set out in the Department for Environment, Food and Rural Affairs (Defra) Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance 2012[2] as:

- To identify and remove unacceptable risks to human health and the environment;
- To seek to ensure that contaminated land is made suitable for its current use; and
- To ensure that the burden faced by individuals, companies and society as a whole are proportionate, manageable and compatible with the principles of sustainable development.

## National Planning Policy

### National Planning Policy Framework

8.12 Chapter 15 of the NPPF (2021)[3] sets out the policy framework for contributing to and enhancing the natural local environment by protecting and enhancing valued landscapes, geological conservation interests and soils. It states that the planning system should guide towards preventing both new and existing development from contributing to, or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability. The planning system further outlines the remediation and mitigation of despoiled, degraded, derelict, contaminated and unstable land. Where appropriate, each of the aforementioned measures should be considered at all stages of the planning process.

8.13 Chapter 15 of the NPPF outlines that in order to meet development needs, the aim should be to minimise pollution and other adverse effects on the local environment. The guidance further states that plans should allocate land with the least environmental or amenity value.

## Local Planning Policy

8.14 Manchester Core Strategy plan 2012-2027[4] sets out to protect and enhance the natural and built environment of the City and ensure the sustainable use of natural resources to help adapt to climate change while supporting biodiversity and wildlife. The two main areas of focus include:

- Place Making and Sustainable Design in accordance with PPS1

[2] Contaminated Land Exposure Assessment (CLEA) model. Accessed via: https://www.gov.uk/government/publications/contaminated-land-exposure-assessment-clea-tool. Date accessed: January 2022.
[3] National Planning Policy Framework (2021) Accessed via: 15. Conserving and enhancing the natural environment - National Planning Policy Framework - Guidance - GOV.UK (www.gov.uk). Date accessed: February 2022.
[4] Manchester City Council Core Strategy Plan 2012-2027 (2012). Accessed via: Core Strategy 2012-2027 | Core Strategy 2012-2027 | Manchester City Council Date Accessed: January 2022

- Green Infrastructure, multi-functional open spaces and corridors together with the links between them provide multiple benefits for residents, workers, investors and visitors to the City.

Strategic Regeneration Framework (SRF) Manchester Northern Gateway (February 2019)

8.15 The SRF will be a material consideration in the determination of all planning applications relevant to the study area. Whilst 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 Northern Gateway (now known as Victoria North) area comprises approximately 155 hectares of land to the north of Manchester City Centre and Victoria Station, offering an opportunity to deliver new homes, employment, social, community, cultural and ancillary uses (see **Chapter 1** for further details).

8.16 The Proposed Development is within an 'Initial Development Area' defined by the Joint Venture (JV) as having the potential to deliver 21 housing development plots. The Proposed Development is located within this Initial Development Area and is the first phase of the Victoria North SRF initiative to be brought forward. The Proposed Development is intended to deliver approximately 4,000 dwellings, largely within the Red Bank neighbourhood.

### Other Relevant Policy, Standards and Guidance

8.17 Other guidance documents that have been referenced in the preparation of the assessment are:

- Environment Agency, Land Contamination: Risk Management (LCRM)[5];
- Environment Agency (2009) Human health toxicological assessment of contaminants in soil. Science Report SC050021/SR2[6]
- Environment Agency (2006) Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination; [7]
- HSE (2012) The Control of Asbestos Regulations[8];
- CIRIA (2014) Asbestos in soil and made ground: a guide to understanding and managing risks. Publication C733[9];
- British Standards Institute (2019) BS8485:2015+A1:2019: Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (+A1:2019)[10];

[5] Land Contamination risk management (2020). Accessed via: Land contamination risk management (LCRM) - GOV.UK (www.gov.uk). Date accessed: January 2022
[6] Environmental Agency (2009) Science Report SC050021/SR2. Accessed via: Human health toxicological assessment of contaminants in soil. Date accessed: January 2022
[7] Environmental Agency (2006) Remedial Targets. Accessed via: Land contamination: remedial targets methodology (RTM) - GOV.UK (www.gov.uk). Date accessed: January 2022
[8] HSE (2012) Control Asbestos in Soil. Accessed via Control of Asbestos Regulations 2012 (hse.gov.uk). Date accessed: January 2022
[9] CIRA (2014) Asbestos in Soil Accessed via: Item Detail (ciria.org). Date accessed: January 2022
[10] British Standards Institute (2019). Accessed via: The British Standards Institution (bsigroup.com). Date accessed: January 2022

- Building Research Establishment (2003) Report 456: Control of dust from construction and demolition activities[11], and
- Environment Agency (2002) National Groundwater and Contaminated Land Centre: Piling into contaminated Sites[12].

# Assessment Methodology and Significance Criteria

## Overview

8.18 The assessment has been undertaken with due consideration of the relevant general EIA guidance. The assessment method includes the following steps:

- Confirmation of information gathered from the relevant statutory bodies and the local planning authority;
- Review of historical plans;
- Review of published geological maps and memoirs;
- Review of ground investigation data from 2019 (see **Appendix 8.1**);
- Review of ground investigation data from 2021 (see **Appendix 8.2**); and
- Review of preliminary contaminated land assessments.

## Study Area

8.19 The HIF Infrastructure Works Site boundary is described in **Chapter 1: Introduction** and **Chapter 3: Site Description** and is shown in **Figure 1.1**. The Site comprises an area of land to the north-east of Victoria Station, to the south of Red Bank Road, and immediately adjacent to Manchester City Centre. It is predominantly in an urban setting, with the wider landscape comprising mainly of commercial/industrial development.

8.20 This chapter refers to the infrastructure works to the north of Victoria Station that are proposed within the first phase of the Victoria North site development and the wider SRF, as described in **Chapter 1: Introduction** and **Chapter 5: Proposed Development**.

8.21 It should be noted that the design of the Victoria North development and of the wider SRF has yet to be completed and therefore, the consideration of in-combination effects given below should be regarded as preliminary and based on available information at the time of writing.

8.22 The assessment scenarios in respect of the EIA for the Proposed Development are as follows:

[11] Building Research Establishment (2003) Report 456: Control of dust from construction and demolition activities. Accessed via: Document 12 - BRE - Control of Dust from Construction & Demolition Activities.pdf (rbkc.gov.uk). Date accessed: October 2021

[12] Environment Agency (2002) National Groundwater and Contaminated Land Centre. Accessed via: Piling into contaminated sites. Date accessed: January 2022

- Assessment Stage 1 - Demolition and Construction Phase:
  - Scenario 1a - Assessment of the impacts relating to the Proposed Development only.
  - Scenario 1b - Assessment of the impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4
  - Scenario 1c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.
- Assessment Stage 2 - Completed Development and Operational Phase:
  - Scenario 2a - Assessment of the impacts relating to the Proposed Development only.
  - Scenario 2b – Assessment of the impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4.
  - Scenario 2c – Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.

8.23 A Cumulative Impact Assessment (CIA) has also been carried out. The schemes considered in the CIA are listed in **Table 2.4** and presented in **Figure 2.5**.

## Baseline Survey Methods

### Desk-based Assessment

8.24 Prior to undertaking the assessment for ground conditions, the baseline information for the Site is obtained. Baseline conditions pertaining to the ground conditions (including geology, soils, land use, contaminated land and hydrogeological issues) have been compiled from a review of readily available published information previously undertaken as part of the Arup Ground Conditions Desk Study (provided in **Appendix 8.1**). Two phases of intrusive site investigation have been completed on the Site and the data from these is interpreted in the Arup Ground Investigation Interpretative Report (GIR). A draft version of the GIR is included as **Appendix 8.2** which has been used to inform the assessments in this chapter.

### Historical Uses

8.25 The history of the Site and surrounding area has been summarised below, based on historical mapping, aerial photography and satellite imagery. The following information has been reviewed:

- Published Ordnance Survey (OS) mapping dating from 1848 to 1992 obtained from Groundsure[13];
- Aerial photographs sourced from Historic England[14]; and

[13] Groundsure Map Insight report, Report Reference: Northern Gateway, presented in Arup Ground Conditions Desk Study, see **Appendix 8.1**

[14] Historic England aerial photography search for Northern Gateway project, presented in Arup Ground Conditions Desk Study, see **Appendix 8.1**

- Satellite imagery from Google Earth.

### Geology and Hydrogeology

8.26 The geology of the Site and surrounding area has been determined with reference to BGS mapping and borehole logs as well as the historical and preliminary ground investigation. The information has been reviewed using the following sources:

- British Geological Survey (BGS) GeoIndex online viewer[15];
- Groundsure GeoInsight report which included 1:10,000 and 1:50,000 geological maps [**Appendix 8.1**];
- BGS bedrock and superficial geology map sheet at 1:10,000 SJ89NW;
- Historical ground investigation data and reports from the planning portal[16], and
- Ground investigation data from 2019 and 2021 provided within the Arup Ground Investigation Interpretative Report (GIR) [**Appendix 8.2**].

### Controlled Waters

8.27 Groundwater and surface water represent potential receptors for pollutants emanating from the Proposed Development either during construction or operation. The baseline information and the assessment of the impact on groundwater and surface water uses desk-based information supplemented by relevant information from intrusive investigations.

8.28 Aquifers that are a source of public water supply, or that connect directly to surface water bodies are particularly sensitive to pollution incidents. The magnitude of potential impacts on groundwater and surface water resources that may be affected by the development is based on the criteria shown in **Table 8.1.**

### Contaminated Land

8.29 A contaminated land risk assessment has been undertaken by Arup in accordance with the Environment Agency (EA) LCRM guidance[17] based on the data that is currently available. The assessment uses a risk-based approach following the source-pathway-receptor methodology promoted by the EA, which considers the nature of potentially contaminated areas in relation to the proximity of any sensitive receptors such as health of site users, residential developments or controlled waters.

8.30 This assessment considers the greatest potential risk of causing adverse environmental impact. The magnitude for potential impact is based on the criteria presented in **Table 8.1.**

[15] BGS online geology viewer. Accessed via: Geology of Britain viewer | British Geological Survey (BGS). Date accessed: January 2022
[16] Manchester City Council Planning Portal. Accessed via: Applications Search (manchester.gov.uk)
[17] Land Contamination Risk management (LCRM) Accessed via: Land contamination risk management (LCRM) - GOV.UK (www.gov.uk) Date accessed: October 2021

### Characterisation of Effect

8.31 The environmental impacts have been predicted with reference to definitive standards and legislation where available. Where it has not been possible to quantify impacts, qualitative assessment has been carried out based on available knowledge and professional judgement. Where uncertainty exists, this has been noted.

8.32 The potential significance of predicted impacts on ground conditions has been determined by reference to criteria for each receptor. Broadly, the significance of the impact is determined with reference to the magnitude of the potential impact, the sensitivity value of the receiving environment or receptor (presented in **Table 8.2**) and the likelihood of the impact occurring and its duration. In order to provide a consistent approach to expressing the outcomes of each of the assessments, the following terminology has been used to assist in determining the degree of significance.

8.33 Magnitude refers to the size or amount of an impact. It is a function of other aspects such as the extent of an impact being the area over which the impact occurs, the duration (i.e., the time for which the impact is expected to last prior to recovery or replacement of the resource or feature), the likelihood (i.e., the chance that the impact will occur) and reversibility. An irreversible (permanent) impact is one from which recovery is not possible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it.

8.34 The value or sensitivity of a receptor is a function of a variety of factors e.g., biodiversity value, social/community value and economic value. The value or potential value of a resource or feature can be determined within a defined geographical context.

### Significance Criteria

8.35 There is no statutory definition of what constitutes a significant effect, and guidance is intended to support the overall impact assessment process. However, it is widely recognised that significance reflects the relationship between the magnitude of an impact and the value of the affected resources or receptor. As such, the significance of an impact is determined using the value of the environmental receptor and its sensitivity to change, together with the determined magnitude of the impact.

8.36 Statutory designations and any potential breaches of environmental law take precedence in determining significance, because the protection afforded to a particular receptor or resource has already been established as a matter of law. However, any assessment of specific impacts that may occur is based on professional judgement, utilising site-specific information on ground conditions / quality.

*Table 8.1 Assessment of Magnitude*

| Magnitude | Definition | Receptor (Example of Impact) |
|---|---|---|
| **High** | Severe or substantial alteration to a key receptor such that the post-development character/composition attributes will be fundamentally changed. | Human Health: Introduction/removal of contamination resulting in acute change in risk to human health based on the potential effects on the critical human health receptor<br><br>Controlled Waters: Introduction/removal of a pollutant to a Principal Aquifer within a Source Protection Zone (SPZ) or potable water supply characterised by a breach of Drinking Water Standards (DWS)<br><br>Geology & Soils: An internationally or nationally designated site such as a Site of Special Scientific Interest (SSSI) or a significant area of high quality or rare soil type that will be significantly damaged or destroyed by the Proposed Development. |
| **Medium** | Loss of alteration to one or more key receptors of the baseline conditions such that post development character/ compositions/ attributes of the baseline will be materially changed | Human Health: Introduction of contamination resulting in chronic damage to health<br><br>Controlled Waters: Pollution of a Principal Aquifer outside a SPZ characterised by a breach of DWS<br><br>Geology & Soils: A locally designated or proposed site of geological interest, such as a Regionally Important Geological Site (RIG), an area of high-quality soil type Loss of good agricultural land (1, 2, 3A) that will be significantly damaged. |
| **Low** | A small shift away from baseline conditions. Change arising from the loss/ alteration will be discernible/ detectable, but not material. The underlying character/ composition/ attributes of the baseline condition will be similar to the pre-development circumstances/ situation | Human health: Introduction of contamination resulting in minimal short-term effects to health<br><br>Controlled waters: Low levels of pollution to a Principal Aquifer outside a SPZ, or pollution of a Secondary A/B Aquifer<br><br>Geology & Soils: Slight damage to a designated site of geological interest or damage to soils or good agricultural land (Grade 1,2,3a). Any other prominent but undesignated geological feature that will be damaged. |
| **Very Low** | Very little change from baseline conditions. Change barely distinguishable, approximating to a “no change” situation | Human health: No appreciable impact on health<br><br>Controlled waters: No appreciable impact on pollution or water quality<br><br>Geology & Soils: Slight damage to other sites of geological interest, soils or poor agricultural land |

| Magnitude | Definition | Receptor (Example of Impact) |
|---|---|---|
| | | (Grade 3b, 4, 5). That is in the vicinity of the Site but will not be affected by the development. |

*Table 8.2 Assessment of Receptor Value*

| Value | Description | Examples |
|---|---|---|
| **High** | Receptor having a high sensitivity to contamination or pollution, or subject to prolonged exposure to contamination.<br><br>Feature possessing key characteristics which contribute significantly to the distinctiveness, rarity and character of the Site<br><br>Feature possessing very significant biodiversity, social/community value and/or economic value at the national level.<br><br>Feature is extremely rare. | Human health: Residential, schools and playing fields.<br><br>Controlled waters: Catchment or surface water bodies of high quality (as defined in Water Framework Directive) and/or Principal aquifers with high to minor vulnerability. Likely to be groundwater protection zone SPZ1 (inner or outer source protection zone) with short travel times to sources or sensitive watercourses. |
| **Medium** | Receptor having a medium sensitivity to contamination or pollution, moderate exposure to contamination.<br><br>Feature possessing key characteristics which contribute significantly to the distinctiveness, and character of the Site.<br><br>Feature possessing significant biodiversity, social/community value and / or economic value at the regional level.<br><br>Feature is uncommon. | Human health: Retail and business parks (public and workplaces), allotments and market gardens.<br><br>Controlled waters: Catchment or surface water bodies of moderate quality, and/or Secondary A aquifers with moderate to low vulnerability. Likely to be SPZ2 and 3 for potable water supplies |
| **Low** | Receptor having a low sensitivity to contamination or pollution, limited exposure to contamination.<br><br>Feature not designated or only designated at a regional / local level. Feature possesses moderate biodiversity, social/community value and / or economic value at the local level.<br><br>Feature is relatively common. | Human health: Public open space, commercial developments, construction workers with acute exposure.<br><br>Controlled waters: Surface water bodies of low quality. Secondary B and undifferentiated aquifers with low vulnerability. Likely to be SPZ3 (Total catchment source protection zone). ` Unproductive strata with no apparent abstraction use, including aquifers affected by saline intrusion. |

| Value | Description | Examples |
|---|---|---|
| | | Property: Infrastructure susceptible to potential gas accumulation, attack by aggressive contaminants or permeation. |
| **Very Low** | Receptor having a very low sensitivity to contamination or pollution, little or exposure to contamination.<br><br>Feature characteristics do not make a significant contribution to the character or distinctiveness locally. Feature not designated. Feature possesses low biodiversity, social/community value and / or economic value. Feature is common. | Human health: Industrial development (assuming routine health and safety practices are implemented).<br><br>Controlled waters: Secondary B aquifer, undifferentiated aquifers, surface water bodies of poor quality. |

*Table 8.3 Impact Matrix*

| Magnitude | Value and Sensitivity of Receptor | | | |
|---|---|---|---|---|
| | **Very Low** | **Low** | **Medium** | **High** |
| **Very Low** | Negligible | Negligible | Minor | Minor |
| **Low** | Negligible | Minor | Minor | **Moderate** |
| **Medium** | Minor | Minor | **Moderate** | **Major** |
| **High** | Minor | **Moderate** | **Major** | **Major** |

8.37 As shown in the matrix in **Table 8.3**, the levels of significance range from Major through to Negligible. The allocation of an impact significance provides clarification of the nature, scale, and type of a determined impact. The generic description for the various significance ratings is given in **Table 8.4**.

*Table 8.4 General significance description.*

| Significance | Significance Ratings |
|---|---|
| **Major** | Very large or large change in environmental or socio-economic conditions. Effects, both adverse and beneficial, which are important considerations at a national to regional level because they contribute to achieving national / regional objectives, or, likely to result in exceedance of statutory objectives and/or breaches of legislation. |

| Significance | Significance Ratings |
|---|---|
| **Moderate** | Intermediate change in environmental or socio-economic conditions. Effects that are likely to be important considerations at a district to local level because they contribute to achieving local objectives or may result in exceedance of local statutory objectives and/or breaches of legislation. |
| **Minor** | Small change in environmental or socio-economic conditions. These effects may be raised as local issues but are unlikely to be of importance in the decision-making process. |
| **Negligible** | No discernible change in environmental or socio-economic conditions. An effect that is likely to have a negligible or neutral influence, irrespective of other effects. |

8.38 Although **Tables 8.1 to 8.4** generally consider adverse effects that have a negative influence on receptors, it is important to note that potential impacts from the development may also be beneficial and can have a positive influence on receptors or provide opportunities for improvement. Consequently, final residual significance ratings may include:

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

8.39 Impact significance provides an indication as to whether mitigation may be required and whether, following the use of mitigation measures, identified impacts may be avoided, reduced or offset. Any impact that is moderate or above is considered a significant impact, as depicted by **bold** text in Table 9.3 . Nevertheless, for best practice purposes, mitigation measures may be required following identification of minor to moderate or greater impacts.

### Assumptions/Limitations

8.40 The majority of the information included in this assessment is derived from desk-based studies, historic and recent ground investigation data, risk assessments and third-party reports.

8.41 The reliability of conclusions drawn from third party reports is based on the accuracy of the information provided. While care has been taken in assessing the information some changes to site conditions are likely to have taken place during the intervening periods.

8.42 A further phase of confirmatory ground investigation is to be carried out in order to address data gaps and confirm the conclusions of the assessments completed to date. The conclusions of this assessment will be revisited taking into consideration the additional data. Any changes will be addressed through a remediation strategy and/or contractor's remedial implementation plan however, significant changes to the proposed works are not foreseen.

## Consultation

8.43 To date, meetings have been held with the following statutory consultees to introduce the proposed Victoria North development and to provide the relevant consultees with a summary of ground conditions at the Site as they are currently understood. These consultees have been provided with the 2019 Arup desk study report for the Site and have reviewed the information in **Table 8.5**.

- Manchester City Council – contaminated land team; and
- The Environment Agency.

*Table 8.5: Consultation*

| Consultee | Date and Time | Comments | Actions |
|---|---|---|---|
| **Manchester City Council** | 25th November 2021 | A scoping request was submitted by Avison Young to MCC and the scoping opinion was received on 7th January 2022. MCC confirmed that the approach outlined within the Scoping Report is broadly acceptable. | MCC confirmed that the ES should include Ground Conditions as a topic and that the results of the 2021 ground investigation should be provided as part of the EIA (provided in **Appendix 8.2**). |
| **Manchester City Council Contaminated Land Team** | 22nd July 2021 (13:30 – 14:30 hrs) | The meeting was intended to brief MCC on work undertaken to date to understand ground conditions across the proposed Victoria North development and to outline proposed further assessment works. | Subsequently, the 2019 Arup Desk Study was provided to MCC for review.<br><br>Initial MCC comments on the 2019 Desk Study have been provided. These and other comments are to be revisited during a proposed meeting of 17 November 2021 |
| **Manchester City Council Contaminated Land Team** | 30 September 2021 (15:00 to 16:00hrs) | This meeting was held with MCC and the EA and was intended to brief both regulators – particularly the EA – on work undertaken to date across the proposed Victoria North development and to outline proposed further assessment works. | See above for MCC actions |
| **Environment Agency** | | | Subsequently, the 2019 Arup Desk Study was provided to the EA for review.<br><br>EA comments on the 2019 Desk Study are to be |

| Consultee | Date and Time | Comments | Actions |
|---|---|---|---|
| | | | provided during a further meeting arranged for 17 November 2021 |
| **Environment Agency** | 23 November 2021 (14:00 to 15:00hrs)<br><br>Meeting rescheduled from 17 November 2021. | This meeting was held with the EA and the project design team to present initial findings from the review of available ground investigation data and discuss the proposed reporting in the GIR. | The EA provided comments on the 2019 Desk Study. The proposed GIR was discussed and proposals made for some additional ground investigation to fill in data gaps.<br><br>Scope of additional GI to be shared with the EA for comment when available. |

# Baseline Conditions

8.44 This section describes the baseline conditions at the Site, the wider Victoria North development and the surrounding area as appropriate. Current site conditions, features and issues are identified and their potential to interact with the development process is assessed.

8.45 The findings of the 2019 and 2021 AEG ground investigations, and the assessments reported by Arup in the Ground Investigation Interpretative Report (see **Appendix 8.2**), form the basis of this assessment. The findings of the Arup 2019 desk study also inform our overall assessment.

### Historical On-Site Uses

8.46 The Arup 2019 desk study describes the previous development of the Victoria North area, drawing on historical mapping, aerial photography, and satellite imagery. Review of the data has identified an industrial history dating back at least to the 1840's. Between the 1840s and late 1800s, modifications were made to the channel of the River Irk, minor channels (mill races etc.) were infilled and the area to the north and west of the River Irk saw large scale earthworks and raising of ground levels to form the Red Bank Plateau. Further information is included within the desk study in **Appendix 8.1**. The discussion below considers the development on the basis of the key site areas, as shown in **Figure 8.1,** and off-site uses (within the wider SRF area). Note the names used for these site areas differ from those used previously in the Arup Ground Conditions Desk Study and reflect current development proposals.

8.47 The 1848 mapping showed that the ground level across much of the Red Bank Plateau appeared to be continuous with the River Irk. The main River Irk channel was present along the southern edge of the area, together with a mill race that ran through the centre of the area that served a corn mill. The map (see **Appendix 8.**1) shows

development along the River Irk, including a dye works within the St. Catherine's Wood area and development in the Red Bank Viaduct area including residential housing, two reservoirs, a swimming baths, print and dye works and a tannery. The Creamline Dairies site was partially occupied by a timber yard around this time.

8.48 No rail infrastructure is evident within the Site until the 1891 map (see **Appendix 8.1**), which identifies large-scale re-development of the Site, including significantly raised ground levels forming the present-day Red Bank Plateau, resulting in steep banks running along the southeast of the area and the installation of rail sidings, a viaduct, a carriage shed and turntables. The river channel had been altered at the northern end of the Site, the mill race infilled and the dye works in St. Catherine's Wood was no longer present.

8.49 In 1906, further filling had taken place to expand the Red Bank Plateau to the south. A small gasworks with two gasometers and associated buildings were present in the northern part of the St. Catherine's Wood area. This feature was partially shown on the 1985 OS map (see **Appendix 8.1**). By 2000, all buildings had been cleared from the gasworks area.

8.50 The 1906 map (see **Appendix 8.1**) shows the Creamline Dairies site occupied by a synagogue and housing. By 1922, filling had extended further southwest to infill the former reservoirs and extend Red Bank Plateau to its present-day extent. The approximate area of filling to create Red Bank Plateau is shown in **Figure 8.1**. From 1992 onwards, most of the rail sidings had been removed and the present-day Creamline Dairies buildings had been constructed. By 2000, all rail infrastructure had been removed from the plateau. The Red Bank Plateau area is now largely vacant and overgrown, and the Red Bank Viaduct area is predominantly used for car parking, with some light industrial use in the southern tip of the Site.

### Historical Off-Site Uses

8.51 The wider SRF site has had a variable industrial history, with past land uses including former gasworks (Rochdale Road), gasholder tanks (Dantzic Street), collieries, chemical and dye works and textile manufacturing. There has been extensive historical clay extraction associated with brick making within the wider SRF area, resulting in landfilling of the former extraction pits within the Lower Irk Valley and Collyhurst areas. Historical landfills outside the site boundary are located at Queens Road, Sand Street and Fitzgeorge Street (**Figure 8.7**).

8.52 Historical coal mining has taken place within the wider SRF area and mine shafts are recorded within Collyhurst South, together with a former colliery (St. George's). Workings from past shallow coal mining are recorded within the area, and several the proposed development plots within Collyhurst are in areas associated with probable coal extraction.

### Ground Conditions

8.53 A review of publicly available BGS geological mapping and borehole records indicate the Site is underlain by the following:

- Superficial deposits: The 1:50,000 scale geological map (reproduced as **Figure 8.2**) indicates that glacial till underlies the Site in the area south-east of the River Irk and along the north-western site boundary. Although not indicated, it is assumed that alluvial deposits are to be found in association with the current and former channels of the River Irk.
- Bedrock: The bedrock varies from east to west across the Site, as illustrated in **Figure 8.3**. The Chester Pebble Beds Formation underlies the west of the Site; The Manchester Marls Formation underlies the centre of the Site; and the Collyhurst Sandstone Formation underlies the north-eastern corner of the Site. All three units are shown on mapping to be gently dipping (5 degrees) SSW.

8.54 Two faults, trending NNW-SSE, cut across the Site, one within the Manchester Marl Formation and the other within the Chester Pebble Beds beneath the disused viaduct. The BGS map indicates that these are normal faults.

8.55 There are no protected geological designations within the Site boundary.

### Geoenvironmental Investigation

8.56 The 2019 ground investigation (January 2019) was designed to provide information on ground conditions within the Victoria North development boundary to inform a high-level cost plan for the proposed Northern Gateway development. The investigation included thirty-seven intrusive locations. No rotary coring was conducted therefore penetration into rockhead was limited (**Figure 8.4**). The scope of fieldwork comprised of:

- Ten cable-percussion boreholes;
- Twenty-one mechanically excavated trial pits;
- Six window sample boreholes; and
- The installation of seven groundwater monitoring wells.

8.57 The 2021 ground investigation was designed to establish baseline geo-environmental and geotechnical conditions within each housing development plot and wider areas, and to provide greater understanding of some of the abnormal ground conditions within the Victoria North development (**Figure 8.4).** Additional phases of ground investigation will be required in the future to provide data for design and costing of earthworks, foundations, and remediation of a plot/building specific basis. The 2021 field work consisted of:

- Sinking of seventeen boreholes using cable percussion methods;
- Further advancement of six of these boreholes into bedrock using rotary coring methods;
- Sinking of eighteen window sample boreholes;
- Mechanical excavation of twenty-three mechanically excavated trial pits; and
- Six horizontal concrete cores into the Red Bank retaining wall.

8.58 In addition to establishing further information on ground conditions and the potential for contamination within areas of former industry, in particular near former gasholders and dye works, the 2021 ground investigation was designed to collect data on:

- The depth to rockhead and quality of rock;
- The infill within the former River Irk channel, and
- Construction of the Red Bank retaining wall.

### Unexploded Ordnance (UXO)

8.59 A preliminary UXO risk assessment report[18] was obtained for the Victoria North development. The report indicates that as Manchester was a bombing target during WWII, the entire city of Manchester, including the Site, potentially is at risk of UXO.

8.60 A map of recorded bomb damage in Manchester shows nine recorded bomb strikes within the Site boundary **(Figure 8.5)**. Given the heavy industrial usage of the development pre-war and the proximity to Victoria Station, the areas are very likely to have been targeted and there is the potential for further unrecorded strikes having taken place.

8.61 A detailed, site-specific risk assessment was carried out by Zetica[19] in line with CIRIA C681[20] for the entire Victoria North SRF area which identified the Site to be at low risk of UXO. During the 2019 and 2021 ground investigations, UXO risk was managed in accordance with the recommendations made in the Zetica risk assessment i.e. through the use of UXO awareness briefings given by a specialist ordnance engineer to site operatives. Zetica recommended that if a 'zero tolerance' to risk is adopted, then clearance certification for pile locations should be obtained in addition to awareness briefings.

### Stratigraphy

8.62 A geological long section through the Site from the southwest to northeast is shown in **Figure 8.6.** The alignment of the geological long section is shown on **Figure 8.4.**

8.63 Ground Investigation data from 2019 and the ground investigation data from 2021 has been used to identify the stratigraphy of the development by area, as presented in **Tables 8.6, 8.7 and 8.8**.

[18] Dynasafe Bactec (2017) Preliminary UXO Risk Assessment, Northern Gateway, Near Sand Hills, Manchester. Groundsure Ref. GSTEST-4393041, Report Ref. 502549
[19] Zetica (2018) Northern Gateway, Manchester. UXO Desk Study and Risk Assessment. Ref. P8135-18-R1
[20] Ciria (2021) Ciria C681 a guide to unexploded ordnance for UK construction industry (safelaneglobal.com) Date accessed: November 2021

*Table 8.6 Summary of Stratigraphy encountered in Red Bank Plateau (Including Creamline Dairies).*

| Stratum | Top of Stratum mbgl (mAOD) | Thickness range (m) | Description |
|---|---|---|---|
| Made ground | GL (39.89-43.55) | 0.8-15.7 | Made ground is variable at shallow depths up to 1m however generally comprises sandy gravel with low cobble content. With gravel of concrete, brick, tarmac, plastic, glass, clinker, sandstone, ceramic, rubber.<br><br>The deeper made ground as depth >1m is also highly variable but has a more cohesive component and is generally described as sandy slightly gravelly clay. With a low cobble content with gravels of clinker, slag, tarmac, brick, mudstone, sandstone, limestone. The cohesive soils are generally soft to firm becoming stiff at depth. |
| Glacial till | 0.8-15.7 (25.94-42.38) | 0.3-9.5 | Soft to firm and stiff at depth slightly sandy gravelly clay.<br><br>Medium dense to very dense gravelly bands of brown slightly clayey sandy gravel and gravelly sand with low/moderate cobble. |
| Alluvium | 0.8-10 (42.38-31.39) | 0.3-4.7 | Medium/dense slightly gravelly sand. Cohesive bands of soft-firm sandy gravelly clay. |
| Chester Pebble Beds | 8.8-13.6 (26.85-31.87) | Unproven | Weak red brown slightly clayey coarse grained weathered sandstone. |
| Manchester Marls | 4-15.7 (25.94-38.8) | Unproven | Weak thinly laminated clayey mudstone. |
| Collyhurst Sandstone | 7 (36.38) | Unproven | BH101 only extremely weak-very weak fine to coarse grained sandstones with lenses of red marl. |

*Table 8.7 Summary of the stratigraphy encountered at Red Bank Viaduct*

| Stratum | Top of Stratum mbgl (mAOD) | Thickness range (m) | Description |
|---|---|---|---|
| Made ground | GL (29.45-32.25) | 1.8-6.4 | Concrete with rebar.<br><br>Red-brown and grey sandy gravel with gravels of brick, concrete, sandstone. In some areas, made |

| Stratum | Top of Stratum mbgl (mAOD) | Thickness range (m) | Description |
|---|---|---|---|
| | | | ground encountered as clayey material described as soft firm sandy gravelly clay. |
| Glacial till | 3 (27) | 1.1 | Granular medium dense slightly clayey gravelly sand with gravels of mudstone limestone and sandstone. |
| Alluvium | 4 (25.45) | Unproven | Only WS105A. Loose dark brown clayey gravelly sand with gravels of sandstone limestone and quartzite. |
| Chester Pebble Beds | 1.8-6.4<br><br>(24.68-30.15) | Unproven | Extremely weak to weak weathered to un-weathered red brown fine grained sandstone. |
| Manchester Marls | Not encountered | | |
| Collyhurst Sandstone | Not encountered | | |

*Table 8.8 Summary of stratigraphy encountered at St. Catherine's Wood*

| Stratum | Top of Stratum mbgl (mAOD) | Thickness range (m) | Description |
|---|---|---|---|
| Made ground | GL (31.94-43.38) | 3-7.5 | Concrete with rebar<br><br><1m sandy clay, gravelly sand and sandy gravelly topsoil.<br><br>>1m loose medium dense clayey sandy gravel and soft to stiff sandy gravelly clay. |
| Glacial till | 7.5 (34.39-35.78) | 10.5 | Soft-firm brown sandy very gravelly clay with gravels of sandstone mudstone and limestone. Medium dense granular bands of brown clayey sandy gravel and gravelly sand. |
| Alluvium | 3-4.3 (28.51-29.2) | Unproven | Soft brown very sandy clay and loose brown slightly clayey sand. |

| Stratum | Top of Stratum mbgl (mAOD) | Thickness range (m) | Description |
|---|---|---|---|
| Chester Pebble Beds | 3.3 (28.64) | Unproven | Only BH213. Extremely weak fine grained red sandstone distinctly weathered. |
| Manchester Marls | Not encountered | | |
| Collyhurst Sandstone | 18 (23.89) | Unproven | Extremely weak red-brown coarse grained weathered sandstone. |

### Rock Head Levels

8.64 The average depth to bedrock encountered across the Site is 7.25m bgl, but there are much deeper areas recorded in Red Bank Plateau and St. Catherine's Wood (in the area of the historic infilled channel feature). The implication of this variable rockhead depth is that a variety of foundation solutions may be required for future development across the Site.

### Buried Obstructions

8.65 There is a high potential for encountering buried obstructions at the Site due to the Site development history. Potential relic foundations and obstructions intersecting the stratigraphy have been encountered during intrusive ground investigations, particularly in the area of the former carriage shed on Red Bank Plateau, as shown in **Figure 8.7**.

## Hydrology

8.66 The closest surface water feature to the Site is the River Irk, which forms part of the southern boundary of the Site. The river lies in a valley and river levels are in the order of 15m below the general level of the Red Bank Plateau. The north bank of the River Irk is characterised by a series of steep slopes, with gradients locally approaching 1(v) to 1.7(h).

8.67 As also shown on **Figure 8.7**, during the industrial development of the Site (which began c. 1850) the natural channel of the river was modified, with some straightening of the channel undertaken in the north east together with the construction and later infilling of a mill race. Masonry walls have been constructed on the river banks in some areas, which constrain the river flow. The River Irk is classified as a heavily modified water body. There are two weirs within the site area: Collyhurst weir in the north-east and Scotland Weir in the south-west, and a section of the river is culverted beneath an operational railway viaduct. The Irk currently has an overall Water Framework Directive (WFD) status of 'Moderate' with a chemical status of 'fail'[21]. The reasons for not achieving good water

[21] Defra and Environment Agency (2011) Water for life and livelihoods. River basin management plan North West river basin district. Water Body Status Objectives. Accessed January 2022.

quality status in the River Irk include continuous sewage discharges and diffuse pollution sources including contaminated land, landfill leachate and urban development.

### Hydrogeology

8.68 The superficial geology within the Site is classified as a Secondary (A) Aquifer (undifferentiated). There is small area in St. Catherine's Wood which is classified as a Secondary (A) Aquifer (permeable layers), associated with alluvial deposits. Secondary aquifers are defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

8.69 The Manchester Marl bedrock is classified as a Secondary (B) Aquifer (lower permeability layers), whereas the Chester Pebble Beds Formation and Collyhurst Sandstone Formation are classified as Principal Aquifers. Principal aquifers are defined as geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale.

8.70 No SPZs are located within 500m of the Site, but there are three active abstraction licences within 500m of the Site boundary, all used for general cooling and process water. The closest licensed abstraction is at Packaging Products, approximately 270m north east of the Site boundary.

8.71 The main groundwater-bearing units within the Site are the Collyhurst Sandstone Formation in the east and the Chester Pebble Beds Formation in the west. These two units are likely to be hydraulically separated from each other by the less permeable Manchester Marl Formation, which is present through the centre of the Site (**Figure 8.3**). Average recorded groundwater levels in the Manchester Marl were around 37 to 38mAOD, in the Collyhurst Sandstone around 30mAOD and in the Chester Pebble Beds at around 27 to 30mAOD. Based on the river levels measured in 2021, it is likely that the groundwater within the sandstone discharges into the River Irk.

8.72 Groundwater was also observed in the made ground, glacial till and alluvium during drilling and in subsequent water monitoring. The made ground is considered likely to contain a perched but discontinuous body of groundwater in the Red Bank Plateau area, separated from the underlying bedrock aquifers in most areas by the glacial till. The glacial till has been noted to be absent in parts of Red Bank Plateau, for example where a former river channel was located.

8.73 In the lower-lying areas of the Site (Red Bank Viaduct and the lower part of St. Catherine's Wood), where glacial till is absent, made ground has been observed to directly overlie alluvium or bedrock and groundwater in these areas is likely to be in continuity with the river unless it is perched on relic features such as old floor slabs or cellars.

8.74 Alluvium was not encountered in many exploratory holes, but is likely to be present in a narrow zone along the river valley. The groundwater within the alluvium is assumed to be in continuity with the River Irk.

8.75 Glacial till is similarly not continuous across the Site, being absent in a zone along the river valley (**Figure 8.2**). The groundwater monitoring data in the glacial till suggests that there is not a continuous water body within these deposits, but that any groundwater is confined within granular layers.

### Contamination – Soils

8.76 Field observations were recorded during the 2019 and 2021 preliminary ground investigations. A summary of encountered obstructions and visual and olfactory evidence of contamination is presented in **Table 8.9.**

8.77 The visual and olfactory evidence for contamination identified in TP202B and TP202C is considered to be associated with below-ground remains of a former railway carriage shed. The visual and olfactory evidence for contamination identified in BH203, TP204, TP205, TP206A and TP213 is thought to be associated with the below-ground remains of a former gas works. Both these historical features are part of the former rail infrastructure and are shown in **Figure 8.7**.

*Table 8.9 Encountered visual and olfactory evidence of contamination*

| Location ID | Site area | Evidence of contamination |
|---|---|---|
| BH103 | Red Bank Plateau | Hydrocarbon odour at 0.1 – 1.3mbgl |
| TP101 | Red Bank Plateau | Slight hydrocarbon odour at 0.8 – 0.9mbgl |
| TP120 | Red Bank Viaduct | Strong hydrocarbon odour at 0.7 – 1.8mbgl |
| BH203 | St. Catherine's Wood (in area of former railway gasworks) | Moderate hydrocarbon odour at 5.5 – 7.5mbgl |
| BH207 | Red Bank Plateau | Moderate hydrocarbon odour at 13 – 15.7mbgl |
| BH211A | Red Bank Plateau (in area of former reservoir) | Strong hydrocarbon odour at 10.1 – 10.5mbgl |
| TP202B | Red Bank Plateau (in area of former carriage shed) | Oily groundwater within foundations at 0.1 – 0.6mbgl |
| TP202C | Red Bank Plateau (in area of former carriage shed) | Oily groundwater within foundations at 0.5 – 1.2mbgl |
| TP204 | St. Catherine's Wood (in area of former railway gasworks) | Metallic dark blue sand with strong hydrocarbon odour at 2.4 - 4.5mbgl, sheen on groundwater |

| Location ID | Site area | Evidence of contamination |
|---|---|---|
| TP205 | St. Catherine's Wood (in area of former railway gasworks) | Metallic dark blue sand and gravel with strong hydrocarbon odour at 1.9 – 4.2mbgl, sheen on groundwater |
| TP206A | St. Catherine's Wood (in area of former railway gasworks) | Metallic dark blue sand with strong hydrocarbon odour at 1.7 – 4.5mbgl, sheen on groundwater |
| TP213 | Red Bank Plateau (in area of former railway gasworks) | Strong hydrocarbon odour at 1.2 – 4.5mbgl |
| TP216 | Red Bank Plateau | Mild hydrocarbon odour at 1.1 – 1.2mbgl |

8.78 Soil guideline values (SGVs) generated using the CLEA software and accompanying toxicological reports have been issued by the Environment Agency (EA) for eleven contaminants. To supplement these, Land Quality Management Ltd (LQM)[22] and the AGS/EIC/CL:AIRE[23] have also produced and published Generic Assessment Criteria (GACs) for the standard CLEA end uses and input parameters for use in the CLEA software. Arup has produced GACs using the CLEA software using inputs derived by LQM and AGS/EIC/CL:AIRE.

8.79 It is understood that the Proposed Development will largely consist of apartments with managed soft landscaping although some townhouses with private gardens are proposed in the Red Bank Plateau area. The St. Catherine's Wood area is to largely remain as wooded, public open space, although a small part of this area is proposed for a school development. Based on the current proposed masterplan, the soil data for the Red Bank Plateau and Red Bank Viaduct areas have been compared to the GACs for a residential land use with private gardens that could be used to grow produce for consumption, assuming a soil organic matter (SOM) content of 6%, which has been selected based on the average SOM content of the soils sampled on site. The soil data for St. Catherine's Wood has been compared against the GACs for a public open space (park) end use assuming 6% SOM.

*Table 8.10 Exceedances of soil screening against residential with plant uptake GACs*

| Contaminant | GAC (mg/kg) | No. of samples | Conc range (mg/kg) | Exceedances | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | No. | Location ID | Depth (mbgl) | Conc (mg/kg) | Area |
| Arsenic | 37 | 128 | 1.9 to 180 | 13 | BH106<br>TP109 | 0.3m<br>1.3m | 40<br>71 | RB Plateau<br>RB Plateau |

[22] Land Quality Management Ltd (LQM) (2013) Accessed via: LQM: Conceptual site model software - Land Quality Management Ltd Date accessed: January 2022
[23] AGS/EIC/CL:AIRE Accessed via: Generic Assessment Criteria (GAC) (claire.co.uk) Date accessed: January 2022

| Contaminant | GAC (mg/kg) | No. of samples | Conc range (mg/kg) | Exceedances | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | No. | Location ID | Depth (mbgl) | Conc (mg/kg) | Area |
| | | | | | TP112 | 2.3m | 44 | RB Plateau |
| | | | | | TP115 | 0.3m | 40 | RB Plateau |
| | | | | | TP115 | 3.3m | 40 | RB Plateau |
| | | | | | TP124 | 0.3m | 61 | New Town |
| | | | | | BH207 | 1.2m | 53 | RB Plateau |
| | | | | | BH211A | 9m | 50 | RB Plateau |
| | | | | | BH211A | 10.5m | 40 | RB Plateau |
| | | | | | TP219 | 1m | 180 | RB Viaduct |
| | | | | | WS201 | 1m | 44 | RB Plateau |
| | | | | | WS205 | 2m | 65 | RB Plateau |
| | | | | | WS209 | 2m | 43 | Travis Island |
| Beryllium | 1.7 | 128 | <0.2 to 3.9 | 24 | BH104 | 0.7m | 2.8 | RB Plateau |
| | | | | | BH104 | 9.7m | 2.1 | RB Plateau |
| | | | | | TP109 | 0.3m | 2.6 | RB Plateau |
| | | | | | TP109 | 1.3m | 2.1 | RB Plateau |
| | | | | | TP109 | 3.3m | 2 | RB Plateau |
| | | | | | TP110 | 1.3m | 1.9 | RB Plateau |
| | | | | | TP112 | 0.3m | 2.2 | RB Plateau |
| | | | | | TP115 | 0.3m | 2.2 | RB Plateau |
| | | | | | TP115 | 1.3m | 3.9 | RB Plateau |
| | | | | | TP115 | 3.3m | 2.3 | RB Plateau |
| | | | | | TP120 | 1m | 1.9 | RB Viaduct |
| | | | | | TP124 | 0.3m | 1.8 | New Town |
| | | | | | BH207 | 1.2m | 2.6 | RB Plateau |
| | | | | | BH207 | 10.2m | 3.9 | RB Plateau |

| Contaminant | GAC (mg/kg) | No. of samples | Conc range (mg/kg) | Exceedances | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | No. | Location ID | Depth (mbgl) | Conc (mg/kg) | Area |
| | | | | | BH208 | 0.3m | 1.8 | RB Plateau |
| | | | | | BH208 | 8.2m | 2 | RB Plateau |
| | | | | | BH209 | 1.2, | 2.1 | RB Plateau |
| | | | | | BH211A | 2.2m | 1.8 | RB Plateau |
| | | | | | BH211A | 5.2m | 2 | RB Plateau |
| | | | | | TP202 | 0.3m | 1.9 | RB Plateau |
| | | | | | TP219 | 1m | 2.6 | RB Viaduct |
| | | | | | WS201 | 1m | 2 | RB Plateau |
| | | | | | WS205 | 2m | 2.3 | RB Plateau |
| | | | | | WS209 | 2m | 2.2 | Travis Island |
| Copper | 2430 | 128 | 8.9 to 4200 | 1 | TP124 | 0.3m | 4200 | New Town |
| Lead | 200 | 128 | 6.4 to 12000 | 39 | BH102 | 0.3m | 530 | RB Plateau |
| | | | | | BH103 | 0.3m | 230 | RB Plateau |
| | | | | | BH103 | 1m | 210 | RB Plateau |
| | | | | | BH106 | 0.3m | 370 | RB Plateau |
| | | | | | BH106 | 3.3m | 210 | RB Plateau |
| | | | | | BH110 | 3m | 1900 | RB Viaduct |
| | | | | | BH112 | 0.3m | 300 | RB Viaduct |
| | | | | | TP104 | 0.3m | 210 | RB Plateau |
| | | | | | TP109 | 0.3m | 1300 | RB Plateau |
| | | | | | TP109 | 3.3m | 330 | RB Plateau |
| | | | | | TP110 | 1.3m | 520 | RB Plateau |
| | | | | | TP112 | 0.3m | 290 | RB Plateau |
| | | | | | TP112 | 2.3m | 210 | RB Plateau |
| | | | | | TP115 | 0.3m | 460 | RB Plateau |

| Contaminant | GAC (mg/kg) | No. of samples | Conc range (mg/kg) | Exceedances | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | No. | Location ID | Depth (mbgl) | Conc (mg/kg) | Area |
| | | | | | TP115 | 3.3m | 520 | RB Plateau |
| | | | | | TP120 | 0.3m | 2100 | RB Viaduct |
| | | | | | TP121 | 0.3m | 440 | RB Viaduct |
| | | | | | TP122 | 0.3m | 730 | RB Viaduct |
| | | | | | TP124 | 0.3m | 12000 | New Town |
| | | | | | TP125 | 0.3m | 830 | New Town |
| | | | | | WS104 | 1m | 290 | Travis Island |
| | | | | | WS105 | 0.3m | 490 | RB Viaduct |
| | | | | | BH207 | 1.2m | 240 | RB Plateau |
| | | | | | BH210 | 4.2m | 260 | RB Plateau |
| | | | | | BH211A | 2.2m | 490 | RB Plateau |
| | | | | | BH211A | 5.2m | 600 | RB Plateau |
| | | | | | BH211A | 9m | 460 | RB Plateau |
| | | | | | BH212 | 0.4m | 430 | RB Viaduct |
| | | | | | BH212 | 2.2m | 850 | RB Viaduct |
| | | | | | BH212A | 0.6m | 370 | RB Viaduct |
| | | | | | BH214 | 1.1m | 870 | RB Viaduct |
| | | | | | BH214A | 2.2m | 520 | RB Viaduct |
| | | | | | TP202 | 0.3m | 460 | RB Plateau |
| | | | | | TP210 | 1m | 420 | RB Plateau |
| | | | | | TP213 | 0.3m | 230 | RB Plateau |
| | | | | | TP219 | 1m | 430 | RB Viaduct |
| | | | | | WS205 | 2m | 1400 | RB Plateau |
| | | | | | WS208 | 2m | 240 | Travis Island |
| | | | | | WS209 | 0.3m | 230 | Travis Island |

| Contaminant | GAC (mg/kg) | No. of samples | Conc range (mg/kg) | Exceedances | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | No. | Location ID | Depth (mbgl) | Conc (mg/kg) | Area |
| Vanadium | 410 | 128 | 7 to 640 | 1 | BH207 | 5.2m | 640 | RB Plateau |
| Cyanide | 1.4 | 128 | <0.1 to 160 | 14 | BH104 | 9.7m | 2.4 | RB Plateau |
| | | | | | TP115 | 3.3m | 68 | RB Plateau |
| | | | | | TP124 | 0.3m | 89 | New Town |
| | | | | | WS104 | 1m | 8.5 | Travis Island |
| | | | | | WS106 | 1m | 4 | Travis Island |
| | | | | | BH207 | 10.2m | 9.1 | RB Plateau |
| | | | | | BH207 | 13.2m | 18 | RB Plateau |
| | | | | | BH211A | 2.2m | 2.9 | RB Plateau |
| | | | | | BH211A | 5.2m | 2.5 | RB Plateau |
| | | | | | BH211A | 9m | 47 | RB Plateau |
| | | | | | BH211A | 10.5m | 12 | RB Plateau |
| | | | | | BH212A | 0.6m | 3.1 | RB Viaduct |
| | | | | | WS208 | 2m | 160 | Travis Island |
| | | | | | WS209 | 0.3m | 69 | Travis Island |
| Dibenz-a-h-anthracene | 0.305 | 99 | <0.03 to 5 | 6 | BH110 | 0.3m | 0.54 | RB Viaduct |
| | | | | | WS104 | 1m | 2.4 | Travis Island |
| | | | | | BH213 | 1.2m | 5 | RB Viaduct |
| | | | | | TP210 | 0.3m | 0.76 | RB Plateau |
| | | | | | TP213 | 0.3m | 0.75 | RB Plateau |
| | | | | | TP213 | 2m | 0.46 | RB Plateau |
| Benzo(a) anthracene | 13.3 | 99 | <0.03 to 43 | 2 | WS104 | 1m | 19 | Travis Island |
| | | | | | BH213 | 1.2m | 43 | |
| Benzo(a) | 3 | 99 | <0.03 to 26 | 6 | BH110 | 0.3m | 3.9 | RB Viaduct |

| Contaminant | GAC (mg/kg) | No. of samples | Conc range (mg/kg) | Exceedances | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | No. | Location ID | Depth (mbgl) | Conc (mg/kg) | Area |
| pyrene | | | | | WS104 | 1m | 17 | Travis Island |
| | | | | | BH213 | 1.2m | 26 | RB Viaduct |
| | | | | | TP210 | 0.3m | 5.6 | RB Plateau |
| | | | | | TP213 | 0.3m | 6.2 | RB Plateau |
| | | | | | TP213 | 2m | 5 | RB Plateau |
| Benzo(b) fluoranthene | 3.7 | 99 | <0.03 to 37 | 5 | BH110 | 0.3m | 4.5 | RB Viaduct |
| | | | | | WS104 | 1m | 17 | Travis Island |
| | | | | | BH213 | 1.2m | 37 | RB Viaduct |
| | | | | | TP210 | 0.3m | 7.1 | RB Plateau |
| | | | | | TP213 | 0.3m | 5.9 | RB Plateau |
| Chrysene | 26.8 | 99 | <0.03 to 50 | 1 | BH213 | 1.2m | 50 | RB Viaduct |

8.80 As shown in **Table 8.10**, the following contaminants have been reported above their respective screening criteria for a residential with private gardens (plant uptake) end use: arsenic, beryllium, copper, lead, vanadium, cyanide and PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene and dibenz(ah)anthracene). No exceedances were found for BTEX or TPH.

8.81 The screening of soil samples for the St. Catherine's Wood area did not identify any samples where contaminants exceeded the relevant GAC for public open space.

8.82 Small quantities (in the range <0.001% by weight of sample to 0.012%) of asbestos were detected in the made ground in all areas of the Site, as is common on previously-developed land. Asbestos fibres were identified by laboratory analysis in 16 of 121 samples tested, comprising amosite (brown asbestos) and chrysotile (white asbestos) fibres.

### Contamination – Controlled Waters

8.83 Groundwater samples were obtained from monitoring wells installed in the sandstone aquifers, the mudstone, made ground, alluvium and glacial till. Selected samples of soil were also subject to leaching tests. Two

groundwater samples were taken from trial pits where oily groundwater was observed in the made ground. A total of 30 groundwater samples were tested for a range of potential contaminants. In addition, two samples of water were tested from the River Irk at the upstream and downstream ends of the Site.

8.84 The primary controlled waters receptors within the Site are considered to be the River Irk and the Principal Aquifers in the sandstone bedrock. The groundwater and surface water data were therefore screened against values appropriate for this scenario, primarily Environmental Quality Standards (EQS) for freshwater and where these are not available, UK Drinking Water Standards or other European or international standards. Where the EQS values are based on water hardness, the hardness of the River Irk was used.

8.85 Testing of groundwater within the bedrock indicated that the former Queens Road Tip landfill to the immediate north of the Site (**Figure 8.7**) may be affecting the quality of groundwater entering the Site from the north. Exceedances of the screening values for copper, iron, cyanides and PAH were noted in borehole BH203 located close to the former gasworks in the St. Catherine's Wood area. These contaminants are consistent with gasworks wastes. Exceedances were also noted in the Red Bank Viaduct area close to the River Irk (BH212) and may be the result of historical contaminative uses in that area of the Site. The groundwater screen in bedrock is summarised in **Table 8.11** below.

*Table 8.11 Exceedances of groundwater screening criteria in bedrock*

| Contaminant | GAC (mg/l) | No. of samples | Exceedances | | | | |
|---|---|---|---|---|---|---|---|
| | | | No. | Location | Conc. (ug/l) | Formation | Area |
| Antimony | 0.005 | 10 | 1 | BH212 | 0.0059 | Chester Pebble Beds | RB Viaduct |
| Copper | 0.001 | 10 | 4 | BH201<br>BH210<br>BH203 | 0.006<br>0.003, 0.002<br>0.005 | Manchester Marl<br>Chester Pebble Beds<br>Collyhurst Sandstone | RB Plateau<br>RB Plateau<br>RB Viaduct |
| Manganese | 0.012 | 10 | 9 | BH201<br>BH205<br>BH209<br>BH210<br>BH203 | 0.39<br>0.28, 0.46<br>0.75, 1.6<br>0.75, 0.85<br>0.66 | Manchester Marl<br>Manchester Marl<br>Chester Pebble Beds<br>Chester Pebble Beds | RB Plateau<br>RB Plateau<br>RB Plateau<br>RB Plateau<br>St. C Wood |

| Contaminant | GAC (mg/l) | No. of samples | Exceedances | | | | |
|---|---|---|---|---|---|---|---|
| | | | No. | Location | Conc. (ug/l) | Formation | Area |
| | | | | BH212 | 0.02 | Collyhurst Sandstone<br>Chester Pebble Beds | RB Viaduct |
| Nickel | 0.004 | 10 | 2 | BH209 | 0.014, 0.012 | Chester Pebble Beds | RB Plateau |
| Zinc | 0.012 | 10 | 5 | BH205<br>BH209<br>BH212 | 0.015, 0.024<br>0.1, 0.05<br>0.022 | Manchester Marl<br>Chester Pebble Beds<br>Chester Pebble Beds | RB Plateau<br>RB Plateau<br>RB Viaduct |
| Iron (soluble) | 0.2 | 6 | 3 | BH210<br>BH203<br>BH212 | 1.1<br>5.9<br>0.22 | Chester Pebble Beds<br>Collyhurst Sandstone<br>Chester Pebble Beds | RB Plateau<br>RB Plateau<br>RB Viaduct |
| Total Cyanide | 0.001 | 10 | 1 | BH212 | 0.29 | Chester Pebble Beds | RB Viaduct |
| Complex Cyanide | 0.001 | 2 | 2 | BH203<br>BH212 | 0.001<br>0.36 | Collyhurst Sandstone<br>Chester Pebble Beds | RB Plateau<br>RB Viaduct |
| Ammoniacal Nitrogen as N | 0.3 | 8 | 3 | BH201<br>BH210 | 0.34<br>2.5, 7.4 | Manchester Marl<br>Chester Pebble Beds | RB Plateau<br>RB Plateau |
| Fluoranthene | 0.000006 | 6 | 3 | BH210<br>BH203<br>BH212 | 0.00002<br>0.00006<br>0.00001 | Chester Pebble Beds<br>Collyhurst Sandstone | RB Plateau<br>RB Plateau<br>RB Viaduct |

| Contaminant | GAC (mg/l) | No. of samples | Exceedances | | | | |
|---|---|---|---|---|---|---|---|
| | | | No. | Location | Conc. (ug/l) | Formation | Area |
| | | | | | | Chester Pebble Beds | |
| Naphthalene | 0.002 | 6 | 1 | BH203 | 0.085 | Collyhurst Sandstone | RB Plateau |
| Anthracene | 0.0001 | 6 | 1 | BH203 | 0.00012 | Collyhurst Sandstone | RB Plateau |

8.86 Groundwater testing within the made ground (**Table 8.12**) suggests more widespread contamination with copper, lead, nickel and zinc. Ammoniacal nitrogen is also noted to be present at elevated concentrations in several samples. Oily groundwater was noted around the former carriage shed on Red Bank Plateau. It is thought that the remnant carriage shed structure is hydraulically isolated and this oily contamination is localised.

8.87 An iridescent sheen was noted on the groundwater around the former gasworks in St. Catherine's Wood. Groundwater testing detected PAH and TPH in groundwater, but not at concentrations in excess of the screening values. Ammoniacal nitrogen was present in groundwater marginally in excess of the screening value in this location. A hydrocarbon odour was identified at the base of the made ground in BH207, which is believed to be located in a former mill race/river channel. Testing did not identify any detectable concentrations of hydrocarbons in groundwater, however.

8.88 A number of contaminants were present in excess of screening values in BH211A, which was located within a former reservoir beneath the Red Bank Plateau. Material with a strong hydrocarbon odour was encountered at the base of the made ground at a depth of over 10m bgl. Elevated concentrations of ammoniacal nitrogen, PAH, complex cyanide and metals including lead were identified in groundwater, possibly as a result of contaminated materials used to infill the reservoir when it became disused.

*Table 8.12: Exceedances of water screening criteria in made ground*

| Contaminant | GAC (mg/l) | No. of samples | Exceedances | | | |
|---|---|---|---|---|---|---|
| | | | No. | Location | Concentration (ug/l) | Area |
| Antimony | 0.005 | 14 | 1 | BH103 | 0.01 | RB Plateau |

| Contaminant | GAC (mg/l) | No. of samples | Exceedances | | | |
|---|---|---|---|---|---|---|
| | | | No. | Location | Concentration (ug/l) | Area |
| Arsenic | 0.01 | 14 | 1 | BH211A | 0.019 | RB Plateau |
| Copper | 0.001 | 14 | 8 | BH103<br>BH208<br>BH211A<br>WS201B<br>WS207 | 0.003<br>0.003, 0.003<br>0.001<br>0.007, 0.008<br>0.008, 0.007 | RB Plateau<br>RB Plateau<br>RB Plateau<br>RB Plateau<br>RB Plateau |
| Chromium | 0.0047 | 14 | 1 | BH103 | 0.008 | RB Plateau |
| Lead | 0.0012 | 14 | 2 | BH103<br>BH211A | 0.002<br>0.005 | RB Plateau<br>RB Plateau |
| Nickel | 0.004 | 14 | 7 | BH103<br>BH208<br>WS201B<br>WS207<br>BH207 | 0.006<br>0.014, 0.04<br>0.005<br>0.004, 0.005<br>0.08 | RB Plateau<br>RB Plateau<br>RB Plateau<br>RB Plateau<br>RB Plateau |
| Manganese | 0.012 | 14 | 14 | All | 0.049 to 3.2 | All |
| Zinc | 0.012 | 14 | 7 | BH103<br>BH208<br>WS201B<br>WS207<br>BH207 | 0.013<br>0.014, 0.037<br>0.057<br>0.1, 0.09<br>0.077 | RB Plateau<br>RB Plateau<br>RB Plateau<br>RB Plateau<br>RB Plateau |
| Iron (soluble) | 0.2 | 4 | 2 | BH211A<br>WS208 | 0.82<br>4.1 | RB Plateau<br>Travis Island |
| Total Cyanide | 0.001 | 10 | 1 | BH212 | 0.29 | RB Viaduct |

| Contaminant | GAC (mg/l) | No. of samples | Exceedances | | | |
|---|---|---|---|---|---|---|
| | | | No. | Location | Concentration (ug/l) | Area |
| Complex Cyanide | 0.001 | 6 | 3 | BH211A<br>WS208 | 0.009, 0.003<br>0.19 | RB Plateau<br>Travis Island |
| Ammoniacal Nitrogen as N | 0.3 | 13 | 9 | BH103<br>BH204<br>BH208<br>BH211A<br>WS201B<br>WS207 | 3.8<br>0.36<br>1.3, 1<br>5.6, 2.7<br>22<br>16, 18 | RB Plateau<br>St. C Wood<br>RB Plateau<br>RB Plateau<br>RB Plateau<br>RB Plateau |
| Fluoranthene | 0.000006 | 11 | 8 | BH103<br>BH208<br>BH211A<br>TP202B<br>TP202C<br>WS201B<br>WS208<br>WS210 | 0.00006<br>0.00003<br>0.00001<br>0.019<br>0.007<br>0.00002<br>0.0008<br>0.0004 | RB Plateau<br>RB Plateau<br>RB Plateau<br>RB Plateau<br>RB Plateau<br>RB Plateau<br>Travis Island<br>RB Plateau |
| Naphthalene | 0.002 | 11 | 1 | WS208 | 0.016 | Travis Island |
| Anthracene | 0.0001 | 11 | 4 | BH208<br>TP202B<br>TP202C<br>WS208 | 0.00005<br>0.05<br>0.006<br>0.00001 | RB Plateau<br>RB Plateau<br>RB Plateau<br>Travis Island |

8.89 Groundwater in the glacial till was found to contain concentrations of copper, lead and zinc in excess of the screening values within the Red Bank Plateau area of the Site. Generally lower concentrations of contamination were noted in the groundwater in glacial till compared to the made ground, which indicates that the glacial till may

be preventing significant vertical migration of perched groundwater from the made ground, where the glacial till is present. The groundwater testing in glacial till is summarised in **Table 8.13**.

*Table 8.13 Exceedances of water screening criteria in glacial till*

| Contaminant | GAC (mg/l) | No. of samples | Exceedances | | | |
|---|---|---|---|---|---|---|
| | | | No. | Location | Concentration (ug/l) | Area |
| Antimony | 0.005 | 1 | 1 | BH105 | 0.008 | RB Plateau |
| Cadmium | 0.00008 | 1 | 1 | BH105 | 0.0001 | RB Plateau |
| Copper | 0.001 | 5 | 2 | BH202<br>BH105 | 0.007<br>0.003 | RB Plateau<br>RB Plateau |
| Lead | 0.0012 | 5 | 1 | BH202 | 0.0014 | RB Plateau |
| Manganese | 0.012 | 5 | 2 | BH202<br>BH206 | 1.25<br>0.85, 1.5 | RB Plateau<br>RB Plateau |
| Zinc | 0.012 | 5 | 3 | BH202<br>BH206<br>BH105 | 0.16<br>0.03, 0.03<br>0.02 | RB Plateau<br>RB Plateau<br>RB Plateau |
| Chloride | 250 | 3 | 1 | BH202 | 320 | RB Plateau |
| Ammoniacal nitrogen | 0.3 | 2 | 1 | BH105 | 1.3 | RB Plateau |

8.90 Groundwater quality was only tested in one sample from the alluvium, taken from the Red Bank Viaduct area. Marginally elevated concentrations of contamination were identified in the alluvium, similar to those observed in the made ground. The testing data are summarised in **Table 8.14**.

*Table 8.14 Exceedances of water screening criteria in alluvium*

| Contaminant | GAC (mg/l) | No. of samples | Exceedances | | | |
|---|---|---|---|---|---|---|
| | | | No. | Location | Conc (ug/l) | Area |
| Cadmium | 0.00008 | 1 | 1 | BH214A | 0.0002 | RB Viaduct |
| Copper | 0.001 | 1 | 1 | BH214A | 0.005 | RB Viaduct |

| Contaminant | GAC (mg/l) | No. of samples | Exceedances | | | |
|---|---|---|---|---|---|---|
| | | | No. | Location | Conc (ug/l) | Area |
| Selenium | 0.01 | 1 | 1 | BH214A | 0.05 | RB Viaduct |
| Ammoniacal Nitrogen | 0.3 | 1 | 1 | BH214A | 0.34 | RB Viaduct |

8.91 The river samples that were tested as part of the 2021 ground investigation identified exceedances of the screening values for copper, nickel and zinc both upstream and downstream of the Site. Water quality was not observed to worsen significantly as the river passes through the Site, indicating that groundwater quality is not having a significant impact on surface water quality currently.

8.92 Soil leachate was prepared in line with BS EN12457 and results of eluate at 2:1 liquid:solid ratio were screened against the same water quality standards used for groundwater and surface water above, which identified exceedances of the screening values for copper, antimony, cadmium, lead, zinc and sulphate. The results indicate that some of the contaminants within the made ground are potentially mobile, but this was not observed consistently across the Site and the exceedances were typically marginal. The soil leachate screening is summarised in **Table 8.15**.

*Table 8.15 Exceedances of water screening criteria in soil leachate*

| Contaminant | GAC (mg/l) | No. of samples | Exceedances | | | |
|---|---|---|---|---|---|---|
| | | | No. | Location | Conc (ug/l) | Area |
| Antimony | 0.005 | 22 | 1 | WS209 | 0.005 | Travis Island |
| Cadmium | 0.00008 | 22 | 3 | WS209<br>TP215<br>BH212 | 0.00016<br>0.00028<br>0.00018 | Travis Island<br>RB Plateau<br>RB Viaduct |
| Copper | 0.001 | 22 | 12 | BH203<br>BH210<br>WS209<br>WS203<br>WS208<br>WS204<br>WS206<br>BH212<br>BH214<br>WS202<br>WS210<br>WS212 | 0.0034<br>0.0018<br>0.0013<br>0.0012<br>0.0025<br>0.0024<br>0.0014<br>0.0017<br>0.0089<br>0.0032<br>0.0013<br>0.0033 | RB Plateau<br>RB Plateau<br>Travis Island<br>St. C Wood<br>Travis Island<br>St. C Wood<br>St. C Wood<br>RB Viaduct<br>St. C Wood<br>St. C Wood<br>RB Plateau<br>St. C Wood |
| Lead | 0.0012 | 22 | 3 | WS204<br>WS202 | 0.0013<br>0.0013 | St. C Wood<br>St. C Wood |

| Contaminant | GAC (mg/l) | No. of samples | Exceedances | | | |
|---|---|---|---|---|---|---|
| | | | No. | Location | Conc (ug/l) | Area |
| | | | | WS212 | 0.0028 | St. C Wood |
| Zinc | 0.012 | 22 | 2 | TP212<br>BH212 | 0.058<br>0.19 | St. C Wood<br>RB Viaduct |
| Sulphate | 250 | 22 | 1 | BH212 | 360 | RB Viaduct |

## Ground Gas

8.93 There are no recorded landfills within the Site boundary, but part of the Site borders the historical Queens Road tip and Sand Street landfill is located within 250m of the Site boundary (**Figure 8.7**). These off-site areas represent potential sources of hazardous ground gases (methane, carbon dioxide, hydrogen sulphide and carbon monoxide).

8.94 No gas data was collected as part of the 2019 ground investigation, however ground gas data was collected during the ground investigation works of 2021. Up to six rounds of gas monitoring were completed in twenty standpipes installed within the Victoria North site in 2021. Access issues prevented a full set of complete monitoring rounds from being collected for several standpipes. **Table 8.16** below displays the 2021 ground gas monitoring results.

*Table 8.16 Summary of the 2021 ground gas monitoring results*

| Monitoring well | Response Zone strata | No. of completed visits | Methane (range % v/v) | Carbon Dioxide (range % v/v) | Peak gas flow (l/hr) | Characteristic Situation |
|---|---|---|---|---|---|---|
| BH201 | Bedrock | 5 of 5 | 0.1 to 1.7 | 0.2 to 0.9 | 0 | CS1 |
| BH202 | Glacial till | 3 of 3 | 0.1 to 0.1 | 0.1 to 0.1 | 1.2 | CS1 |
| BH203 | Possibly Alluvium | 3 of 5 | 0.1 to 0.1 | 1.8 to 2.1 | 0.1 | CS1 |
| BH204 | Glacial till | 6 of 6 | 0.1 to 0.1 | 4.0 to 9.7 | 1.5 | CS1 |
| BH205 | Bedrock | 3 of 3 | 0.1 to 0.1 | 0.5 to 11 | 1 | CS2 |
| BH206 | Glacial till | 5 of 5 | 0.1 to 0.3 | 0.7 to 6.6 | 0.1 | CS1 |
| BH207 | Made ground | 6 of 6 | 0.1 to 0.1 | 0.4 to 5.6 | 0.6 | CS1 |
| BH208 | Made ground | 5 of 5 | 0.1 to 0.1 | 0.4 to 3.1 | 0.1 | CS1 |

| Monitoring well | Response Zone strata | No. of completed visits | Methane (range % v/v) | Carbon Dioxide (range % v/v) | Peak gas flow (l/hr) | Characteristic Situation |
|---|---|---|---|---|---|---|
| BH209 | Bedrock | 3 of 3 | 0.1 to 0.1 | 0.1 to 0.3 | 0.3 | CS1 |
| BH210 | Bedrock | 5 of 5 | 0.1 to 0.2 | 0.1 to 3.1 | 1.2 | CS1 |
| BH211A | Made ground | 6 of 6 | 0.1 to 0.2 | 0.1 to 3.0 | 1.5 | CS1 |
| BH212 | Bedrock | 1 of 2 | 0.1 | 0.1 | 0.1 | CS1 |
| BH213 | Made ground | 6 of 6 | 0.1 to 0.4 | 0.1 to 2.1 | 1.1 | CS1 |
| BH214A | Glacial till | 4 of 5 | 0.1 to 0.1 | 0.1 to 1.0 | 0 | CS1 |
| WS201B | Made ground | 6 of 6 | 0.1 to 0.2 | 0.1 to 2.3 | 0.1 | CS1 |
| WS207 | Made ground | 6 of 6 | 0.1 to 0.1 | 0.4 to 1.8 | 1 | CS1 |
| WS208 | Made ground | 2 of 3 | 0.1 to 0.1 | 0.1 to 0.2 | 0.1 | CS1 |
| WS209 | Made ground | 1 of 3 | 0.2 | 0.4 | 0.1 | CS1 |
| WS210 | Made ground | 6 of 6 | 0.1 to 0.4 | 0.1 to 3.9 | 1.2 | CS1 |
| WS212 | Made ground | 6 of 6 | 0.1 to 0.1 | 0.1 to 0.9 | 1.2 | CS1 |

8.95 The data presented in **Table 8.16** indicates that the Site is characterised by CS1 conditions (equivalent to NHBC 'Green'[24]. According to CIRIA C665, Table 8.5[25] CS1 conditions represent a "very low risk classification" for which no special measures will need to be adopted during development.

8.96 With regard to the Queens Road landfill to the north of the Site, the location of monitoring installations are considered appropriate to identify any ground gases that may migrate from that site. It is considered that the River Irk and the associated saturated ground conditions will inhibit gas migration from the former landfill sites to the east, such as Sand Street landfill and Fitzgeorge Street landfill.

[24] National House Building Council (2007) Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present. Available at: NHBC.co.uk. Date accessed: January 2022
[25] Ciria (2007) Assessing risks posed by hazardous ground gases to buildings. Available at: ciria.org.uk. Date accessed: January 2022

## Sensitivity of Receptors

8.97 The potential receptors that have been identified through the 2019 desk study and reviewed during the 2019 and 2021 preliminary ground investigations and are of relevance to the Site are listed in **Table 8.17**.

*Table 8.17 Summary of the sensitivity of potential receptors.*

| Receptor | Receptor sensitivity value | Description |
|---|---|---|
| Construction workers during HIF Infrastructure works | Low | Construction workers involved in the HIF Infrastructure Works are at the greatest risk of exposure to contaminants during works on site. |
| Interim site users (in period following completion of HIF Infrastructure Works, prior to development) | Low | The Site may be used by trespassers or others in the interim period after completion of construction, but prior to final development. The exposure duration is expected to be limited. |
| Site neighbours during HIF Infrastructure works | Medium | Site neighbours (businesses and light industry surrounding the Site) and pedestrians are considered at risk of exposure to windblown contaminants during the Site development but unlikely to be at risk of exposure post-completion of construction works. |
| Groundwater within the alluvial deposits (secondary A aquifer), Manchester Marls Formation (secondary B aquifer) and Chester Formation and Collyhurst Sandstone Formation (principal aquifer) | High/Medium | The sensitivity of the principal aquifers is high and the River Irk and alluvium are medium. The Manchester Marls are of low sensitivity. |
| River Irk and surface water features. | Medium | Accidental leaks and spills during construction and impacted shallow groundwater can have direct contact with River Irk adjacent to site boundary. |
| Buried buildings and services | Low | Water pipes and concrete foundations may be at risk if in contact with areas of. Buildings and other confined spaces may also be at risk from potential ground gas ingress. |
| Vegetation and plants planted in soft landscaping. | Low | There is potential for concentrations of potentially toxic elements to be present within the soil which may be phytotoxic to vegetation planted in proposed soft landscaping areas |

### Conceptual Site Model

8.98 A conceptual model has been developed for the HIF Infrastructure Works and is presented in **Table 8.18.** This presents the potential sources, receptors and pathways during the construction phase of the Proposed Development.

*Table 8.18 Summary of source pathway and receptors on the Site during construction*

| Source | Pathway | Receptor |
|---|---|---|
| Made Ground (containing solid contaminants, asbestos fibres, and possible hydrocarbons) | Dermal contact | Construction worker |
| | Ingestion of soil/ soil dust | |
| | Inhalation of soil and soil dust | Construction worker / site neighbours |
| Temporary stockpiles of excavated arisings<br><br>Accidental leaks and spills during construction<br><br>Increase in leaching of exposed soils as a result of removal of hardstanding and vegetation or removal of river banks | Leaching and runoff | Existing surface water drains<br><br>River Irk |
| | Leaching and infiltration | Principal aquifers in bedrock<br><br>River Irk |
| Impacted shallow groundwater, including groundwater entering from offsite | Dermal contact | Construction worker |
| | Ingestion | Construction worker |
| | Vertical migration via existing pathways e.g. absent glacial till cover, old wells<br><br>Lateral migration via preferential pathways e.g. old drainage runs, buried river channels | Principal aquifers in bedrock<br><br>River Irk |

## Standard Mitigation

8.99 The assessment of Standard Mitigation that follows focuses primarily on the HIF Infrastructure Works. As appropriate, the assessment also considers the Victoria North Proposed Development and wider SRF developments.

## Demolition and Construction

8.100 The proposed Infrastructure Works consist of the following activities:

- New highway connections (internal roads, access roads and junctions);
- New utility and services connections/diversions;
- Remediation and earthworks;
- Demolition of existing structures, and
- The provision of green infrastructure including the creation of green links and the first phase of the new city river park.

8.101 This environmental impact assessment has been carried out which considers the potential impacts of the HIF Infrastructure Works on the surrounding environment without mitigation, except those standard mitigation measures, which are presented in **Table 8.19** below.

*Table 8.19 Construction phase standard mitigation measures*

| **H&S Management During Construction** | |
|---|---|
| Inhalation of soil derived dust (which may contain metals, asbestos, cyanide, PAHs) by construction workers and adjacent site users. | Dust generated from areas of contaminated soils during dry weather is a potential means for migration of contaminants to both site workers and adjacent site users. Dust suppression measures should be used during site works i.e. damping down or sheeting of exposed of soils. Use of appropriate site controls, abatement measures and monitoring will mitigate against potential risks. |
| Generation of airborne asbestos fibres from asbestos containing soils and ACMs presenting a risk via inhalation to construction workers and adjacent site users. | Asbestos containing materials are known to be present in site soils. Asbestos is not unexpected on a site of this nature, it is likely that the greatest potential risks will be during earthworks and construction, when soils are disturbed and may allow fibres to be released into ambient air. Therefore, works will need to be carried out by a competent contractor and, where necessary, a suitably qualified experienced asbestos specialist, and employ methods to control risks to on-site workers and adjacent site users. |
| Exposure of construction workers or maintenance workers to made ground (which may contain asbestos, metals, cyanide, PAH) via dermal contact and ingestion. | Contractors working on the Site will require appropriate Health and Safety briefings on the types of contaminants known to exist on site and the possibility of unexpected contamination. Procedures should be in place in the event that unexpected contamination is encountered. Contractors should be provided with personal protective equipment (PPE) appropriate for the contamination expected. |

| H&S Management During Construction | |
|---|---|
| Risk from direct contact with contaminated groundwater to construction workers. | Use of appropriate site controls and PPE to mitigate against potential risks to construction workers |
| **Environmental protection during construction** | |
| Leaching of stockpiled made ground and infiltration into shallow groundwater and the River Irk via runoff | Appropriate bunding and drainage measures will be required to mitigate this risk. Positioning of the stockpiles away from the river or any active surface water drainage to limit any impact of surface runoff on the River Irk in event of extreme rainfall event or site flooding. |
| Migration of accidental spillages of contaminants (fuel, raw materials) via live or redundant site drains to the River Irk | Condition survey of existing drainage runs. Repair where necessary. Remove and/or seal redundant drainage runs.<br><br>Raw materials and fuel to be stored on site in accordance with relevant Environmental Protection Regulations. |
| Creation of preferential pathways for contamination to migrate into Principal Aquifer via piled foundations | Use of appropriate pile types to prevent the creation of preferential pathways, in accordance with the guidance provided by the Environment Agency: *Piling into Contaminated Sites*. |
| **Management of UXO risk during construction** | |
| Possible presence of buried UXO from WWII | Zetica report assesses UXO risk on site as low. Appropriate mitigation measures include awareness briefings to site staff. Contractor to determine whether clearance certification for pile locations is required. It is recommended that these measures are reviewed for adequacy by BAM Nuttall in advance of the Proposed Development. |
| **Protection of buried structures in the new development** | |
| Direct contact of aggressive soil and groundwater with buried structural concrete | Risk assessment and selection of appropriate grade of concrete for the ground conditions |
| Direct contact of potable water supply pipes with soils and groundwater | Risk assessment and selection of appropriate potable water pipe materials for the ground conditions |

8.102 The Principal Contractor (BAM Nuttall Ltd) will develop a methodology to carry out the Infrastructure Works which will be described in a method statement and Construction Environmental Management Plan (CEMP). As part of the development of this methodology, the Principal Contractor will also prepare:

- A Materials Management Plan (MMP) in line with the Disposal of Waste: Code of Practice (DoWCoP)[26] which is signed off by a CL:AIRE Qualified Person.
- A Site Waste Management Plan (SWMP). The Principal Contractor shall establish targets for the recovery and re-use of site-won material based on an assessment of the estimated composition and quantity of waste arisings. This should be supplemented by information on how the targets will be achieved during construction activities and how the actual levels of waste reduction and recovery shall be monitored for comparison with the targets set.
- A Construction Traffic Management Plan to detail proposals for traffic management (both vehicular and pedestrian traffic) during construction.

8.103 Notwithstanding the findings of the 2019 and 2021 ground investigations, it is possible that areas of contamination may exist which have not yet been identified. Mitigation measures will be required to deal with the potential for encountering unidentified contamination during construction (a 'discovery strategy').

8.104 The Principal Contractor will be required to set out method statements which demonstrate how the stability of any slopes and earthworks will be maintained during construction. These method statements will need to be agreed with all relevant parties prior to the relevant works commencing.

### The Completed and Operational Development

8.105 Within the Infrastructure Works site, there are currently no completed or operational development standard mitigation measures with regards to ground conditions.

8.106 A remediation Validation Report will be prepared by the Principal Contractor following the completion of the Infrastructure Works. This report will form part of the Health and Safety File, submitted in accordance with Regulation 12 of the CDM Regulations 2015. The Health and Safety file is to be made available to the future site developer(s), to allow them to address any residual risks. The records that must be retained for the Validation Report will be defined in the Remediation Strategy.

8.107 Considering the other Assessment Scenarios, described in the following section, no standard mitigation measures with regards to ground conditions have been identified yet.

## Assessment of Likely Significant Effects

8.108 The assessment that follows focuses primarily on the HIF site. As appropriate, the assessment also considers the Victoria North Proposed Development and wider SRF developments. This section covers potential effects, issues

[26]CL:AIRE (2011) Definition of Waste Code of practice. Accessed via https://www.claire.co.uk/projects-and-initiatives/dow-cop, Date accessed November 2021

identified in the EIA Scoping Report, issues raised through all consultations and the LPA's formal scoping opinion. This section details the likely significant effects taking into consideration standard mitigation, where appropriate.

### Demolition and Construction

8.109 The assessment of contaminated land related significant effects has been conducted based on existing information about the Site, the Victoria North Proposed Development, and adjacent SRF sites. The following assessment considers potential pathways and receptors as described in the context of the demolition and construction phase.

#### Assessment Scenario 1a – Proposed Development Only (Infrastructure Works)

8.110 The infrastructure, earthworks and remediation activities proposed under Assessment Scenario 1a, with the potential to impact ground conditions, are detailed in **Chapter 1** and summarised in **Section 8.100.**

Human Health

8.111 The conceptual model identifies a plausible pollutant linkage relating to construction workers and adjacent site users as a result of the excavation and remediation of potentially contaminated materials (which may contain a number of potential contaminants, including asbestos fibres). Additionally, the generation of contaminated dust can result in exposure to contamination, via inhalation as excavation of made ground is to be undertaken. Construction workers may also have contact with any existing contaminated groundwater within the Site. However, exposure periods are generally shorter than those experienced by long term site users and can usually be reduced to an acceptable level through adoption of adequate health and safety procedures.

8.112 There is a possibility that site neighbours or the users of adjacent areas may be exposed to contaminated dust during construction. Exposure can be reduced to an acceptable level through the adoption of standard construction good working practices which limit the generation of dust and the deposition of mud on highways outside the Site.

8.113 On the basis of known site information, with Standard Mitigation, the magnitude of impact is assessed to be very low for construction workers and users of adjacent developments, resulting in a **Negligible** effect to construction workers and users of adjacent sites and therefore **not significant**.

Controlled waters

8.114 A potential pollutant linkage has been identified during construction as a result of the exposure of additional areas of contaminated soils during removal of areas of existing hardstanding and to a lesser extent, vegetation removal and the removal or regrading of existing river banks. This may result in a temporary increase in infiltration of rainwater and vertical migration, and consequently an increase in the leaching of contaminants into groundwater. The sensitivity value of the receptors, in this case the groundwater, is considered to be high for the Principal Aquifer and medium for the River Irk. The magnitude of these impacts would be low and therefore the effect would be

**Moderate Adverse** for the principal aquifer and **significant**. The effect on the River Irk would be **Minor Adverse** and **not significant**.

8.115 Another plausible pollutant linkage is present where temporary stockpiles are located close to the River Irk, where soil fines and contamination may be able to be washed into the river. In addition, there may be accidental leaks and spills of contamination during construction (for example, from stored materials on site) which could impact on groundwater quality and enter the River Irk. The magnitude of these impacts with Standard Mitigation measures implemented can be classed as very low, therefore the effect would be **Minor Adverse** and **not significant**.

8.116 It is known that the groundwater is impacted by contamination as a result of historical site uses and potentially also off-site migration of contamination. Contamination in shallow groundwater will continue to migrate into the bedrock and River Irk during construction. The magnitude of this impact with Standard Mitigation measures can be classed as low based on current information on site conditions, therefore the effect would be **Moderate Adverse** for the principal aquifer and significant. The effect on the River Irk would be **Minor Adverse** and **not significant**.

Summary

8.117 The significance of impacts arising during the Infrastructure Works site are considered **Negligible to Moderate Adverse,** and therefore some impacts are significant. Appropriate mitigation measures, in the form of remediation, will be required and are detailed in the Additional Mitigation/Enhancement Measures section below.

### Assessment Scenario 1b – Proposed Development (HIF) plus impacts associated with Applications 1, 3 and 4

8.118 The works proposed under Applications 1, 3 and 4 involve various stages of development within the Site are as follows:

- Application 1: the demolition of existing structures at Creamline Dairies, the partial removal of an existing retaining wall and construction of a new access onto Red Bank Plateau and vegetation clearance.
- Application 3: flood mitigation and defence work along the River Irk.
- Application 4: main development works.

8.119 During the construction and infrastructure works proposed in Assessment Scenario 1b, the identified significant effects from Scenario 1a (HIF Works) will largely remain the same: **Negligible to Moderate Adverse**. Given what is currently understood regarding the nature of works that will be undertaken as part of Applications 1, 3 and 4, the likelihood of these effects occurring will be greater. Significant effects associated with the works undertaken as part of Applications 3 and 4 will be re-assessed once the design has been developed. These re-assessments will address any change in the in-combination effects described in this Chapter.

8.120 As summarised in **Table 8.20**, additional significant effects can be associated with Assessment Scenario 1b and are related to proposed piling activities (most likely associated with Application 4, development of the Site). A potential pollutant linkage has been identified where piling could drive contaminants down into groundwater from the overlying made ground, however as the superficial deposits and underlying bedrock appear to be in hydraulic connection the risk of a new contaminant pathway being created is considered to be very low. The sensitivity value of the groundwater body in the principal aquifer is high and the magnitude of impact would be low. The effect following Standard Mitigation is reduced to **Minor Adverse** and is **not significant**.

*Table 8.20 Summary of additional source pathway and receptors identified in this assessment for Scenario 1b*

| Source | Pathway | Receptor |
|---|---|---|
| Made Ground (containing solid contaminants, asbestos fibres, and possible hydrocarbons) | Formation of piles | Natural strata, controlled waters. |

### Assessment Scenario 1c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

8.121 The works proposed under Assessment Scenario 1c include those in Applications 1, 3 and 4 discussed above and the following:

- SRF is the residential-led regeneration scheme (Approx.15,000 dwellings), which includes employment and commercial uses, retail provision, additional infrastructure and increased access and transport.

8.122 The identified significant affects identified in Assessment Scenario 1b will apply to Assessment Scenario 1c. However, similar to Assessment Scenario 1b, significant effects associated with Assessment Scenario 1c will need to be re-assessed in advance of those applications, particularly as ground investigations of the wider SRF area have yet to be completed, therefore ground-related risks are not yet fully understood. These re-assessments will address any change in the impacts described in this Chapter.

## Completed Development

8.123 The assessment of related significant effects has been conducted based on existing information about the Site, the Victoria North Proposed Development, subsequent phases of development including development within adjacent SRF sites. The following assessment considers potential pathways and receptors as described in the context of the completed operational phase.

### Assessment Scenario 2a – Proposed Development Only (HIF Infrastructure Works)

8.124 The HIF Infrastructure Works activities are described in **Section 8.100**.

*Human health*

8.125 On completion of the HIF Infrastructure works, the Site will predominantly comprise exposed made ground within the future development plot areas. The green infrastructure and part of the City River Park will have been constructed. Soil/dust ingestion, dust inhalation and dermal pathways will exist in any areas of exposed soil. The impact may be to trespassers on undeveloped plots, or via windblown dust onto adjacent areas. On the basis of current information, the magnitude of impact is assessed to be medium for trespassers or users of adjacent developments. The effect is assessed to be **Minor Adverse** and therefore **not significant**.

8.126 A potential pollutant linkage exists between contaminants in the soil and future maintenance workers who may encounter the soil, for example to repair the utilities laid as part of the HIF Infrastructure works. Maintenance workers will adopt relevant health and safety measures during excavation and handling of soils and will use appropriate PPE (Standard Mitigation). Maintenance workers value and the magnitude of impact are classed as negligible. The effect is assessed to be **Negligible** and therefore **not significant**.

*Controlled Waters*

8.127 In the period after completion of the HIF Infrastructure Works but before buildings have been constructed on the Site, the current areas of existing hardstanding and vegetation will have been removed. This may temporarily increase the potential for leaching through the made ground, which has the potential to reach groundwater and migrate laterally into the River Irk, where it could impact on the water quality. The sensitivity of the receptors, in this case the groundwater and River Irk, is considered to be high and medium respectively. The magnitude of these impacts with Standard Mitigation is low, and therefore the effect is **Minor** to **Moderate Adverse** which is **significant** for the Principal Aquifer.

*Phytotoxicity*

8.128 There is a possibility that concentrations of potentially toxic elements are present within the made ground, which may be toxic to vegetation. Much of the vegetation within the St. Catherine's Wood area is to be retained and is already established within the soil in that part of the Site. Elsewhere, new green infrastructure will be installed. The sensitivity value of soft landscaping is very low. The magnitude of this impact can be classed as low and the significant effect is **Negligible** and **not significant**.

*Buried structures and services*

8.129 Risks to buried concrete or utilities installed as part of the HIF Infrastructure works may occur as a result of direct contact with made ground and groundwater. The sensitivity value of buried structures and services is low, and the magnitude of impact is very low with Standard Mitigation, therefore the effect is assessed as being **Negligible** and **not significant**.

*Summary*

8.130 The significance of impacts arising during the operational phase of the HIF site are considered **Negligible to Moderate Adverse** and therefore some impacts are significant in EIA terms. Appropriate mitigation measures may be required. Mitigation measures include supplementary investigations to refine the conceptual site model, the development of a remediation strategy and the implementation of the remedial measures to address the identified risks.

### Assessment Scenario 2b – Proposed Development plus impacts associated with Applications 1, 3 and 4

8.131 The works proposed under Applications 1, 3 and 4 involve various stages of development within or close to the Site as described in **Section 8.118**.

8.132 Following completion of the construction works proposed in Assessment Scenario 1b, the completed development significant effects identified from Scenario 2a (HIF Infrastructure Works) will largely remain the same. Given what is currently understood regarding the nature of works that will be undertaken as part of Applications 1, 3 and 4, , the likelihood of these effects occurring will be greater. Significant effects associated with the works undertaken as part of Applications 1, 3 and 4 will be re-assessed once the design has been developed. These re-assessments will address any change in the in-combination effects described in this Chapter.

8.133 During future development (Application 4), new areas of impermeable hardstanding, building roofs etc will be constructed. These impermeable areas will reduce rainfall infiltration and vertical migration, and consequently a decrease in the leaching of contaminants into groundwater. The sensitivity value of the groundwater body is high and the river medium, and the magnitude of impact would be very low. The effect following standard mitigation is **Minor Beneficial** and therefore **not significant**.

8.134 In areas that are not provided with hard cover and those areas outside building footprints, potential impacts to health have been identified where future site residents may be exposed to existing contaminated site soils via dermal contact and ingestion. The sensitivity value of future site users is classed as high and the magnitude of impact with is classed as low. The effect is assessed to be **Moderate Adverse** to future site users and therefore **significant**.

### Assessment Scenario 2c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

8.135 Post construction of the works proposed in Assessment Scenario 2c, the identified completed development significant effects from Scenario 2b will largely remain the same; **Negligible to Moderate Adverse**.

## Additional Mitigation / Enhancement Measures

8.136 This section describes the measures which are required to mitigate any significant environmental effects with regard to ground conditions. The additional mitigation/enhancement measures will specifically relate to the HIF

Infrastructure Works only. Additional mitigation measures associated with Assessment Scenarios 1b, 1c, 2b and 2c were addressed in Application 1 which has already been determined[27] and will be addressed in Applications 3 and 4.

### Construction

*Human health*

8.137 In areas of the Site which have been subject to historical development, the Site preparation work will include the systematic excavation of shallow made ground to remove obstructions such as old foundations and confirmed areas of contamination that require targeted remediation. These areas will be identified in the remediation strategy.

8.138 Where appropriate, material will be replaced to achieve the required development levels and in accordance with an agreed geotechnical and chemical specification. Material re-use criteria will be developed to be protective of human health and controlled waters based on the proposed future residential-led development and agreed with MMC and the EA. Only soils that have been validated as meeting the required re-use criteria will be used in the earthworks.

8.139 No significant impacts will remain once all mitigation measures have been implemented.

*Controlled waters*

8.140 Significant impacts have been identified where plausible pollutant linkages exist between contamination in soil groundwater and the principal aquifers. The removal of surface cover and vegetation during construction will temporarily expose a greater area of soil to infiltration, which may create larger volumes of leachate. Any contamination that leaches into the groundwater during construction has the potential to reach groundwater or to migrate laterally into the River Irk, where it could impact on the water quality.

8.141 Existing contamination within the Site will be addressed during the HIF Infrastructure Works by the removal or treatment of known contaminated materials and contaminated perched groundwater. These areas will be identified in the remediation strategy and risk-based targets will be developed that are protective of the principal aquifers and River Irk. No significant impacts will remain to controlled waters once the mitigation measures have been implemented.

*Phytotoxicity*

8.142 No significant impacts have been identified once all mitigation measures have been implemented.

[27] Manchester City Council (2021) Ground Conditions chapter of the Environmental Statement for Application 1 (Enabling Works), prepared by Arup. Document Reference: VNIF-ARP-ZZ-YYY-RP-WD-0008.

*Buried structures and services*

8.143 No significant impacts have been identified once all mitigation measures have been implemented.

### Completed Development

*Human health*

8.144 The existing site soils are unlikely to be suitable for exposure at ground surface in future landscaped areas within a residential development. Remediation is typically achieved through the provision of a capping layer of clean soil, in order to break the exposure pathway between existing site soils beneath and future site residents. The requirements for the capping layer will be set in the remediation strategy for the HIF Infrastructure Works, assuming a mix of residential apartments and townhouses that may have private gardens. These requirements may need to be revisited once the detailed design of Application 4 has been completed and the nature of future development is confirmed. No significant impacts to human health will remain once the mitigation measures have been implemented.

*Controlled Waters*

8.145 Soil will be exposed to infiltration during any interim period after completion of the HIF Infrastructure Works and future development. The provision of surface water drainage within new roads and the establishment of new planted areas will limit the amount of surface water infiltration through the Site in the interim period. The remediation strategy will present any additional measures which may be required to protect groundwater quality in the interim period between the completion of HIF Infrastructure Works and future development, for example, the provision of a temporary layer of compacted material on the Site on completion of the HIF Infrastructure Works to encourage run-off into surface water drains. No significant impacts will remain to controlled waters once all mitigation measures have been implemented.

*Phytotoxicity*

8.146 No significant impacts have been identified.

*Buried structures and services*

8.147 No significant impacts have been identified.

## Likely Residual Effects of the Development and their Significance

8.148 This section specifically relates to any residual effects from the HIF Infrastructure works only. The residual effects are summarised in **Table 8.21**, the assessment assumes that the mitigation described in the section above has been implemented.

*Table 8.21 Residual Effects Summary.*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction*** | | | |
| *Assessment Scenario 1a – Proposed Development only* | | | |
| Risks to health of construction workers and adjacent site users from contaminated land | Negligible and not significant | Standard mitigation, CEMP | **No residual effects** |
| Risks to the quality of controlled waters as a result of exposure of contaminated soils (groundwater and River Irk) | Moderate adverse and significant | Standard mitigation, Remediation Strategy | **No residual effects** |
| Risk to the quality of controlled waters as a result of temporary stockpiling | Minor adverse and not significant | Standard mitigation, CEMP | **No residual effects** |
| Existing contaminated groundwater impact on River Irk and Principal aquifer | Moderate adverse and significant (aquifer)<br><br>Minor adverse and not significant (river) | Standard mitigation, Remediation Strategy | **No residual effects** |
| *Assessment Scenario 1b – Proposed Development plus Applications 1, 3 and 4* | | | |
| Risks to health of construction workers and adjacent site users from contaminated land | Negligible and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Standard mitigation, CEMP | **No residual effects** |
| Risks to the quality of controlled waters as a result of exposure of contaminated soils (groundwater and River Irk) | Moderate adverse and significant<br><br>Significance of effects to be reviewed once detailed design is available | Remediation Strategy | **No residual effects** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Risk to the quality of controlled waters as a result of temporary stockpiling | Minor adverse and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Standard mitigation, CEMP | **No residual effects** |
| Existing contaminated groundwater impact on River Irk and Principal aquifer | Moderate adverse and significant (aquifer)<br><br>Minor adverse and not significant (river)<br><br>Significance of effects to be reviewed once detailed design is available | Remediation Strategy | **No residual effects** |
| Formation of piled foundations through made ground | Minor adverse and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Standard mitigation, Remediation Strategy, piling risk assessment | **No residual effects** |
| *Assessment Scenario 1c – Proposed Development plus Applications 1, 3 and 4 and wider SRF* | | | |
| Risks to health of construction workers and adjacent site users from contaminated land | Negligible and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF), standard mitigation, CEMP | **No residual effects** |
| Risks to the quality of controlled waters as a result of exposure of contaminated soils (groundwater and River Irk) | Moderate adverse and significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF) and Remediation Strategy | **No residual effects** |
| Risk to the quality of controlled waters as a result of temporary stockpiling | Minor adverse and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF), standard mitigation, CEMP | **No residual effects** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Existing contaminated groundwater impact on River Irk and Principal aquifer | Moderate adverse and significant (aquifer)<br><br>Minor adverse and not significant (river)<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF) and Remediation Strategy | **No residual effects** |
| Formation of piled foundations through made ground | Minor adverse and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Standard mitigation, ground investigation (wider SRF), remediation strategy, piling risk assessment | **No residual effects** |
| ***Completed Development*** | | | |
| *Assessment Scenario 2a – Proposed Development only* | | | |
| Contamination remaining in exposed soils e.g. undeveloped plots in interim, areas of public open space | Minor adverse and not significant | Remediation Strategy | **No residual effects** |
| Residual contamination and exposure of future maintenance workers | Negligible and not significant | Standard Mitigation, Remediation Strategy | **No residual effects** |
| Temporary increase in infiltration on undeveloped plots causing impact on water quality | Minor to moderate adverse and significant for Principal aquifer | Remediation Strategy | **No residual effects** |
| Impact of residual contamination on new green infrastructure | Negligible and not significant | Remediation Strategy | **No residual effects** |
| Direct contact of new services with existing made ground/groundwater | Negligible and not significant | Standard Mitigation, Remediation Strategy | **No residual effects** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| *Assessment Scenario 2b – Proposed Development plus Applications 1, 3 and 4* | | | |
| Contamination remaining in exposed soils e.g. undeveloped plots in interim, areas of public open space | Minor adverse and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Remediation Strategy | **No residual effects** |
| Impact of residual contamination on new green infrastructure | Negligible and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Remediation Strategy | **No residual effects** |
| Direct contact of new services with existing made ground/groundwater | Negligible and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Standard Mitigation, Remediation Strategy | **No residual effects** |
| Reduction in infiltration once development completed (Application 4) | Minor beneficial and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Remediation Strategy | **No residual effects** |
| *Assessment Scenario 2c – Proposed Development plus Applications 1, 3 and 4 and wider SRF* | | | |
| Contamination remaining in exposed soils e.g. undeveloped plots in interim, areas of public open space | Minor adverse and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF), Remediation Strategy | **No residual effects** |
| Impact of residual contamination on new green infrastructure | Negligible and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF), Remediation Strategy | **No residual effects** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Direct contact of new services with existing made ground/groundwater | Negligible and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF), Standard Mitigation, Remediation Strategy | **No residual effects** |
| Reduction in infiltration once development completed (Application 4) | Minor beneficial and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF) Remediation Strategy | **No residual effects** |

## Conclusions

8.149 The ground conditions at the Site have been assessed utilising available information. A number of geological, hydrogeological and contaminated land related impacts have been identified, of which the main points of focus are related to potential for contamination in the soils beneath the Site and potential for migration of contaminants into groundwater and the River Irk.

8.150 The effect of the potential impacts has been assessed in the context of the construction phase and operational phase. A number of risks have been identified associated with the ground conditions and the potential for contaminated land. Mitigation measures have been recommended to reduce these risks.

8.151 Baseline conditions pertaining to ground conditions have been assessed as part of an Arup Desk Study (**Appendix 8.1**). The information presented in this chapter is based on the results of two phases of intrusive site investigation. The assessments presented in this chapter are based on the interpretation of the data from the ground investigations, which is presented in **Appendix 8.2**.

8.152 Any areas of contamination that are identified in the GIR as presenting a demonstrable risk to health or the environment will be addressed by removal or treatment. A remediation strategy will be developed for the Site, which will be reported via the planning process. As part of the remediation strategy, materials re-use criteria will be developed to be protective of human health and controlled waters based on the Proposed Development and agreed with MCC and the EA. Only soils that have been validated as meeting the required re-use criteria will be used in the earthworks.

8.153 A CEMP will be produced and implemented during the construction phase. The plan will outline how adverse effects on the environment will be avoided or mitigated during construction in accordance with current environmental legislation.

8.154 During construction, any previously unidentified areas of contamination, that are considered to present a demonstrable risk, will need to be addressed by removal or treatment.

8.155 With the implementation of the recommended mitigation measures, no adverse residual effects have been identified during the construction or operational phases of the proposed scheme.

## Assessment of Cumulative Effects and their Significance

8.156 The Cumulative Impact Assessment (CIA) is presented as three scenarios. This is to ensure that the assessment is as robust as possible. The scenarios to be considered are as follows:

- Scenario 3a - Assessment of the cumulative impacts relating to the HIF Infrastructure works plus impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative impacts relating to the HIF works, plus impacts associated with Application 1 (HIF Advance Enabling Works), 3 (HIF Flood Defence Works) and 4 (Red Bank Neighbourhood built development), and the agreed cumulative sites.
- Scenario 3c - Assessment of the cumulative impacts relating to the HIF works, plus impacts associated with Application 1 (HIF Advance Enabling Works), 3 (HIF Flood Defence Works) and 4 (Red Bank Neighbourhood built development), the wider SRF, and the agreed cumulative sites.

8.157 In Scenario 3a the cumulative sites include for those approved projects within 1km of the Site considered as having potential for cumulative impact with the Proposed Development. This is the typical approach to CIA undertaken for an EIA. The proposed sites have been identified by Avison Young from MCC's and SCC's planning portal, as applicable, and have been agreed with MCC as part of the EIA Scoping process.

8.158 Scenario 3b considers the cumulative impacts of the Proposed Development, Application 1 (Enabling works), 3 (Flood Defence) and 4 (Red Bank Neighbourhood built development), and all of the relevant cumulative sites. Scenario 3c considers the cumulative impacts of the Proposed Development, Application 1, Application 3, Application 4, the wider SRF. This ensures that all potential impacts of the Victoria North (formerly Northern Gateway) SRF are considered as part of this EIA. SRF

8.159 Wherever possible, definitive and fixed information relating to each application has been used, despite the applications progressing at different rates. Where definitive information is not available, a maximum, upper quantum and / or worst-case position has been agreed between the consultant team and regulatory authority. This will ensure that the CIA presented assesses the absolute worst case and is as robust as possible.

8.160 **Table 8.22** provides a list of the developments which are to be included within the cumulative site's assessment.

*Table 8.22 Sites used in the assessment of cumulative effects*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | 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 | Approved Jun 2021 | Scoped Out | Assessment of cumulative impacts assumes that the developments identified in the cumulative effects assessment will be delivered in accordance with the same environmental standards and require the appropriate level of mitigation at construction and operation to meet regulatory requirements. Therefore, it is predicted that the cumulative impacts are no greater than those from the proposed scheme in isolation |
| 2 | 127971/FO/2020 | 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 | Scoped Out | |
| 3 | 128248/FO/2020 | 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 | 150m south | Approved June 2021 | Scoped Out | |
| 4 | 116366/FO/2017 | 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, | 150m south | Approved Aug 2017 | Scoped Out | |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | Under construction | | |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<br><br>Under construction | Scoped Out | |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 | Scoped Out | |
| 7 | 124973/FO/2019 | 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 | 350m south | Approved Feb 2016 | Scoped Out | |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 8 | 111777/FO/2016/C1 | 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 | 250m south east | Approved Sep 2016<br><br>Under construction | Scoped Out | |
| 9 | 121375/FO/2018 | 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. | 840m south | Approved Oct 2020 | Scoped Out | |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | Approved Oct 2018<br><br>Under construction | Scoped Out | |
| 11 | 20/76134/FUL | 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 | 1000m south west | Approved Feb 2020 | Scoped Out | |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br>Under construction | Scoped Out | |
| 13 | 19/74465/HYBEIA | 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 7BN | 960m south west | Validated Nov 2019 | Scoped Out | |
| 14 | 126944/FO/2020 | 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 | 140m south east | Approved Sep 2020<br>Under Construction | Scoped Out | |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | substation), car parking, cycle storage, landscaping and new public realm including the re-instatement of Bromley Street and other associated works | | | | |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | 145m south east | Approved October 2017 | Scoped Out | |
| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 | Scoped Out | |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | 635m south west | Approved June 2018 | Scoped Out | |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | Scoped Out | |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | infrastructure and associated works following demolition of existing building | | | | |
| 19 | 124888/FO/2019 | 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>Under Construction | Scoped Out | |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | Scoped Out | |

## Likely Residual Cumulative Effects and their Significance

### Construction

8.161 Assessment of cumulative impacts assumes that the developments identified in the cumulative effects assessment will be delivered in accordance with the same environmental standards and require the appropriate level of mitigation at construction and operation to meet regulatory requirements. Therefore, it is predicted that the cumulative impacts are no greater than those from the proposed scheme in isolation

### Completed and Operational Development

8.162 Assessment of cumulative impacts assumes that the developments identified in the cumulative effects assessment will be delivered in accordance with the same environmental standards and require the appropriate level of mitigation at construction and operation to meet regulatory requirements. Therefore, it is predicted that the cumulative impacts are no greater than those from the proposed scheme in isolation

# 9. Drainage and Flood Risk

## Introduction

9.1 As noted in Chapter 1: Introduction, The Red Bank Neighbourhood project as a whole is the First Phase of the Initial Development Area identified for development within the Northern Gateway SRF. It is intended that FEC will progress an application for a new residential-led neighbourhood application for approximately 4,000 dwellings to be located on land controlled by the JV. This project is proposed on an area of land that forms part of Victoria North, which is located to the north east of Victoria Station and immediately adjacent to the main Central Business District of Manchester City Centre (this area of land to be developed is hereafter referred to as 'the Site').

9.2 As noted in Chapter 2: Approach, this ES assesses the Development Project, which is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in 4 planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – planning permission has been granted for the demolition of Creamline diary, tree and shrub clearance and construction of a temporary haul road.
- HIF Infrastructure Works (referred to hereafter as 'Application 2') – the subject of this application. Creation of development platforms, demolition of sections of existing River Wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diversions and provision of green infrastructure including creation of green links and first phase of the new City River Park.
- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within flood zone 3.
- Land under control of the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. As noted in Chapter 2: Approach, the entire Red Bank Neighbourhood within the SRF, including third party land, will deliver up to 5,500 new dwellings.

9.3 Whilst the Applicant has the detail of the early applications, the later parts of the Development Project (and particularly Application 4) are still being designed and the details are not yet available. Therefore, the approach that has been taken in the ES is to break the Development Project into 3 elements, with each element being assessed in a level of detail commensurate with the detail that is available for the relevant part of the Development Project.

9.4 As such, a very full and detailed assessment is undertaken of Application 2, and then reasonable assumptions and judgements have informed and been made to assess Applications 1-4 together, and then Applications 1-4 and SRF.

9.5 This chapter assesses the drainage and flood risk effects of the Proposed Development on HIF Infrastructure Works (hereafter referred to as the 'Proposed Development'). See **Figure 9.1** for information relating to this Proposed Development.

9.6 The chapter describes the methods used to assess the likely significant effects, the current baseline conditions and surroundings, the potential direct and indirect effects of the development arising from the infrastructure works, and the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual drainage and flood risk effects.

9.7 The chapter also presents a high-level assessment of the drainage and flood risk effects of the Proposed Development in-combination with the wider development project (inclusive of Applications 1, 3 and 4), and also of the wider SRF of which it is a part. Chapter 2 contains a description of the available information that is relevant to the Site and the wider development project.

9.8 This chapter has been written by Arup.

# Planning Policy Context

9.9 The following key legislation is relevant to this assessment:

- The Environment Act 2021[1].
- Environmental Permitting (England and Wales) (Amendment) (EU Exit) Regulations 2019[2].
- Environment (Amendment etc.) (EU Exit) Regulations 2019[3].
- Environmental Protection Act 1990[4].
- Environment Act 1995[5].
- Environmental Permitting (England and Wales) Regulations 2016[6].
- Water Resources Act 1991[7].
- Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Water Framework Directive) (WFD)[8].
- Land Drainage Act 1991[9].
- Water Act 2014[10].
- Water Resources (Abstraction and Impounding) Regulations 2006[11].
- Water Abstraction and Impounding (Exemptions) Regulations 2017[12].

[1] Legislation.gov.uk (2021) *Environment Act 2021*. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted Accessed on: 09/02/2022.
[2] Legislation.gov.uk (2019) *The Environmental Permitting (England and Wales) (Amendment) (EU Exit) Regulations 2019*. Available at: https://www.legislation.gov.uk/uksi/2019/39/contents Accessed on: 09/02/2022.
[3] Legislation.gov.uk (2019) *The Environment (Amendment etc.) (EU Exit) Regulations 2019*. Available at: https://www.legislation.gov.uk/uksi/2019/458/contents Accessed on: 09/02/2022.
[4] Legislation.gov.uk (1990) *Environment Protection Act 1990*. Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents Accessed on: 09/02/2022.
[5] Legislation.gov.uk (1995) *Environment Act 1995*. Available at: https://www.legislation.gov.uk/ukpga/1995/25/contents Accessed on: 09/02/2022.
[6] Legislation.gov.uk (2016) *The Environmental Permitting (England and Wales) Regulations 2016*. Available at: https://www.legislation.gov.uk/uksi/2016/1154/contents Accessed on: 09/02/2022.
[7] Legislation.gov.uk (1991) *Water Resources Act 1991*. Available at: https://www.legislation.gov.uk/ukpga/1991/57/contents Accessed on: 09/02/2022.
[8] Legislation.gov.uk (2017) *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017*. Available at: https://www.legislation.gov.uk/uksi/2017/407/contents/made Accessed on: 09/02/2022.
[9] Legislation.gov.uk (1991) *Land Drainage Act 1991*. Available at: https://www.legislation.gov.uk/ukpga/1991/59/contents Accessed on: 09/02/2022.
[10] Legislation.gov.uk (2014) *Water Act 2014*. Available at: https://www.legislation.gov.uk/ukpga/2014/21/contents/enacted Accessed on: 09/02/2022.
[11] Legislation.gov.uk (2006) *The Water Resources (Abstraction and Impounding) Regulations 2006*. Available at: https://www.legislation.gov.uk/uksi/2006/641/contents/made Accessed on: 09/02/2022.
[12] Legislation.gov.uk (2017) *The Water Abstraction and Impounding (Exceptions) Regulations 2017*. Available at: https://www.legislation.gov.uk/uksi/2017/1044/contents/made Accessed on: 09/02/2022.

- Flood Risk Regulations 2009[13].
- Water Supply (Water Quality) Regulations 2018[14].
- Flood and Water Management Act 2010[15].
- Environmental Damage (Prevention and Remediation) (England) Regulations 2015[16].

## National Planning Policy

### National Planning Policy Framework[17]

9.10 The National Planning Policy Framework (NPPF) 2021 requires that a sequential, risk-based approach is taken to direct development to areas of lowest risk of flooding from any source. Where this is not possible, the exception test should be applied to demonstrate that the development will be safe for its lifetime without increasing flood risk elsewhere, whilst also providing wider sustainability benefits to the community. The NPPF requires Local Plans to seek opportunities for new development to reduce flood risk where possible.

9.11 Local authorities must ensure that new development does not increase flood risk elsewhere when determining planning applications. Major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be infeasible and/or inappropriate.

9.12 The NPPF outlines the requirement for planning policies and decisions to prevent development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of water pollution. Development should, where possible, improve water quality and take into account the information presented in river basin management plans.

## Local Planning Policy

### Manchester City Council, Local Plan: Core Strategy 2012-2027 (July 2012)[18]

9.13 Manchester's Local Development Framework Policy reflects the sequential approach outlined in the NPPF in Policy EN 14 Flood Risk and indicates that all sources of flood risk identified in the Manchester-Salford-Trafford Strategic Flood Risk Assessment (SFRA) should be taken into account. Surface water runoff from new developments should be minimised through use of Sustainable Drainage Systems (SuDS) and green

[13] Legislation.gov.uk (2009) *The Flood Risk Regulations.* Available at: https://www.legislation.gov.uk/uksi/2009/3042/contents/made Accessed on: 09/02/2022.
[14] Legislation.gov.uk (2018) *The Water Supply (Water Quality) Regulations 2018*. Available at: https://www.legislation.gov.uk/wsi/2018/647/contents/made Accessed on: 09/02/2022.
[15] Legislation.gov.uk (2010) *Flood and Water Management Act 2010*. Available at: https://www.legislation.gov.uk/ukpga/2010/29/contents Accessed on: 09/02/2022.
[16] Legislation.gov.uk (2015) *The Environmental Damage (Prevention and Remediation) (England) Regulations 2015.* Available at: https://www.legislation.gov.uk/uksi/2015/810/contents Accessed on: 09/02/2022.
[17] NPPF (2021) *National Planning Policy Framework*. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2 Accessed on: 11/01/2022.
[18] Manchester City Council (2012) *Manchester's Local Development Framework: Core Strategy Development Plan Document.* Available at: https://secure.manchester.gov.uk/info/200074/planning/6573/core_strategy_2012-2027 Accessed on: 11/01/2022.

infrastructure. Within Critical Drainage Areas (CDAs), developers are required to provide evidence to justify the surface water runoff rates.

9.14 EN 8 Adaptation to Climate Change indicates that developers should aim to minimise flood risk by appropriate siting, drainage, and treatment of surface areas. Policy EN 9 encourages developers to enhance the quality, quantity and performance of green infrastructure and highlights the multiple functions of existing green infrastructure corridors, including along the River Irk.

9.15 Policy EN 17 Water Quality requires that adverse impacts on water quality arising from new development are avoided and that opportunities should be sought to improve water quality wherever possible, including through the use of SuDS to reduce the risk of pollution of watercourses.

### Strategic Regeneration Framework (SRF) Manchester Northern Gateway (February 2019)[19]

9.16 The SRF will be a material consideration in the determination of all planning applications relevant to the study area. Whilst 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.

9.17 The Site falls within the 'Northern Gateway' 'Lower Irk Valley' boundary and will form part of the 'Red Bank' neighbourhood. The Site is earmarked for residential-led development.

### Manchester City, Salford City and Trafford Councils Level 2 Hybrid Strategic Flood Risk Assessment (SFRA) (March 2011)[20]

9.18 The Level 2 SFRA, published in 2011, describes flood risk across Manchester, Salford and Trafford from all sources to help support the application of the Sequential Test. The document provides an understanding of actual risk (taking into account the presence of flood defences) and identifies residual risk. The SFRA notes that there is potential for development to reduce risk within the Irk Valley through reductions in surface water runoff and mitigation of flood risk.

### Local Flood Risk Management Strategy (LFRMS)

9.19 The LFRMS aims to ensure that local flood risk is properly managed to reduce the likelihood, severity and consequences of flooding from Ordinary watercourses, groundwater and surface water runoff.

9.20 It is recognised within the LFRMS that minimising surface water runoff rates from new developments is one of the most effective ways of reducing local flood risk through the planning process. Within CDAs, developers are asked to minimise surface water runoff rates by achieving a minimum of attenuating to greenfield runoff rate on

[19] Northern Gateway Manchester (2019) *Northern Gateway Strategic Regeneration Framework*. Available at: http://northerngatewaymanchester.co.uk/framework/ Accessed on: 11/01/2022.

[20] JBA Consulting (2011) *Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA*. Available at: https://www.trafford.gov.uk/planning/strategic-planning/docs/manchester-salford-and-trafford-councils-level-2-hybrid-sfra-level-1-sfra-march-2011.pdf Accessed on: 11/01/2022.

greenfield sites up to a 1 in 100-year storm event including consideration of climate change, or a 50% runoff rate reduction for brownfield sites (with an aim to reduce to greenfield runoff rates (defined as the rate of runoff that would occur from the Site in its undeveloped and therefore undisturbed state) up to a 1 in 100-year storm event including consideration of climate change).

### Other Relevant Policy, Standards and Guidance

9.21 The assessment will follow the principles, where relevant, set out within Design Manual for Roads and Bridges (DMRB) LA 104 Environmental Assessment and Monitoring (LA 104)[21] and LA 113 Road Drainage and the Water Environment (LA 113)[22]. This guidance provides the methodology and criteria for identifying likely impacts of a proposed road project on the water environment and predicting their magnitude and significance of the resulting effects. There is no standard guidance for the methodology of water Environmental Impact Assessment (EIA). Therefore, in the absence of any sector guidance, the DMRB methodology outlined within LA 104 and LA 113 is recognised as a robust approach. Some of the methodology is specific to road-related impacts on the water environment and therefore sections of it (e.g., Highways England Water Risk Assessment Tool, HEWRAT) are not applicable to this development.

9.22 The assessment draws on other guidance including:

- GOV.UK guidance: Planning Practice Guidance on flood risk[23].
- GOV. UK guidance: Pollution prevention for businesses[24].
- Planning Inspectorate Advice Note 18 (Water Framework Directive)[25].
- The Environment Agency's (EA) Pollution Prevention Guidelines (PPGs), which have now been withdrawn, and the replacement Guidance for Pollution Prevention (GPPs). Although these are no longer current regulatory guidance in England, they continue to provide environmental good practice guidance.
- Construction Industry Research and Information Association (CIRIA) guidance including:
    - Control of Water Pollution from Construction sites – Guide to Good Practice (SP156)[26].
    - Control of Water Pollution from Construction sites – Guidance for Consultants and Contractors (C532)[27].

[21] Highways England, Transport for Scotland, Welsh Government, and Department for Infrastructure (2020) *LA 104 – Environmental assessment and monitoring.* Accessed on: 09/02/2022.
[22] Highways England, Transport for Scotland, Welsh Government, and Department for Infrastructure (2020) *LA 113 – Road drainage and the water environment*. Accessed on: 09/02/2022.
[23] Department for Levelling Up, Housing and Communities, and Ministry of Housing, Communities & Local Government (2021) *Guidance: Flood Risk and Coastal Change*. Available at: https://www.gov.uk/guidance/flood-risk-and-coastal-change Accessed on: 11/01/2022.
[24] Department for Environment, Food & Rural Affairs (Defra) and Environment Agency (2019) *Guidance: Pollution Prevention for Businesses*. Available at: https://www.gov.uk/guidance/pollution-prevention-for-businesses Accessed on: 11/01/2022.
[25] National Infrastructure Planning (2012) *Advice Note Eighteen: The Water Framework Directive*. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-18/ Accessed on: 11/01/2022.
[26] Murnane. E. (2002) *Control of Water Pollution from Construction Sites: Guide to Good Practice (SP156).* CIRIA, London.

- The SuDS Manual (C753)[28].
- Guidance on the construction of SuDS (C768)[29].
- Environmental good practice on-site (C692)[30].

# Assessment Methodology and Significance Criteria

## Overview

9.23 As described in paragraph 9.21, the assessment will follow the principles set out within LA 113 and LA104. This methodology is specifically designed for assessing the impacts of road or bridge construction on the water environment and therefore sections of it (e.g., HEWRAT) are not applicable to the Proposed Development. Despite this, the DMRB methodology is widely used for all types of schemes and benefits from being recognised by regulators.

9.24 LA 113 provides a standard methodology for the assessment of each topic area and has four key steps:

- Step 1 – Identification of water features within the study area and an assessment of the importance (hereafter referred to as the sensitivity) of each of these receptors, using the criteria set out in **Table 9-1**.
- Step 2 – Identification of potential impacts to the water features identified in Step 1, from construction and/or operation. For example, under the WFD an impact is defined as causing a deterioration in the status of a water body or preventing a water body from reaching 'Good' status in the future.
- Step 3 – Assessment of the potential magnitude of any construction or operation impacts on the receptor, based on the criteria in DMRB LA 113: Table 3.71, summarised in **Table 9-2**.
- Step 4 – Assessment of the overall significance of any effects to receptors due to impacts, using the significance matrix provided in
- **Table** 9-3.

## Scope of Assessment

9.25 The assessment will cover the following key aspects of the surface water environment:

- Impacts on the quality of surface water due to sediment-laden or contaminated run-off or accidental spillages of hazardous substances.
- Impacts on the hydromorphology of affected watercourses.

[27] Masters-Williams, H., Heap, A., Kitts, H., Greenshaw, L., Davis, S., Fisher, P., Hendrie. M., and Owens, D. (2001) *CIRIA C532 Control of Water Pollution from Construction Sites: Guidance for consultants and contractors (C753)*. CIRIA, London.
[28] Woods Ballard, B., Wilson, S., Udale-Clarke, H., Illman, S., Scott, T., Ashley, R., and Kellagher, R. (2015) *The SuDS Manual*. CIRIA.
[29] Illman, S. and Wilson, S. (2017) *Guidance on the Construction of SUDS (C768).* CIRIA.
[30] Charles, P. and Edwards, P. (2015) *Environmental Good Practice on Site Guide (C741)* (4th Edition). CIRIA.

- Impacts on the existing local drainage pattern and flood regime.

9.26 Associated effects on ecology are considered within Chapter 6: Ecology and Nature Conservation. No water-dependent habitats have been identified with the Site boundary (Chapter 6). Groundwater baseline conditions and impacts on groundwater quality are considered in Chapter 8: Ground Conditions.

## Study Area

9.27 The study area has been selected based on a source – pathway – receptor approach. For effects on surface waters, the study area will include those receptors which have potential hydrological connectivity to the Proposed Development. For the purposes of this chapter, these are receptors that have potential hydrological connectivity to the infrastructure works site boundary (Application 2, the Proposed Development).

## Establishing Baseline Conditions

9.28 The baseline describes the existing condition of surface water features and flood risk. Baseline conditions of identified surface water receptors, including flood risk, have been established through a combination of review of desk-based data sources and mapping, walkover survey and review of the flood risk assessment (FRA) (**Appendix 9.1**) and hydraulic modelling report (**Appendix 9.2**). The modelling has been undertaken to understand the change in fluvial flood risk to and from the Proposed Development.

9.29 A fluvial geomorphology survey (**Appendix 9.3**) of the River Irk has been undertaken for the Victoria North River Works project and the findings have been used to support the assessment of the existing hydromorphological condition of this watercourse. The geomorphological survey has also informed a WFD assessment (**Appendix 9.4**) that has been undertaken to understand the potential impact on the effected waterbodies.

### Fluvial Flood Modelling

9.30 Fluvial flood modelling for the HIF Infrastructure Works Application has been conducted using the most developed version of the hydraulic river model of the Irk, the 'Interim 2021 model' (**Appendix 9.2**).

9.31 In 2019, three existing EA models were utilised to develop a more detailed 'combined' baseline River Irk Hydraulic model. This process is summarised below and discussed in more detail in **Appendix 9.2**. The EA have provided a series of comments which have been incorporated in the Interim 2021 model as detailed in **Appendix 9.2**.

9.32 Consequently, the proposed HIF Infrastructure soft landscaping modifications have been modelled using the Interim 2021 model. It is deemed that proposed modifications to the watercourse are limited to local enhancements around the centre of the Victoria North project (St Catherine's Wood and Union Bridge area) and so a like-for-like comparison has been undertaken to assess overall impacts as a result of the HIF Infrastructure proposals. The proposed HIF Infra Model has been developed by modifying the cross section and 2D levels to represent the HIF Infrastructure proposals. At the time of submission, the Interim 2021 model has not yet been signed off by the EA.

9.33 The hydrology work undertaken for the Interim 2021 model has drawn on gauged data from the Collyhurst Weir located on the River Irk on the eastern boundary of the Site and concluded that there is some uncertainty in which rating curve best fits the data, since there are very few historical measurements taken around QMED flows[31], which are then used to extrapolate flood flow estimates for the higher return periods.

9.34 Consequently, it was agreed with the EA that the Proposed Infrastructure works are assessed using the higher flow estimates, termed 'precautionary approach', since these would allow any change in flood risk to be assessed against the worst-case scenario.

### Climate Change

9.35 The impact of climate change on surface water flood risk will be considered for the 1 in 100-year plus 40% return period in line with NPPF guidance. This is included within the fluvial flood risk model presented in **Appendix 9.1**.

## Data Sources

9.36 The following information sources have been used within the assessment:

- North West River Basin Management Plan 2015[32]
- North West Flood Risk Management Plan 2015-21[33]
- Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA[34]
- Local Flood Risk Management Strategy[35]
- WFD data, classifications and mitigation measures from the EA's Catchment Data Explorer website[36]
- Ordnance Survey (OS) Open Data[37]
- Historic OS maps[38]
- National River Flow Archive gauge data[39]

[31] QMED is the flood with a return period of 2 years.
[32] Defra and Environment Agency (2021) *River Basin Management Plans: 2015: North West River Basin Management Plan 2015*. Available at: https://www.gov.uk/government/collections/river-basin-management-plans-2015 Accessed on: 11/01/2022.
[33] Environment Agency (2021) *Flood Risk Management Plans (FRMPs): 2015 to 2021: North West Flood Risk Management Plans 2015-21*. Available at: https://www.gov.uk/government/collections/flood-risk-management-plans-frmps-2015-to-2021 Accessed on: 11/01/2022.
[34] JBA (2011) *Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA*. Available at: https://www.trafford.gov.uk/planning/strategic-planning/docs/manchester-salford-and-trafford-councils-level-2-hybrid-sfra-level-1-sfra-march-2011.pdf Accessed on: 09/02/2022.
[35] Manchester City Council (2014) *Local Flood Risk Management Strategy*. Available at: https://secure.manchester.gov.uk/info/500207/planning_and_regeneration/5905/manchesters_local_flood_risk_management_strategy_lfrms Accessed on: 09/02/2022.
[36] Environment Agency (2021) *Catchment Data Explorer*. Available at: http://environment.data.gov.uk/catchment-planning/ Accessed on: 11/01/2022.
[37] Ordnance Survey (2021) *Open Data maps*. Available at: https://www.bing.com/mapspreview Accessed on: 11/01/2022.
[38] National Library of Scotland (2021) *Historic OS maps*. Available at https://maps.nls.uk/os/townplans-england/ Accessed on: 11/01/2022.

- GOV.UK: Flood map for planning[40]
- Infrastructure Works FRA (**Appendix 9.1**)
- Hydraulic Assessment of HIF Infrastructure Proposals (Interim Model 2021 Report) (**Appendix 9.2**)

### Significance Criteria

9.37 The baseline assessment describes the existing condition of surface water receptors and flood risk within the study area. Their sensitivity to change (referred to in LA 113 as 'importance') has been considered, and the attributes and indicators of quality defined in Table 3.70 of LA 113 have been used to inform the value assigned to each receptor (**Table 9-1**).

*Table 9-1: Criteria for estimating the sensitivity of receptors*

| Sensitivity / value | Quality | Description |
|---|---|---|
| Very high | Attribute has a high quality and rarity on regional or national scale. | Surface water: Watercourses having a WFD classification shown in a RBMP and typically having $Q_{95} \geq 1.0$ m$^3$/s. Site protected / designated under EC or UK legislation (Special Area of Conservation, Special Protection Area, SSSI, Ramsar site, salmonid water). Species protected by EC legislation.<br><br>Flood risk: Essential infrastructure or highly vulnerable development. |
| High | Attribute has a high quality and rarity on a local scale. | Surface water: Watercourses having a WFD classification shown in a RBMP and typically having $Q_{95} < 1.0$ m$^3$/s. Species protected by EC or UK legislation.<br><br>Flood risk: More vulnerable development. |
| Medium | Attribute has a medium quality and rarity on a local scale. | Surface water: Watercourses not having a WFD classification shown in a RBMP and typically having $Q_{95} > 0.001$ m$^3$/s.<br><br>Flood risk: Less vulnerable development. |
| Low | Attribute has a low quality and rarity on a local scale. | Surface water: Watercourses not having a WFD classification shown in a RBMP and typically having $Q_{95} \leq 0.001$ m$^3$/s.<br><br>Flood risk: Water compatible development. |

9.38 Following the baseline study, a qualitative assessment of potential impacts on the surface water environment during both the construction and operational phases was undertaken. The magnitude of effects has been

[39] National River Flow Archive (2021) *69043 – Irk at Collyhurst Weir*. Available at: https://nrfa.ceh.ac.uk/data/station/info/69043 Accessed on: 11/01/2022.

[40] Environment Agency (2021) Flood map for planning. Available at https://flood-map-for-planning.service.gov.uk/confirm-location?easting=384009&northing=399034&placeOrPostcode=manchester%20victoria (Accessed on: 11/01/2022)

assigned according to **Table 9-2** (Table 3.71 of LA 113) and the significance of effect determined using the matrix in

9.39 **Table** 9-3 (Table 3.8.1 of LA 104). Where two possible categories are given in

9.40 **Table** 9-3, professional judgement has been used to determine the most appropriate category taking into account the sensitivity of the receptor, magnitude of effect, scale at which the effect will be felt and the duration of effect.

9.41 This assessment considers a Major or Moderate significance of effect to be significant. Minor and negligible significance of effect is considered not significant. Where significant effects are predicted, mitigation measures have been proposed and the residual significance of effects predicted. Significant effects in

9.42 **Table** 9-3 are shown in bold.

*Table 9-2: Criteria for assessing impact magnitude*

| Magnitude of impact | Typical criteria descriptors |
|---|---|
| Major adverse | Results in loss of attribute and / or quality and integrity of the attribute. |
| Moderate adverse | Results in effect on integrity of attribute, or loss of part of attribute. |
| Minor adverse | Results in some measurable change in attributes, quality or vulnerability. |
| Negligible | Results in effect on attribute but of insufficient magnitude to affect the use or integrity. |
| Minor beneficial | Results in some beneficial effect on attribute or a reduced risk of negative effect occurring. |
| Moderate beneficial | Results in moderate improvement of attribute quality. |
| Major beneficial | Results in major improvement of attribute quality. |
| No change | No loss or alteration of characteristics, features or elements; no observable impact in either direction |

*Table 9-3: Significance of effects matrix*

| Value of receptor | Magnitude of impact | | | | |
|---|---|---|---|---|---|
| | No change | Negligible | Minor | Moderate | Major |
| **Negligible** | Neutral | Neutral | Neutral or slight | Neutral or slight | Slight |
| **Low** | Neutral | Negligible | Negligible | Minor | Minor / **Moderate** |

| Value of receptor | Magnitude of impact | | | | |
|---|---|---|---|---|---|
| | No change | Negligible | Minor | Moderate | Major |
| **Medium** | Neutral | Negligible | Minor | **Moderate** | **Major** |
| **High** | Neutral | Negligible | Minor / **Moderate** | **Moderate / Major** | **Major** |
| **Very high** | Neutral | Negligible | **Moderate / Major** | **Major** | **Major** |

### In-Combination Assessment

9.43 As described in Chapter 2: Approach, an In-Combination Assessment (ICA) has been undertaken. The assessment scenarios in respect of the EIA for the Proposed Development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
  - Scenario 1a - Assessment of the impacts relating to the Proposed Development only.
  - Scenario 1b - Assessment of the impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4.
  - Scenario 1c – Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.
- Assessment Stage 2 - Completed Development and Operational Phase:
  - Scenario 2a - Assessment of the impacts relating to the Proposed Development only.
  - Scenario 2b Assessment of the impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4.
  - Scenario 2c – Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.
- Assessment Stage 3 - Cumulative Impact Assessment:
  - Scenario 3a - Assessment of the impacts relating to the Proposed Development plus impacts associated with agreed cumulative sites.
  - Scenario 3b - Assessment of the impacts relating to the Proposed Development, plus Application 1, 3 and 4, plus impacts associated with agreed cumulative sites.
  - Scenario 3c – Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, the wider SRF, and the agreed cumulative sites.

### Assumptions/Limitations

9.44 This assessment is based on available baseline data and design information for the Proposed Development. Preparation of design details and technical assessments (FRA and WFD Compliance Assessments) for Applications 3 and 4 are ongoing, and the ICA has been carried out using the information available at the time of writing. As such, assessment of scenarios 1b, 1c, 2b and 2c are high level only. The hydraulic modelling does not define final flood levels or flood extents, but rather the relative differences as a result of the proposed HIF Infrastructure Works relating to flood regime, flows and levels, compared back to the Existing situation using the Interim 2021 model.

9.45 Information regarding the drainage ditch to the north-east of the Site is limited. Based on observations from project ecologists and a review of the historic maps (no watercourse shown in this location), it is likely that this is a remanent feature of the railway works and not a watercourse. The assessment assumes that the drainage ditch is not hydrologically connected to the River Irk.

9.46 Government guidance has been followed regarding the use of climate change allowances in the FRA (**Appendix 9.1**), and the design proposals will include embedded mitigation to provide resilience to climate change. Details on how this has been incorporated is presented in the relevant appendices.

9.47 Further details on assumptions relevant to the assessments undertaken in **Appendix 9.1**, **Appendix 9.2**, **Appendix 9.3** and **Appendix 9.4** are described in the relevant appendix, where considered necessary.

## Consultation

9.45 Consultation undertaken to date is summarised in **Table 9-4**.

*Table 9-4: Summary of Consultation*

| Consultee | Date | Comments | Actions |
|---|---|---|---|
| Jonathon Cartledge<br><br>United Utilities (Wastewater and surface water) | 03/08/21 | • High-level principles for SuDS adoption. | Discussion required with UU Modelling Engineers once one has been located. |
| Arup, Manchester City Council (Client), OROC representatives, BRIL representatives and an EA VN project representative. | 04/08/21 | • Session to ensure that all projects were aware of the work ongoing on VN but also was an opportunity for Arup to understand what work had been undertaken on BRIL and OROC to date and if there were any opportunities to | Further engagement with stakeholders. |

| Consultee | Date | Comments | Actions |
|---|---|---|---|
| | | link up. | |
| Arup, representatives from the EA's Fisheries, Biodiversity and Geomorphology (FBG) team and an EA VN project representative. | 05/08/21 | • Session to talk the EA FBG team through the VN proposals, gather their thoughts on the design and if there were any wider aspirations for the catchment. | Further engagement with stakeholders. |
| Andrew Leyssens<br><br>United Utilities (Wastewater and surface water) | 05/08/21 | • High-level principles for SuDS adoption. | Further guidance required from UU Engineers with regards to diversion options. |
| Jonathon Cartledge<br><br>United Utilities (Wastewater and surface water) | 25/08/21 | • High-level principles for SuDS adoption. | Further guidance required from UU Engineers with regards to diversion options. |
| Oliver Timmins<br><br>MMC Flood Risk and Drainage Team | 07/10/21 | • Engagement meeting with UU, LLFA, MCC and EA. Outcomes was to get the initial engagement with these stakeholders. | To follow up from engagement meeting on an individual stakeholder basis. |
| Oliver Timmins<br><br>MCC Flood Risk and Drainage Team (LLFA) | 21/10/21 | • Detailed discussion with LLFA with regards to agreeing a discharge rate for the Site. | Follow up with an email and invite to EA further engagement meeting. |

## Baseline Conditions

9.46 This section sets out existing conditions and identifies potential receptors, describing their sensitivity according to the methodology.

## Surface Water and Hydrology

9.47 The Proposed Development site is located within the River Irk catchment and encompasses a section of the River Irk. Historically, the area was used as railway sidings, with current land use comprising of post-industrial greenfield land, areas of hardstanding and the Creamline Dairies.

9.48 The River Irk is within the southern extent of the site boundary and flows in a south-westerly direction towards the confluence with the River Irwell, which is approximately 480 m downstream. Topographic levels rise at the Site from east to west, with the highest elevation recorded being approximately 43 m. The topographic level of the River Irk remains relatively consistent at approximately 27 m, with the riverbanks being elevated to approximately 30 m. The River Irk is designated as a Heavily Modified Water Body (HMWB) in the River Basin Management Plan (RBMP) according to WFD legislation. This is due to physical modifications associated with urbanisation and historical industry and the resulting change in watercourse character. Gauging station data (station 69043) at Collyhurst Weir adjacent to the Site indicate that the River Irk has a catchment area of 72.3 $km^2$ and a $Q_{95}$ (flow which is exceeded 95% of the time) of 0.914 $m^3/s$. The 100-year return period flow estimate for the Collyhurst Weir downstream and upstream is 31.82 $m^3/s$ and 31.79 $m^3/s$ respectively for the existing development with a difference of -0.11 $m^3/s$ for the proposed HIF Infrastructure Works.

9.49 The fluvial geomorphology surveys (**Appendix 9.3**) describe the reach of the River Irk within and adjacent to the Site as a uniform modified urban reach which is more channelised than upstream reaches. The left and right banks are both artificial and the natural bed substrate was largely obscured by artificial debris.

9.50 A culverted ordinary watercourse called the Cheetham Hill Junction Drain runs though the centre of the Site before discharging to the River Irk. The culvert is shown on MCC records to drain two open ditches just north of the Site boundary. Unfortunately, MCC has no further information on this culvert. If this drain is found to be in use then a diversion of it will be required, further investigation is needed to clarify this. This is included in the assessment to cover a worst-case scenario.

9.51 Observations from a walkover survey (**Appendix 9.5**) show that the drain, adjacent to Fairholme Caravan Site, located on the north-east site boundary is likely to be an old surface water channel which could be from when the area was a part of railway. During the walkover, it was observed to be a dry brick structure, that was overgrown and covered by leaves. The start of the drain was difficult to located but becomes barely visible moving 'upstream'. Based on this evidence it is unlikely that this area is in hydrological connectivity with the River Irk. However, for the purposes of this assessment and to take a conservative approach, the drains have been included as a potential surface water receptor.

9.52 There is a possibility that the Cheetham Hill Junction Drain and the drain adjacent to Fairholme Caravan Site, were historically connected.

### Surface Water WFD Classification

9.53 The study area is situated in the North West River Basin District[41]. The Site is within the Roch Irk Medlock Operational Catchment, and the affected water body is the Irk (Wince to Irwell) (GB112069061131). This is a HMWB and is associated with an Overall Status of Moderate, Chemical Status of Fail and Moderate Ecological Potential. The reasons for the failure to reach Good status include sewage discharge, pollution from industry, contaminated land and urbanisation. The target Overall Status for the waterbody is Moderate by 2027. (**Appendix 9.4**).

9.54 The Irk (Wince to Irwell) water body is located within a Nitrate Vulnerable Zone (NVZ) as designated under the Nitrates Directive. The footprint of the Proposed Development is within this protected area.

9.55 **Table 9-5** provides a summary of the WFD surface water bodies within the study area.

*Table 9-5: Summary of WFD surface water bodies in the study area*

| WFD Waterbody | Irk (Wince to Irwell) |
|---|---|
| ID | GB112069061131 |
| Type of Waterbody | River |
| Management Catchment | North West |
| Area ($km^2$) | 30.975 |
| Heavily Modified Waterbody (HMWB/Artificial Waterbody (AWB)? | Yes |
| Overall Status | Moderate |
| Objective | Moderate by 2015 |
| Chemical Status | Fail |
| Ecological Status (river), Quantitative Status (groundwater) | Moderate |
| Driver of failure to achieve Good status | Sewage discharge, pollution from industry, contaminated land, and urbanisation |

[41] Defra and Environment Agency (2015) North West River Basin Management Plan 2015. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718335/North_West_RBD_Part_1_river_basin_management_plan.pdf (Accessed on: 11/01/2022)

| WFD Waterbody | Irk (Wince to Irwell) |
|---|---|
| Reason for not achieving Good status | Invertebrates, phosphate, ammonia, |

## Flood Risk

9.56 The Manchester, Salford and Trafford SFRA identifies the River Irk as the primary source of flood risk, with surface water as a secondary source of flood risk. The SFRA doesn't identify the Site as an area at risk of groundwater flooding. The groundwater level is anticipated to be below most proposed works. Measures to control groundwater inflow may be required where excavations are proposed.

9.57 An FRA has been produced for the Proposed Development and is included in **Appendix 9.1**. The baseline flood risks are outlined in the following sections.

### Surface Water Flood Risk

9.58 EA surface water flooding mapping shows that there are localised areas of low, medium, and high risk of surface water flooding (directly generated from pluvial events). The surface water flooding follows the alignment of the plateau with the depth of the flooding being less than 300mm for most of the Site. Areas of high risk from surface water flooding are predominantly within the existing River Irk channel, and so are overlain during the mapping process over areas with permanent fluvial flow within the channel, and thus can be dismissed as areas of high surface water flood risk. Within the site's red line boundary other areas of concentrated surface water flood risk (low to medium) are shown along Dantzic Street, Hargreaves street and Chase Street. On the West edge of Travis Island. Dantzic Street is identified as an area of increased surface water risk due to topographical low points

9.59 Based on information available at the point of submission, there are no known existing sewers within the Site, so surface water flooding is assumed to occur due to localised low points. Although the majority of the area within the Site boundary is brownfield, an initial geotechnical investigation found that infiltration varies due to large areas of made ground beneath the Site. This could also contribute to surface water flooding.

9.60 The Site is located within the Conurbation Core Critical Drainage Area (CDA) as identified in the Manchester, Salford and Trafford SFRA. This means the area would be sensitive to an increase in surface water runoff as a result of the new development and is associated with historic flooding in the area. This could be due to the capacity of the existing sewer network or other watercourses including culverts.

### Fluvial Flood Risk

9.61 The EA flood map shows that the majority of the Site sits in Flood Zone 1. This is classified to be at 'Low Risk' of fluvial flooding. This comprises land assessed as having a less than a 1 in 1000 annual probability of river or sea

flooding in any year (<0.1%). Areas identified as Flood Zone 3 follow the edges of the River Irk channel within the Site, and are therefore considered as Flood Zone 3a, rather than Flood Zone 3b classified as functional floodplain.

9.62 The Manchester, Salford and Trafford SFRA identifies areas within Flood Zone 3b which is the functional flood plain for the River Irk which follows the edges of the river channel within the Site. Most of the area South of the River lies in Flood Zone 2, there is a small section in Flood Zone 1. Most of the area North of the river, close to Hargreave's Street and Roger Street sits within Flood Zone 2. Some zones further from the river are in Flood Zone 1, including the bottom section of the proposed Red Bank Terraces. A small section of site North of Union Bridge is in Flood Zone 3.

9.63 The hydraulic modelling outputs presented in the FRA (**Appendix 9.1**) show some small differences between the fluvial flood risk extents shown by the EA flood map compared to the Interim 2021 model. For both Flood Zones 2 and 3, discrepancies lie in the areas surrounding Union Bridge. However, most of the discrepancies are outside of the Site.

9.64 Further detail is provided in the FRA (**Appendix 9.1**).

### Designated Sites

9.65 There are no local, national or international designated sites on account of their ecological value within 2km of the Site, or hydrologically connected to the Site.

9.66 Four non-statutory locally designated sites lie within 2km (described in Chapter 6: Ecology and Nature Conservation). There is no hydrological connectivity between these sites and the Proposed Development, with the sites located in a different catchment or upstream of the Proposed Development. designated sites have therefore been scoped out of further assessment.

### Sensitivity of Receptors

9.67 The baseline assessment has identified two surface water receptors. The sensitivity assigned to these receptors, based on the baseline data, is shown in **Table 9-6**.

*Table 9-6: Description of the sensitivity of the surface water receptors*

| Receptor | Sensitivity and rationale |
|---|---|
| River Irk | ***High*** – WFD classified and $Q_{95}$ <1.0$m^3$/s. Any development within Flood Zone 3 of this watercourse may fall within the 'more vulnerable' category. |
| Drain (Cheetham Hill Junction Drain) | ***Medium*** – A culverted ordinary watercourse runs though the centre of the Site before discharging to the River Irk. The culvert is shown on MCC records to drain two open ditches just north of the Site boundary. |
| Drain (adjacent to Fairholme | ***Low*** – Minor local water feature possibly related to former land use as railway sidings. Likely that this feature is ephemeral and assumed not be hydrologically connected with |

| | |
|---|---|
| Caravan Side) | the River Irk. |
| Residential and commercial complex | ***Very High*** – A residential and commercial complex including features such as apartment blocks and restaurants located near NCP Car Park. Feature only to be affected in a 1 in 100 year plus 40% for climate change flood event. |

# Embedded Mitigation

9.68 This section describes the measures which have been 'embedded' into the development.

### Demolition and Construction

9.69 For this application (Application 2) there is no embedded mitigation that is relevant to surface water and drainage for construction

### Completed and Operational Development

- SuDS will be utilised across the Site to treat and attenuate surface water runoff to the agreed flow rates. Permeable Paving will be utilised for the Plateau Road and areas of public realm within the masterplan, including on-street car parking spaces and footways. Swales are proposed along the active travel route to the south of the Plateau plots which will drain the footway only. The detention basin will store up to 108m$^3$ of water during storm events and will provide an area of amenity during prolonged periods of dry weather when flows will be lower.
- The Site drainage strategy offers opportunities for beneficial impacts on water quality of the River Irk (use of SuDS, separate foul and surface water system).[42]
- Following review of the flood model, building floor levels for Application 2 will be adjusted to a suitable height so that are outside of the 1 in 100 plus climate change extent.

# Assessment of Likely Significant Effects

### Scenarios 1a and 2a: Impacts of the Proposed Development only

[42] Arup (2021) Drainage Strategy, Document reference: VNIF-ARP-ZZ-YYY-RP-CD-0002

### Assessment Scenario 1a: Impacts of the Proposed Development only During Demolition and Construction

9.70 The following paragraphs present the assessment of potential effects to the surface water environment resulting from the activities undertaken during the demolition and construction phase of the infrastructure works. Potential effects on the ground conditions, including potential mobilisation of ground contaminants and impacts on groundwater are considered in Chapter 8.

*Surface Water Quality*

9.71 During the demolition and construction phase there is a risk of potential adverse impact on the water quality of the River Irk arising from increase in sediment discharges from the construction site (exposed soil, stockpiles, road construction). There is also potential adverse impact on the water quality of the Irk arising from contaminant discharges from the construction site (oil or fuel spills or leaks from plant or machinery).

9.72 There is the potential for increases in sediment-laden runoff to the surface water features from vegetation clearance and the presence of exposed soils or soil stockpiles during the construction works. If not properly managed, polluted runoff could enter surface waters and affect water quality and aquatic life adjacent to and downstream of the Site.

9.73 Water quality impacts on the drain adjacent to Fairholme Caravan Park are not considered likely to result in a measurable change in the attributes or quality of this water feature itself. However, a conservative approach has been taken that connectivity with the River Irk cannot be ruled out.

9.74 For the River Irk, which has a sensitivity of **High**, the magnitude of effect is predicted to be **moderate adverse** on surface water quality from the Proposed Development. Therefore, the significance of effect is predicted to be **moderate adverse**, and therefore **significant**, in the absence of further mitigation.

9.75 For the drain, adjacent to Fairholme Caravan Park, which has a sensitivity of **Low**, the magnitude of effect is predicted to be **minor adverse** on surface water quality from the Proposed Development, due to the intermittent nature of the feature holding water, and the feature does not currently flow into another receptor. Therefore, the significance of effect is predicted to be **slight adverse** and therefore **not significant** in the absence of further mitigation.

9.76 For the culvert, called Cheetham Hill Junction Drain, which has a sensitivity of **Medium**, the magnitude of effect is predicted to be **moderate adverse**. Therefore, the significance of effect is predicted to be **moderate adverse** and therefore **significant**, in absence of further mitigation.

*Hydromorphology*

9.77 Impacts during construction on river form and function of the River Irk will be dependent on construction methodology and options taken forward for any works required to channel banks and bed (in relation to

retaining structures, works in the riparian zone). Potential impacts during construction could be adverse and are likely to be short-term and local in extent.

9.78 For the River Irk, which has a sensitivity of **High**, the magnitude of effect is predicted to be **minor adverse** on hydromorphology from the Proposed Development. Therefore, the significance of effect is predicted to be **slight adverse** due to the localised nature of the works and poor existing condition of the watercourse, and therefore **not significant**, in the absence of further mitigation.

9.79 For the drain, adjacent to Fairholme Caravan Site, which has a sensitivity of **Low**, the magnitude of effect is predicted to be **minor adverse** on hydromorphology from the Proposed Development. Therefore, the significance of effect is predicted to be **slight adverse,** and therefore **not significant**, in the absence of further mitigation.

9.80 For the culvert, called Cheetham Hill Junction Drain, which has a sensitivity of **Medium**, the magnitude of effect is **minor adverse** on hydromorphology from the Proposed Development. Therefore, the significance of effect is predicted to be **slight adverse,** and therefore **not significant**, in the absence of further mitigation.

*Local drainage and flood risk*

9.81 The demolition and construction works have the potential to alter local drainage patterns and flood risk through changing surface water flow pathways, for example through changing ground levels and the construction of the temporary haulage road and stockpiling.

9.82 It is noted that the potential change in fluvial flood risk during the construction period will be dependent on the final design of the works within the river corridor and of the construction approach. An adequate maintenance plan will be developed to prevent proposed drainage and SuDS from becoming blocked due to construction debris.

9.83 For the River Irk, which has a sensitivity of **High**, the magnitude of effect is predicted to be **minor adverse** on local drainage and flood risk from the Proposed Development. Therefore, the significance of effect is predicted to be **moderate adverse**, and therefore **significant**, in the absence of further mitigation.

9.84 For the drain, adjacent to Fairholme Caravan Site, which has a sensitivity of **Low**, the magnitude of effect is predicted to be **minor adverse** on local drainage and flood risk from the Proposed Development. Therefore, the significance of effect is predicted to be **slight adverse,** and therefore **not significant**, in the absence of further mitigation.

9.85 For the culvert, called Cheetham Hill Junction Drain, which has a sensitivity of **Low**, the magnitude of effect is predicted to be **minor adverse** on local drainage and flood risk from the Proposed Development. Therefore, the significance of effect is predicted to be **slight adverse,** and therefore **not significant**, in the absence of further mitigation.

9.86 For the surrounding residential and commercial areas, which have a sensitivity of **Very High**, the magnitude of effect is predicted to be **minor adverse** on local drainage and flood risk from the Proposed Development. Therefore, the significance of effect is predicted to be **moderate adverse**, and therefore **significant**, in the absence of further mitigation.

### Assessment Scenario 2a: Impacts of the Proposed Development only at Completed Development and Operational Stage

9.87 The following paragraphs present the assessment of potential effects to the surface water environment resulting from the completed and operational development. For the purposes of this assessment, the operational development comprises:

- New highway connections;
- New utility and services connections;
- Remediation and earthworks;
- Demolition of existing structures; and
- The provision of green infrastructure including the creation of green links and the first phase of the new City River Park.

#### *Surface Water Quality*

9.88 Potential adverse impact on water quality of the River Irk arising from oil or fuel spills or leaks from vehicles using the internal access roads and car parking area of the Proposed Development. Spills could run-off into surface water features presenting a pollution pathway. However, it is considered that the introduction of the treatment train of SuDS features would reduce the risk of pollutant concentrations entering surface waters to an acceptable level.

9.89 There is an existing combined sewer network with Combined Sewer Overflows (CSOs) into the River Irk. In 2020 the CSOs within the Site boundary spilled a total of 108 times for a total of 660 hours[3], with the most spills occurring at the Dantzic Street/Warford Street. This indicates that there may be reduced capacity in the combined sewers and could impact surface water quality.

9.90 The proposed drainage strategy includes discharge restrictions. All surface water runoff will discharge directly to the River Irk. All connections to the river will be new connections, therefore greenfield discharge rate restriction have been specified by the LLFA in line with ambitions set out in the Manchester, Salford and Trafford SFRA. The resulting restrictions will reduce discharge will reduce discharge from the Site by between 73% and 85% compared to existing. This excludes the park area which will continue to drain through infiltration as it does currently.

9.91 Development plots within the surface water network have also been considered. To provide flexibility for the connections from the future development plots, the surface water network has been designed with a depth of 2.0-2.5m below cover level. Plots will be drained through connections to carrier pipes within the highway and public realm; one connection will be allowed per plot. Naturally draining areas, such as the River Park, will have no additional drainage infrastructure.

9.92 All surface water is assumed to either infiltrate, drain to the River Irk or to the combined sewer network.

9.93 For the River Irk, which has a sensitivity of **High**, the magnitude of effect is predicted to be **negligible** on surface water quality from the Proposed Development. The significance of effect is predicted to be **slight adverse**, and therefore **not significant**, in the absence of further mitigation.

9.94 For the drain, adjacent to the Fairholme Caravan Site, which has a sensitivity of **Low**, the magnitude of effect is predicted to be **negligible** on surface water quality from the Proposed Development. Therefore, the significance of effect is predicted to be **slight adverse**, and therefore **not significant**, in the absence of further mitigation.

9.95 For the drain, called the Cheetham Hill Junction Drain, which has a sensitivity of **Medium**, the magnitude of effect is predicted to be **negligible** on surface water quality from the Proposed Development. Therefore, the significance of effect is predicted to be **slight adverse**, and therefore **not significant**, in the absence of further mitigation.

*Hydromorphology*

9.96 Longer-term, permanent impacts on river form and function of the River Irk will be dependent on the final design of any works required to channel banks or bed (in relation to retaining structures, works in the riparian zone and bridge design). Hydromorphological impacts for the completed development could be adverse. However, given the current condition of the river morphology, it is considered more likely that the impacts will be either neutral (for example if remaining structures are similar to those already in place) or beneficial (for example if there are opportunities to improve the morphological condition of the channel, such as through a more naturalised bank).

9.97 A WFD compliance assessment (**Appendix 9.4**) has been undertaken for the scheme which will identify any requirement for additional or off-site mitigation (if needed to offset impacts on hydromorphology).

9.98 For the River Irk, which has a sensitivity of **High**, the magnitude of effect is predicted to be **negligible** on hydromorphology from the Proposed Development. Therefore, the significance of effect is predicted to be **slight adverse**, and therefore **not significant**, in the absence of further mitigation.

9.99 For the drain, adjacent to Fairholme Caravan Site, which has a sensitivity of **Low**, the magnitude of effect is predicted to be **negligible** on hydromorphology from the Proposed Development. Therefore, the significance of effect is predicted to be **slight adverse**, and therefore **not significant**, in the absence of further mitigation.

9.100 For the culvert, called Cheetham Hill Junction Drain, which has a sensitivity of **Medium**, the magnitude of effect is predicted to be **negligible** on hydromorphology from the Proposed Development. Therefore, the significance of effect is predicted to be **slight adverse**, and therefore **not significant**, in the absence of further mitigation.

*Local Drainage and Flood Risk*

9.101 Potential change in surface water flow pathways and associated surface water flood risk (change in topography, presence of roads). Based on information available at the time of writing, the site-wide drainage strategy will aim to reduce runoff rates from the Site.

9.102 Potential change in fluvial flood risk from works within the river corridor will be dependent on the final design of retaining structures, works in the floodplain and bridge. The works should be designed to ensure that there is no off-site increase in flood risk, giving a neutral impact.

9.103 Reprofiling of the site and the implementation of SuDS measures included in the scheme's design to manage run-off surface water run-off from the development into receiving receptors will result in a reduction of surface water flood risk.

9.104 For the River Irk, which has a sensitivity of **High**, the magnitude of effect is predicted to be **minor adverse** on local drainage and flood risk from the Proposed Development. Therefore, the significance of effect is predicted to be **moderate adverse**, and therefore **significant**, in the absence of further mitigation.

9.105 For the drain, adjacent to Fairholme Caravan Site, which has a sensitivity of **Low**, the magnitude of effect is predicted to be **minor adverse** on local drainage and flood risk from the Proposed Development. Therefore, the significance of effect is predicted to be **slight adverse,** and therefore **not significant**, in the absence of further mitigation.

9.106 For the culvert, called Cheetham Hill Junction Drain, which has a sensitivity of **Low**, the magnitude of effect is predicted to be **minor adverse** on local drainage and flood risk from the Proposed Development. Therefore, the significance of effect is predicted to be **slight adverse,** and therefore **not significant**, in the absence of further mitigation.

9.107 For the surrounding residential and commercial areas, which have a sensitivity of **Very High**, the magnitude of effect is predicted to be **minor adverse** on local drainage and flood risk from the Proposed Development. Therefore, the significance of effect is predicted to be **moderate adverse**, and therefore **significant**, in the absence of further mitigation.

## In-Combination Assessment: Assessment Scenarios 1b, 1c, 2b and 2c Considering Impacts of the Proposed Development Alongside the Wider Development Project and SRF

9.108 The ICA identifies whether any non-significant drainage and flood risk effects arising from this Application 2 could become significant, or whether the significance of any effects arising from Application 2 would increase when

considered alongside similar effects from the associated Applications 1, 3 and 4, and with the wider SRF. The effects associated with Application 1 are summarised from the ES submitted for those proposals in November 2021. The design of certain aspects of the works within the future Applications 3 and 4, and the associated detailed assessments of the impact of these works on flood risk, hydromorphology and WFD, are ongoing. The ICA is therefore undertaken at a high-level, is qualitative, and is based on the information available at the time of writing (see Chapter 2: Approach for more information).

9.109 The ICA focusses on the receptors identified for the infrastructure works i.e. the River Irk and the drain, and surface water and fluvial flood risk. Potential effects that may arise from Applications 1, 3 and 4, and the wider SRF are summarised in **Table 9-7**. The results of the ICA are summarised in **Table 9-8**.

*Table 9-7: Associated Future Development – Indicative Descriptions and High-Level Assessment*

| Application | Potential effects |
|---|---|
| Demolition and Construction | |
| Submitted Application 1 - HIF Enabling Works | Surface water quality:<br>• Potential adverse impact on water quality of the River Irk arising from contaminant discharges from construction works within the river corridor (oil or fuel spills or leaks).<br>• Potential adverse impact on water quality of the River Irk arising from the demolition of the Creamline Dairies or runoff from dust suppression.<br>• Potential adverse impact on water quality of the River Irk and / or drain arising from increase in sediment discharges from the construction site (exposed soil, stockpiles).<br>Hydromorphology:<br>• No direct impact as the enabling works are located 60-100m from the River Irk and there are no proposals within Application 1 for works within the river corridor or that could directly impact upon the hydromorphology of the River Irk.<br>Local drainage and flood risk:<br>• Potential change in surface water flow pathways and associated surface water flood risk due to construction activities e.g., changing ground levels and the construction of the temporary haulage road. |
| Future Application 3 - HIF Flood Defence Works | Site boundary for Application 3 is located on the next reach of the River Irk downstream of the one considered within the enabling works assessment (see **Figure 2.2**).<br>Surface water quality:<br>• Potential adverse impact on water quality of the River Irk arising from increase in sediment discharges from construction works within the river corridor.<br>• Potential adverse impact on water quality of the River Irk arising from contaminant discharges from construction works within the river corridor (oil or fuel spills or leaks).<br>Hydromorphology:<br>• Impacts during construction on river form and function of the River Irk will be dependent on construction methodology and the final design of the flood mitigation and defence works / new bridge. Impacts during construction could be adverse and are likely to be short-term and local in |

| Application | Potential effects |
|---|---|
| | extent.<br>Local drainage and flood risk:<br>• Potential change in fluvial flood risk during the construction period will be dependent on the final design and of the construction approach. |
| Future Application 4 - Red Bank Neighbourhood | Surface water quality:<br>• Potential adverse impact on water quality of the River Irk and / or drain arising from increase in sediment discharges from the construction site (exposed soil, stockpiles).<br>• Potential adverse impact on water quality of the River Irk and / or drain arising from contaminant discharges from the construction site (oil or fuel spills or leaks).<br>Hydromorphology:<br>• No direct impacts anticipated as the plots are located outside of the river corridor.<br>Local drainage and flood risk:<br>• Potential change in surface water flow pathways and associated surface water flood risk due to construction activities e.g., stockpiling. |
| Northern Gateway Strategic Regeneration Framework (SRF) | The Northern Gateway SRF area includes land to the north-east of the enabling works site boundary which is located within the River Irk catchment. There is the potential for works within the river corridor of the Irk.<br>Surface water quality:<br>• Potential adverse impact on water quality of the River Irk arising from increase in sediment or contaminant discharges during construction.<br>Hydromorphology:<br>• Potential for adverse, neutral or beneficial impacts depending on the design of any works proposed within the river corridor and construction approach.<br>Local drainage and flood risk:<br>• Potential change in surface water flow pathways and associated surface water flood risk due to construction activities. |
| Completed Development and Operational Stage | |
| Submitted Application 1 - HIF | Surface water quality: |

| Application | Potential effects |
|---|---|
| Enabling Works | • Potential adverse impact on water quality of the River Irk and / or drain arising from contaminant discharges from the construction site (oil or fuel spills or leaks).<br>Hydromorphology:<br>• No impacts anticipated. There are no proposals within the river corridor and no direct impacts predicted on the hydromorphology of the River Irk.<br>Local drainage and flood risk:<br>• Potential change in surface water flow pathways due to the presence of the temporary haulage road and increase runoff volumes if the impermeable area of the Site increases. |
| Future Application 3 - HIF Flood Defence Works | Surface water quality:<br>• No impacts anticipated.<br>Hydromorphology:<br>• Longer term, permanent impacts on river form and function of the River Irk will be dependent on the final design of the flood mitigation and defence works, and could be adverse, neutral or beneficial. Potential beneficial effects will be explored through potential designs to improve the hydromorphology of the reach.<br>• A WFD compliance assessment will be undertaken for the scheme which will identify any requirement for additional or off-site mitigation (if needed to offset impacts on hydromorphology).<br>Local drainage and flood risk:<br>• The flood mitigation and defence works aim to reduce the area of Flood Zone 3 (and fluvial flood risk).<br>• The works should be designed to ensure that there is no off-site increase in flood risk, giving a neutral impact. |
| Future Application 4 - Red Bank Neighbourhood | Surface water quality:<br>• The Site drainage strategy offers potential opportunities for beneficial impacts on water quality of the River Irk (use of SuDS, separate foul and surface water system).<br>Hydromorphology:<br>• No direct impacts anticipated as the plots are located outside of the river corridor.<br>Local drainage and flood risk: |

| Application | Potential effects |
|---|---|
| | • Potential change in surface water flow pathways and associated surface water flood risk (presence of buildings). Based on information available at the time of writing, the site-wide drainage strategy will aim to reduce runoff rates from the Site. |
| Northern Gateway Strategic Regeneration Framework (SRF) | Surface water quality:<br>• Opportunities for beneficial impacts on water quality of the River Irk (use of SuDS, separate foul and surface water systems for the developments).<br>Hydromorphology:<br>• Potential for adverse, neutral or beneficial impacts depending on the design of any works proposed within the river corridor.<br>Local drainage and flood risk:<br>• Anticipated that developments would follow the LFRMS and aim to reduce runoff rates, reducing surface water flood risk (beneficial impact).<br>• Impact on fluvial flood risk dependent on design of any works within the river corridor. |

*Table 9-8: In-Combination Assessment*

| Assessment scenario | Potential effects |
|---|---|
| Demolition and Construction | |
| 1b – Infrastructure works plus Application 1, 3 and 4 | Surface water quality:<br>• Collectively there is a higher likelihood of adverse impacts on water quality of the River Irk when considering all four applications due to the larger construction area and works within the river corridor associated with Applications 2, 3 and 4.<br>• Mitigation outlined in respect of the Proposed Development (Application 2 Infrastructure Works) is also applicable to the future applications in relation to best practice approaches to pollution prevention and management of surface water on construction sites. Additional mitigation may be required for the future applications in relation to works within the river corridor or channel itself (to be determined within the assessments for the future applications). The implementation of the Site drainage strategy offers opportunities for beneficial impacts on water quality of the River Irk (use of SuDS, separate foul and surface water system).<br>• Based on the information currently available, it is considered that effects on water quality of the River Irk will remain **non-significant** when considering all four applications in combination, assuming that pollution prevention and construction surface water management mitigation is |

| Assessment scenario | Potential effects |
|---|---|
| | applied.<br>Hydromorphology:<br>• There is the potential for adverse effects on the hydromorphology of the River Irk during construction for applications 2 and 3 due to works within the river corridor. Additional mitigation will be required for these future applications to ensure that effects are **not significant**; the specifics of the mitigation will be dependent on the final design and construction method.<br>• Direct hydromorphological effects from the enabling works will be **negligible** as all works are outside of the river corridor. As such, no further mitigation is required for the enabling works following the ICA.<br>• Given the current condition of the river morphology, it is considered more likely that the impacts will be either **negligible** (for example if retaining structures are similar to those already in place) or **beneficial** (for example if there are opportunities to improve the morphological condition of the channel, such as through a more naturalised bank).<br>• A WFD compliance assessment has been undertaken for the scheme which will identify any requirement for additional or off-site mitigation (if needed to offset impacts on hydromorphology).<br>Local drainage and flood risk:<br>• Collectively there is the potential for a larger impact on surface water flood risk when considering all four applications together due to the larger construction area and greater change to the existing topography. Mitigation outlined in this application is also applicable to the future applications in relation to best practice approaches to management of surface water on construction sites. The increase of flood risk in areas surrounding Union Bridge in a 1 in 100 year plus 40% for climate change requires additional mitigation. Based on the information available at the time of writing this would be a bund or an overflow route. Assuming that this mitigation is applied, it is considered that effects on surface water flood risk during construction will remain non-significant when considering all four applications in combination and no additional mitigation is required for the infrastructure works following the ICA. |
| 1c – Infrastructure works plus Application 1, 3, 4 and the wider SRF | Considering a worst-case scenario (that development across the wider SRF could include works within the River Irk corridor), there could be in-combination impacts in terms of water quality, hydromorphology, and local drainage and flood risk. The assessment for scenario 1b is also relevant to 1c, and no further mitigation for the infrastructure works is required following consideration of this ICA. |
| Completed Development and Operation stage | |
| 2b – Infrastructure | Surface water quality: |

| Assessment scenario | Potential effects |
|---|---|
| works plus Application 1, 3 and 4 | • Collectively there is a higher likelihood of **beneficial** impacts on water quality of the River Irk when considering all four applications together, as the outline design principles of the Site-wide drainage system include use of SuDS and installation of a separate foul and surface water system (existing drainage is combined sewer).<br>• No additional mitigation is therefore considered necessary for the enabling works due to the position of the Site outside of the river corridor.<br>Hydromorphology:<br>• Longer term, permanent hydromorphological impacts for the completed development could be **adverse** However, given the current condition of the river, it is considered more likely that they will be either neutral or **beneficial** depending upon the final design of the proposed works within the river corridor.<br>• A WFD compliance assessment will be undertaken for the scheme which will identify any requirement for additional or off-site mitigation (if needed to offset impacts on hydromorphology).<br>• Direct hydromorphological effects from the infrastructure works will be **negligible** if the proposed mitigation is in place. As such, no further mitigation is required for the enabling works following the ICA.<br>Local drainage and flood risk:<br>• There is the potential for **beneficial** effects on surface water flood risk when considering all four applications together (reduced runoff rates associated with site-wide drainage strategy). As such, no further mitigation is required for the enabling works following the ICA. |
| 2c – Infrastructure works plus Application 1, 3, 4 and the wider SRF | Considering a worst-case scenario (that development across the wider SRF could include works within the River Irk corridor), there could be in-combination impacts in terms of water quality, hydromorphology, and local drainage and flood risk. The assessment for scenario 1b is also relevant to 1c, and no further mitigation for the infrastructure works is required following consideration of this ICA. |

# Additional Mitigation / Enhancement Measures

9.110 This section describes the proposed measures to mitigate potential significant environmental effects on the surface water environment.

### Scenarios 1a and 2a: Impacts of the Proposed Development Only

Assessment Scenario 1a: Mitigation relating to the Proposed Development only during demolition and construction

*Surface water quality*

9.111 The Contractor will adhere to the following mitigation measures:

- Storage of potentially polluting materials, plant and equipment will be more than ten metres from any water body, including drains.
- Fuel stores will be located away from surface water resources and drainage and will be contained within suitably sized bunds with sealed bases.
- Refuelling will always be undertaken remote from drainage and surface water features and using automatic shut-off fuel delivery systems.
- Pumps, generators and small plant will have drip trays to collect any fuel or oil spills.
- Where wheel washes are installed adjacent to site accesses or egresses, these will be self-contained, will recycle wash water as much as possible and will not directly discharge to the environment.
- Where practicable and appropriate, areas of exposed soil will be kept to a minimum.
- Provision of a suitable construction drainage system including cut-off valves, ditches or drains and sustainable drainage systems, or equivalent, with suitably sized treatment facilities such as settlement or detention basins.
- An adequate maintenance plan should be developed to ensure that construction activities or debris do not block the existing or proposed drainage.
- Standard practice set out in the EA's PPGs (withdrawn) and Guidance for Pollution Prevention (GPPs) and the CIRIA guidance listed in paragraph 9.22 should be followed.
- Spill kits will be available in the event of fuel spillage and personnel will be trained in their use.

9.112 Pollution incident response plans (PIRP) as part of the Site's environmental management system (EMS)[43] will be developed, implemented, and kept up to date by the Contractor that cover any incidents that might lead to release of pollutants to the surface water environment.

9.113 The Contractor will comply with guidance for the preparation of the PIRP, and at a minimum should include:

- Emergency contact details.
- A product inventory, including a product safety data sheet (SDS).
- A site layout plan.
- A plan of the drainage arrangements on the Site.
- Details of the location of emergency response equipment.
- Your emergency procedure.
- How you report incidents.

9.114 The Contractor will also comply with BS 6031 Code of Practice for Earthworks, regarding the general control of site drainage including, for example, all washings, dewatering, abstractions and surface water run-off, unless otherwise agreed by the Applicant, and, where appropriate, the relevant regulator.

9.115 The Contractor will make provisions to ensure that oil drums and containers or other potential contaminants stored on the Site are controlled in accordance with the Control of Substances Hazardous to Health (COSHH) Regulations 2002.

*Hydromorphology*

9.116 Construction methodology and options taken forward for any works required to channel banks and bed (in relation to retaining structures, works in the riparian zone) will need to consider the impacts to hydromorphology and a plan will be developed as to phasing the works to minimise the impact to hydromorphology the receiving surface watercourses.

*Surface water flood risk management*

9.117 The following measures are proposed to manage surface water flood risk during construction:

- Existing overland flow paths will be maintained to prevent additional flood risk outside the Site boundary and to existing buildings.
- On-plot and off-plot levels will be designed to fall away from existing or proposed buildings and thresholds.

[43] Defra and Environment Agency (2016) Prevent groundwater pollution from solvents. Available at: https://www.gov.uk/guidance/prevent-groundwater-pollution-from-solvents#prepare-for-emergencies-create-a-pollution-incident-response-plan (Accessed on: 11/01/2022)

- A suitable surface water strategy will be adopted for both on-plot and off-plot development to capture and store surface water. This will incorporate SuDS to attenuate flow where infiltration is limited due to ground conditions. Surface water will be controlled at source wherever possible to reduce the risk of surface water flooding.
- Consideration of the impact of construction activities on the drainage system should be made, an adequate maintenance plan will be developed to prevent the proposed drainage and SuDS from becoming blocked due to construction debris.
- All new development will be drained to a new surface water sewer and discharged directly to the River Irk to reduce the strain on the existing combined sewer network.
- The impact of climate change on surface water risk will be considered for the 100-year return period in line with NPPF guidance.

9.118 A temporary haul road (750m in length) (consented as part of Application 1 (ref. 132252/VO/2021)) will be used during the main infrastructure works at the Site. During the use of the haul road, emergency response plans will remain in place and spill kits made available. The surface water drainage system installed for the haul road will be regularly inspected to ensure it continues to operate as intended.

9.119 Due to an increased amount of flooding seen downstream of the Union Bridge in the hydraulic modelling undertaken; mitigation is needed. Possible options include:

- Constructing a bund, with the top level of the bund replicating the top level of the wall located at Union Bridge; or
- Create an overflow channel that would outskirt the bridge.

9.120 These will be further developed as the design progresses.

### Assessment Scenario 2a: Mitigation Relating to the Proposed Development Only at Completed Development and Operational Stage

*Flood risk management*

9.121 Due to an increased amount of flooding seen downstream of the Union Bridge in the hydraulic modelling undertaken, mitigation is needed. Possible options include:

- Constructing a bund, with the top level of the bund replicating the top level of the wall located at Union Bridge; or
- Create an overflow channel that would outskirt the bridge.

9.122 These will be further developed as the design progresses.

### In-Combination Assessment: Assessment Scenarios 1b, 1c, 2b and 2c Considering Impacts of the Proposed Development Alongside the Wider Development Project and SRF

9.123 Following the ICA, no additional mitigation is considered to be required for the Proposed Development (Application 2: HIF Infrastructure Works).

9.124 Mitigation specific to Application 2 is detailed in the submitted application. Applications 3 and 4 will follow the mitigation described above for Application 2 with regards to pollution prevention and surface water management during construction. The future applications will include embedded mitigation to minimise impacts of the wider development on the water environment and flood risk. The design of the proposals for the wider development and the associated embedded mitigation is on-going. However, at the time of writing it is anticipated that this will be based on the following principles:

- Works within the river corridor (for example, new river crossings, alterations to the banks or flood mitigation measures) should be designed to ensure that off-site fluvial flood risk is not increased.
- A WFD compliance assessment (see **Appendix 9.4**) has been undertaken and it identifies additional or off-site mitigation required to off-set impacts on the hydromorphology of the River Irk.

## Likely Residual Effects of the Development and their Significance

9.125 This section summarises the significance of the anticipated residual effects on drainage and surface water, which are those that remain after all proposed mitigation measures are implemented during the construction and demolitions phase.

9.126 The overall impact of the proposal in terms of surface water environment issues during the construction, demolition and completed development is highlighted in

Table 9-9. For assessment scenarios 1a and 2a the residual effects summary draws on the assessment of likely effects and proposed mitigation. For assessment scenarios 1b, 1c, 2b and 2c the residual effects summary draws on the ICA presented in Table 9-7 and Table 9-8, and the principles upon which the embedded mitigation for the futures applications will be based. The residual effects summary for assessment scenarios 1b, 1c, 2b and 2c is based on the information available at the time of writing and assumes a worst-case.

*Table 9-9 Residual Effects Summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| *Assessment Scenario 1a – proposed development only* | | | |
| Water quality impacts from sediment and contaminant runoff: River Irk | **Moderate Adverse (significant)** | • None | **Moderate Adverse (significant)** |
| Water quality impacts from sediment and contaminant runoff: Drain (adjacent to Fairholme Caravan Site) | **Slight adverse (not significant)** | | **Slight adverse (not significant)** |
| Water quality impacts from sediment and contaminant runoff: Drain (Cheetham Hill Junction Drain) | **Moderate adverse (significant)** | | **Moderate adverse (significant)** |
| Hydromorphology impacts: River Irk | **Slight adverse (not significant)** | • Following standard construction best practice relating to pollution prevention.<br>• Minimise the footprint of any in-channel works as far as reasonable possible.<br>• Reinstate any impacted marginal habitats.<br>• Control the timing of works so that any in-channel works are programmed to take place outside of sensitive times of year for fish and other sensitive species.<br>• Following standard best practice to avoid spread of non-native species or pathogens. | **Neutral (not significant)** |
| Hydromorphology impacts: Drain (adjacent to Fairholme Caravan Site) | **Slight adverse (not significant)** | | **Neutral (not significant)** |
| Hydromorphology impacts: Drain (Cheetham Hill Junction Drain) | **Slight adverse (not significant)** | | **Neutral (not significant)** |
| Changing local drainage patterns due to construction activities: River Irk | **Moderate adverse (significant)** | • Implement and maintain site drainage plan.<br>• Management of material removal. | **Neutral (not significant)** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Changing local drainage patterns due to construction activities: Drain (adjacent to Fairholme Caravan Site) | **Slight adverse (not significant)** | • Possible options to reduce flood risk downstream of Union Bridge, which will be further developed as the design progresses) include:<br>o Constructing a bund, with the top level of the bund replicating the top level of the wall located at Union Bridge; or<br>o Create an overflow channel that would outskirt the bridge. | **Neutral (not significant)** |
| Changing local drainage patterns due to construction activities: Drain (Cheetham Hill Junction Drain) | **Slight adverse (not significant)** | | **Neutral (not significant)** |
| Changing local drainage patterns due to construction activities: Residential and Commercial complex | **Moderate adverse (not significant)** | | **Neutral (not significant)** |
| *Assessment Scenario 1b – proposed development plus Applications 1, 3 and 4* | | | |
| Impacts on the River Irk | **Moderate adverse (significant)** | • Following standard construction best practice relating to pollution prevention.<br>• Identifying additional mitigation for pollution prevention and potential impacts on hydromorphology where required for works within the river corridor.<br>• Maintaining drainage system to ensure runoff is treated and attenuated prior to discharge to site<br>• Identifying mitigation for flood event plus 40% in areas surrounding Union Bridge.<br>• Emergency response procedures. | **Slight adverse (not significant)** |
| Impacts on the Drain (adjacent to Fairholme Caravan Site) | **Neutral (not significant)** | | **Neutral (not significant)** |
| Impacts on Drain (Cheetham Hill Junction Drain) | **Neutral (not significant)** | | **Neutral (not significant)** |
| Impacts on Residential and Commercial complex | **Neutral (not significant)** | | **Neutral (not significant)** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| *Assessment Scenario 1c – proposed development plus Applications 1, 3 and 4 and wider SRF* | | | |
| Impacts on the River Irk | **Moderate adverse (significant)** | • Following standard construction best practice relating to pollution prevention.<br>• Identifying additional mitigation for pollution prevention and potential impacts on hydromorphology where required for works within the river corridor.<br>• Maintaining drainage system to ensure runoff is treated and attenuated prior to discharge to site.<br>• Identifying mitigation for flood event plus 40% in areas surrounding Union Bridge.<br>• Emergency response procedures. | **Slight adverse (not significant)** |
| Impacts on the Drain (adjacent to Fairholme Carvan Park) | **Neutral (not significant)** | | **Neutral (not significant)** |
| Impacts on Drain (Cheetham Hill Junction Drain) | **Neutral (not significant)** | | **Neutral (not significant)** |
| Impacts on Residential and Commercial complex | **Neutral (not significant)** | | **Neutral (not significant)** |
| ***Completed Development*** | | | |
| *Assessment Scenario 2a – proposed development only* | | | |
| Water quality impacts from sediment and contaminant runoff: River Irk | **Moderate adverse (significant)** | • Implemetation of SuDS measures included in the scheme's design. | **Neutral (not significant)** |
| Water quality impacts from accidental spills: Drain (adjacent to Fairholme Caravan Site) | **Slight adverse (not significant)** | | **Neutral (not significant)** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Water quality impacts from accidental spills: Drain (Cheetham Hill Junction Drain) | **Moderate adverse (significant)** | | **Neutral (not significant)** |
| Hydromorphology impacts: River Irk | **Slight adverse (not significant)** | • None | **Slight adverse (not significant)** |
| Hydromorphology impacts: Drain (adjacent to Fairholme Caravan Site) | **Slight adverse (not significant)** | | **Slight adverse (not significant)** |
| Hydromorphology impacts: Drain (Cheetham Hill Junction Drain) | **Slight adverse (not significant)** | | **Slight adverse (not significant)** |
| Changing local drainage patterns to the River Irk | **Moderate adverse (significant)** | • Possible options to reduce flood risk downstream of Union Bridge, which will be further developed as the design progresses) include:<br>o Constructing a bund, with the top level of the bund replicating the top level of the wall located at Union Bridge; or<br>o Create an overflow channel that would outskirt the bridge.<br>• Implement proposed design in modelled and assessed in final FRA. | **Neutral (not significant)** |
| Changing local drainage patterns to Drain (adjacent to Fairholme Caravan Site) | **Slight adverse (not significant)** | | **Neutral (not significant)** |
| Changing local drainage patterns to Drain (Cheetham Hill Junction Drain) | **Slight adverse (not significant)** | | **Neutral (not significant)** |
| Changing local drainage patterns: around Residential and Commercial complex | **Moderate adverse (not significant)** | | **Neutral (not significant)** |
| *Assessment Scenario 2b – proposed development plus Applications 1, 3 and 4* | | | |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Impacts on the River Irk | **Moderate adverse (significant)** | • Design of works within river corridor to ensure off-site fluvial flood risk is not increased.<br>• Site wide drainage strategy includes separate systems for foul and surface water and should reduce runoff rates from the Site.<br>• Works within the river corridor will aim to have a neutral or beneficial impact on channel morphology, or off-site mitigation will be used to off-set impacts. | **Slight adverse (not significant)** |
| Impacts on the Drain (adjacent to Fairholme Caravan Site) | **Neutral (not significant)** | | **Neutral (not significant)** |
| Impacts on Drain (Cheetham Hill Junction Drain) | **Neutral (not significant)** | | **Neutral (not significant)** |
| Impacts on Residential and Commercial complex | **Moderate adverse (significant)** | | **Slight adverse (not significant)** |
| *Assessment Scenario 2c – proposed development plus Applications 1, 3 and 4 and wider SRF* | | | |
| Impacts on the River Irk | **Moderate adverse (significant)** | • Design of works within river corridor to ensure off-site fluvial flood risk is not increased.<br>• Site wide drainage strategy includes separate systems for foul and surface water and should reduce runoff rates from the Site.<br>• Works within the river corridor will aim to have a neutral or beneficial impact on channel morphology, or off-site mitigation will be used to off-set impacts.<br>• Following standard construction best practice relating to pollution prevention. | **Slight adverse (not significant)** |
| Impacts on the Drain (adjcanet to Fairholme Caravan Site) | **Neutral (not significant)** | | **Neutral (not significant)** |
| Impacts on the Drain (Cheetham Hill Junction Drain) | **Neutral (not significant)** | | **Neutral (not significant)** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Impacts on the Residential and Commercial complex | **Moderate adverse**<br><br>**(significant)** | | **Slight adverse**<br><br>**(not significant)** |

## Conclusions

9.127 Provided that best practice guidance, as outlined in this chapter, is followed for pollution prevention and surface water management during the construction and operational phases there will be no significant effects on the surface water environment and flood risk predicted for the proposed works (Application 2).

9.128 The ICA of likely effects for the Proposed Development alongside the wider development project (Applications 1, 3 and 4) and the wider SRF has been undertaken using the information available at the time of writing. Preparation of design details, including for embedded mitigation, and technical assessments (FRA and WFD Compliance Assessments) are on-going. Using the available information and considering a worst-case outcome, there are no significant likely effects predicted for the surface water environment and flood risk for the wider development project.

## Assessment of Cumulative Effects and their Significance

9.129 The Cumulative Impact Assessment (CIA) is presented as three scenarios. This is to ensure that the assessment is as robust as possible. The scenarios to be considered are as follows:

- Scenario 3a - Assessment of the cumulative impacts relating to the enabling works plus impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 1, 3 and 4, and the agreed cumulative sites.
- Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 1, 3 and 4, the wider SRF, and the agreed cumulative sites.

9.130 The CIA seeks to determine whether any non-significant effects on drainage and surface water 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.

9.131 **Table 9-10** provides a list of the developments which have been included in the CIA. The Sites scoped into the CIA are those which are located within the River Irk catchment and therefore have the potential to impact this watercourse or flood risk within the catchment. Both construction and operational phases have been considered.

9.132 The CIA is summarised in **Table 9-11**. In conclusion, it is assumed that the planning requirements imposed on the future applications and cumulative sites will mean that concurrent construction activities will adhere to the same design and environmental standards as the infrastructure works in relation to pollution prevention and best practice management of surface water. LFRMS requirements for a reduction in runoff rates from new development should result in a reduction in surface water flood risk. It is therefore envisaged that the cumulative impacts for Scenarios 3a, 3b and 3c are not significant and would not pose a significant effect on the overall water environment.

*Table 9-10: Cumulative Sites*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | 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 | Approved Jun 2021 | Scoped In | Within River Irk catchment, but not in close proximity to this watercourse. |
| 2 | 127971/FO/2020 | 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 | Scoped In | Within River Irk catchment, but not in close proximity to this watercourse. |
| 3 | 128248/FO/2020 | 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 | 150m south | Approved June 2021 | Scoped In | Within River Irk catchment, but not in close proximity to this watercourse. |
| 4 | 116366/FO/2017 | 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 | 150m south | Approved Aug 2017 | Scoped In | Within River Irk catchment, but not in close proximity to this |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | Under construction | | watercourse. |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<br><br>Under construction | Scoped In | Within River Irk catchment, but not in close proximity to this watercourse. |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 | Scoped In | Within River Irk catchment, but not in close proximity to this watercourse. |
| 7 | 124973/FO/2019 | 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 | 350m south | Approved Feb 2016 | Scoped In | Within River Irk catchment, but not in close proximity to this watercourse. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | Headquarters Miller Street And Angel Street Manchester | | | | |
| 8 | 111777/FO/2016/C1 | 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 | 250m south east | Approved Sep 2016<br><br>Under construction | Scoped In | Within River Irk catchment. River Irk is culverted through the development site. |
| 9 | 121375/FO/2018 | 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. | 840m south | Approved Oct 2020 | Scoped Out | Not located in River Irk catchment. |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | Approved Oct 2018<br><br>Under construction | Scoped Out | Not located in River Irk catchment. |
| 11 | 20/76134/FUL | Erection of 16-storey building plus plant comprising a hotel (Use Class C1) with ancillary bar and restaurant uses, access, servicing, | 1000m south west | Approved Feb 2020 | Scoped Out | Not located in River Irk catchment. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | landscaping and other associated works | | | | |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br>Under construction | Scoped Out | Not located in River Irk catchment. |
| 13 | 19/74465/HYBEIA | 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 7BN | 960m south west | Validated Nov 2019 | Scoped Out | Not located in River Irk catchment. |
| 14 | 126944/FO/2020 | 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 | 140m south east | Approved Sep 2020<br>Under Construction | Scoped In | Within River Irk catchment. Site is bounded to the west by Dantzic Street which is |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | | | adjacent to the River Irk. |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | 145m south east | Approved October 2017 | Scoped In | Within River Irk catchment. Site is approximately 30m from the River Irk at the closet point. |
| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 | Scoped In | Within River Irk catchment. |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | 635m south west | Approved June 2018 | Scoped Out | Not located in River Irk catchment. |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | Scoped In | Within River Irk catchment. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 19 | 124888/FO/2019 | 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>Under Construction | Scoped In | Within River Irk catchment. |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | Scoped In | Within River Irk catchment. |

*Table 9-11 Cumulative Impact Assessment summary*

| Assessment scenario | Potential effects |
|---|---|
| 3a – Assessment of the cumulative impacts relating to the infrastructure works plus impacts associated with the agreed cumulative sites | • Concurrent construction of cumulative sites plus the infrastructure works may result in increased magnitude of effect in relation to impacts on surface water quality (sediment runoff, contaminant discharges) and change in local drainage patterns. It is assumed that the construction activities of the cumulative developments will adhere to the same environmental standards and best practice mitigation for pollution prevention and surface water management as those proposed for the infrastructure works, and therefore the effects will remain **not significant**.<br>• There are no proposals for works to the River Irk itself within the cumulative site applications, and therefore effects on hydromorphology remain **negligible** and **not significant**.<br>• Cumulatively there is the potential for an increased magnitude of effect in relation to surface water flood risk. The area is highly urbanised and much of the land within the cumulative site boundaries is brownfield (and can be expected to include impermeable areas). The LFRMS states that developers should aim to reduce runoff rates from brownfield sites by 50%. Cumulative effects on surface water flood risk should therefore be **beneficial**, assuming that these reduction rates are being secured through the planning process. |
| 3b – Assessment of cumulative impacts relating to the infrastructure works, plus impacts associated with Application 1, 3 and 4, and the agreed cumulative sites | • The assessments outlined in Table 9-8 for scenarios 1b and 2b are relevant, and the assessment summary for scenario 3a.<br>• In conclusion, assuming that the construction activities of the future applications and cumulative sites adhere to the same environmental standards and best practice mitigation for pollution prevention and surface water management as those proposed for the infrastructure works, effects on water quality will be **not significant**. Cumulative effects on flood risk should be beneficial or, as a worst case, **neutral** and **not significant**. |
| 3c – Assessment of the cumulative impacts relating to the infrastructure works, plus impacts associated with Application 1, 3, and 4, the wider SRF and the agreed cumulative sites | • The assessments outlined in Table 9-8 for scenarios 1c and 2c are relevant, and the assessment summary for scenario 3a.<br>• In conclusion, assuming that the construction activities of the future applications and cumulative sites adhere to the same environmental standards and best practice mitigation for pollution prevention and surface water management as those proposed for the infrastructure works, effects on water quality will be not significant. Cumulative effects on flood risk should be **beneficial** or, as a worst case, **neutral** and **not significant**. |

# 10. Townscape and Visual

## Introduction

10.1 This chapter assesses the effects of the Proposed Development on townscape character and visual amenity. In particular it identifies and assesses the anticipated effects of change resulting from the Proposed Development on the character and features of the townscape; and on people's views and visual amenity within the Townscape and Visual Impact Assessment Study Area.

10.2 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 from changes to landscape and views, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It has been written by Planit-IE.

10.3 As noted in Chapter 2: Approach, this ES assesses the Development Project, which is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in 4 planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – planning permission has been granted for the demolition of Creamline diary, tree and shrub clearance and construction of a temporary haul road.
- HIF Infrastructure Works (referred to hereafter as 'Application 2') – the subject of this application. Creation of development platforms, demolition of sections of existing River Wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diversions and provision of green infrastructure including creation of green links and first phase of the new City River Park.
- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within flood zone 3.
- Land under control of the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. As noted in Chapter 2: Approach, the entire Red Bank Neighbourhood within the SRF, including third party land, will deliver up to 5,500 new dwellings.

10.4 Whilst the Applicant has the detail of the early applications, the later parts of the Development Project (and particularly Application 4) are still being designed and the details are not yet available. Therefore, the approach that has been taken in the ES is to break the Development Project into 3 elements, with each element being

assessed in a level of detail commensurate with the detail that is available for the relevant part of the Development Project.

10.5 As such, a very full and detailed assessment is undertaken of Application 2, and then reasonable assumptions and judgements have informed and been made to assess Applications 1-4 together, and then Applications 1-4 and SRF.

10.6 This chapter is supported by the following appendices:

- **Appendix 10.1** – Landscape Baseline and Affects Table;
- **Appendix 10.2** – Visual Baseline and Affects Table;
- **Appendix 10.3** – Key Views and Photomontages.

# Planning Policy Context

## National Planning Policy

### National Planning Policy Framework

10.7 The National Planning Policy Framework (NPPF)[1] sets out the government's planning policies for England and how these are expected to be applied.

10.8 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."*

10.9 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."*

10.10 Paragraph 130 of the NPPF also sets out a number of principles of good design. In order to accord with these principles, it should be ensured that new developments:

- 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;

[1] NPPF. Available at https://www.gov.uk/government/publications/national-planning-policy-framework--2. [Access: 13.01.22]

- Are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;
- 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);
- 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;
- 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,
- 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.

10.11 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. There is also an overarching desirability set out within the NPPF for new development to contribute positively to local character and distinctiveness. 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*".

### National Planning Practice Guidance

10.12 The National Planning Practice Guidance (NPPG)[2] (DCLG, 2014) (Ref. 15-3) provides a web-based resource in support of the NPPF.

10.13 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

### Manchester City Council Core Strategy (2012)3

10.14 Policy EN1 – Design Principles and Strategic Character Areas

[2] NPPG https://www.gov.uk/government/collections/planning-practice-guidance [Access: 13.01.22]
[3] Manchester City Council Core Strategy https://secure.manchester.gov.uk/info/200074/planning/3301/core_strategy [Access: 13.01.22]

*"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".*

10.15 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".*

### Local Development Frameworks

10.16 The Northern Gateway Strategic Regeneration Framework[4] (SRF) (February 2019) was approved by MCC's Executive on 13th February 2019. The Proposed Development comprises the entirety of the Red Bank neighbourhood of the Northern Gateway 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.

## Other Relevant Policy, Standards and Guidance

10.17 The European Landscape Convention (ELC) (2000)[5] 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.

10.18 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.

[4] Northern Gateway Strategic Regeneration Framework http://northerngatewaymanchester.co.uk/framework/
[5] European Landscape Convention (ELC) (2000) https://www.coe.int/en/web/landscape [Access: 13.01.22]

# Assessment Methodology and Significance Criteria

## Overview

10.19 This assessment has been carried out with reference to the Guidelines for Landscape & Visual Impact Assessment[6] (referred to hereafter as "the Guidelines") by Planit-IE Ltd, a registered practice of the Landscape Institute with considerable experience in landscape and visual assessment. The Landscape Institute Guidance applies equally to rural landscapes and landscapes within the urban environment referred to as townscapes.

10.20 A three-stage assessment process has been adopted. Firstly, the nature of receptors (sensitivity) have been assessed, and secondly, the size of impacts (magnitude) likely to result from the Proposed Development have been assessed. From this, the overall significance of the identified effects on receptors has been assessed.

10.21 The methodology is collated into a tabulated format where possible to provide structure for a consistent and methodical approach. Criteria and justifications are recorded in **Appendix 10.1** and **Appendix 10.2** for transparency. The overall assessment of significance has regard to paragraph 5.56, page 92 (significance of landscape effects) and paragraph 6.44, page 116 (significance of visual effects) of the Guidelines.

10.22 To produce the most comprehensive, rounded and objective view of the landscape and visual impacts, any significant effects will be agreed following round-table review by the team of qualified assessors.

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

- Assessment Stage 1 - Demolition and Construction Phase:
    - Scenario 1a - Assessment of impacts relating to the Proposed Development only.
    - Scenario 1b - Assessment of the impacts relating to the Proposed Development, plus impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
    - Scenario 1c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.

10.24 In accordance with the Guidelines, the construction phase assessment reflects the 'worst case scenario' at the peak of construction activity – assuming full site occupation.

- Assessment Stage 2 - Completed Development and Operational Phase:
    - Scenario 2a - Assessment of impacts relating to the Proposed Development only.

[6] Guidelines for Landscape and Visual Impact Assessment, Third Edition. Landscape Institute, Institute of Environmental Management and Assessment.

- Scenario 2b - Assessment of the impacts relating to the Proposed Development, plus impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
- Scenario 2c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.

10.25 In accordance with the Guidelines, the operational phase effects were considered on 'day 1' immediately after completion to reflect 'worst case scenario'.

- Assessment Stage 3 - Cumulative Impact Assessment:
  - Scenario 3a - Assessment of the impacts relating to the Proposed Development plus impacts associated with agreed cumulative sites.
  - Scenario 3b - Assessment of the impacts relating to the Proposed Development, plus Application 1, 3 and 4, plus impacts associated with agreed cumulative sites.
  - Scenario 3c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, the wider SRF, and the agreed cumulative sites.

### Identification of the Study Area

10.26 The study area for the Proposed Development extends approximately 200m from the Site edge for the demolition and construction phase, the completed development and operational stage, and the cumulative impact assessment. The Site is visually and physically well enclosed. Taking into consideration the nature and parameters of the Proposed Development and its context, and based on professional judgement, it is considered that beyond this distance any effects on townscape character would diminish to non-significant levels. A wider study area has been considered for scenarios 1b, 1c, 2b, 2c, 3b and 3c of approximately 500m from the centre of Red Bank (Application 4) site boundary. This assessment is a 'high level' assessment of effects in respect of the built development proposals due to the lack of known information.

### Desk-based Data

10.27 Desk-based studies have been carried out to inform the assessment and have included the collation of map and topographic baseline information, and relevant information relating to townscape and landscape.

### Identification of Sensitive Receptors

10.28 The following receptors were identified within the scoping report and are considered to have the potential to result in significant townscape effects during the construction and operational phases of the development (refer to **Volume 2a: Main Text Figures – figures 10.4-10.14**):

- Townscape Character
- Urban Grain

- Land Use
- Open Space
- Movement and Linkages
- Site Character

10.29 A Principal Viewpoints plan has been produced and forms **Figure 10.1** in **Volume 2a: Main Text Figures**. The viewpoints were selected through a process of desktop survey and assessment. A total of 7 viewpoints have been selected and agreed with the Local Authority **table 10.1** and are considered representative viewpoints from key visual receptors. Viewpoints were excluded where there is likely to be no significant impact. Due to the Site topography and intervening tree cover and built form, mid- and long-distance views are scoped out of the assessment. This is due to the nature of the proposals and generally small-scale features that would be completely screened from surrounding areas. Views have been selected close to the Site edges where the proposed changes would be highly visible.

### Site Survey

10.30 Desk-based site survey and assessment and site walkovers have been carried out during the summer of 2021. In addition, Planit have considerable experience and knowledge of this part of the city.

### Photography Methodology

10.31 Photographs for the selected viewpoints were taken by a professional photographer in December 2021. Visualisations were produced by Virtual Planit, a professional visualization studio with extensive experience in the production of photomontages. Both photographs and verified photomontages were produced in accordance with Guidance Note 06/19[7]. The photography is contained within **Appendix 10.3** and the photomontages illustrate the proposals for Scenario 2a only - on completion**.** Where significant screening from existing trees and buildings in the views has been removed as part of the Scenario 2a works, a simple 3D representation and massing of existing built form in the backdrop of the view has been added using the Manchester Digital City Model. This allows a basic understanding of the wider view context and the how the composition/ nature of the view would change.

## Reporting of the Environmental Effect and Significance Criteria

10.32 The assessment of likely significant environmental effects as a result of the Proposed Development has taken into account the construction and operational phases.

### Determining the Sensitivity of Receptors

10.33 The sensitivity of affected receptors has been considered on a scale of high, medium, low or negligible.

[7] Visual Representation of Development Proposals. Landscape Institute Technical Guidance Note 06/09. 17th September 2019.

*Baseline Townscape Value*

10.34 Townscapes may be valued at community, local, national level or above. Existing townscape designations have been taken as the starting point for this assessment, as shown in **Table 10.1** below.

*Table 10.1: Value of Designated Townscapes*

| Value | Description |
|---|---|
| High | Sites, features or areas of national or international importance with settings of high quality such as World Heritage Site, Areas of Outstanding Natural Beauty, National Parks, Grade I and Grade II* Listed buildings or Registered Parks and Gardens. |
| Medium | Sites, features or areas of local or regional importance with intact character such as Grade II Listed Buildings, Conservation Areas, Scheduled Monuments, local nature sites, long distance recreational routes. |
| Low | Areas or features of local importance such as Tree Preservation Orders, PROW and locally listed buildings. |

10.35 Whilst the assessment of value is partly based on the Planning Policy importance of the townscape, other criteria used to assess townscape value in more detail, including that of undesignated townscapes, are set out in **Table 10.2** below. The criteria are taken from the Guidelines.

*Table 10.2: Criteria for Assessing the Value of Non-Designated Townscapes*

| Attribute | Criteria |
|---|---|
| Functional | A building or place should be fit for purpose, designed and delivered in a way that delivers the intended function and achieves value for money in terms of lifetime costs. |
| Mix Uses | Mix of uses to ensure easy access to facilities and encourage a healthier environment, reducing the need to travel. |
| Well-Designed Public Space | Functional and attractive hard and soft landscape elements, well orientated and designed routes, inclusion of facilities such as seats and play equipment and public art. |
| Buildings designed to be adaptable | Flexibility to be able to respond to a range of future needs – how easily buildings change be adapted for change of use, places that are easy and practical to manage with good access, natural surveillance and hard-wearing materials that are easy to repair. |
| Distinctive character | Consideration of the local pattern of street blocks and plots; building forms; details and materials; style and vernacular. |

| Attribute | Criteria |
|---|---|
| Attractive Spaces | Consideration of streetscapes, townscapes, buildings and elements within them all, microclimates and views should all be considered. This is also affected by the way a townscape is perceived using the senses and the effect of transient elements such as the presence of human activity and resulting tranquillity or vibrancy. |
| Promotes ease of movement | All users should be able to move safely, conveniently and efficiently to and within a place, appropriate number of legible routes to and through it, good connections with each other and other destinations. |

10.36 An overall assessment of value has been made for each townscape receptor (refer to **Appendix 10.1**), based on an overview of the assessments made using each of the above criteria, in terms of high, medium and low value.

*Baseline Susceptibility of Townscape Receptors to Change*

10.37 Susceptibility of townscape receptors to change has been assessed using the criteria identified in ***Table 10.3***, with reference to the baseline conditions.

*Table 10.3: Townscape Receptor Susceptibility to Change*

| Susceptibility | Criteria |
|---|---|
| High | Little ability to accommodate the Proposed Development without undue harm |
| Medium | Some ability to accommodate the Proposed Development without undue harm. |
| Low | Substantial ability to accommodate the Proposed Development without undue harm. |

10.38 The assessment of likely significant environmental effects as a result of the Proposed Development has taken into account the construction and operational phases.

*Overall Sensitivity of Townscape Receptors*

10.39 The assessment of receptor sensitivity combines judgements on the susceptibility of the receptor to the specific type of development proposed and the value attributed to that receptor, as detailed within **Appendix 10.1**.

*Criteria for Determining Sensitivity of Visual Receptors*

*Type of View and Number of Viewers*

10.40 In terms of assessing the baseline visual sensitivity, key factors to consider are the type of view and the likely numbers of viewers (the visual receptors). The type of view and the number of viewers are described in the following terms

- Glimpsed (i.e. in passing)/filtered/oblique/framed/open views; and
- Few/moderate/many viewers.

*Value of Views*

10.41 The value attached to views has regard to a number of factors, including:

- Recognition through planning designations or heritage assets; and
- The popularity of the viewpoint, its appearance in guidebooks, literature or art, on tourist maps and the facilities provided for its enjoyment.

10.42 The assessment of the value of views is summarised in **Table 10.4** below, in terms of high, medium and low value. These criteria are provided for guidance only and are not intended to be absolute.

*Table 10.4: Value Attached to Views*

| Value | Criteria |
|---|---|
| High | Views from townscapes/viewpoints of national importance, or highly popular visitor attractions where the view forms an important part of the experience, or with important cultural associations |
| Medium | Views from townscapes/viewpoints of regional/district importance or moderately popular visitor attractions where the view forms part of the experience, or with local cultural associations |
| Low | Views from townscapes/viewpoints with limited designations, not particularly popular as a viewpoint and with minimal or no cultural associations |

*Susceptibility of Visual Receptors to Change*

10.43 The susceptibility of different types of visual receptor to changes in views is mainly a result of:

- The occupation or activity of the viewer at a given location; and
- The extent to which a person's attention or interest may therefore be focussed on a view and the visual amenity experienced at a given view.

10.44 The assessment of a visual receptor to change is specific to the Proposed Development. However, the Guidelines for Landscape and Visual Impact Assessment offers the generic guidance identified in Table 10.5 as a starting point for the assessment.

*Table 10.5: Visual Receptor Susceptibility to Change*

| Susceptibility | Type of Receptor |
|---|---|
| High | • Users of public space, including users of public rights of way, whose attention is likely to be focussed on the townscape and on particular views;<br>• Visitors to heritage assets or other attractions where views of the surroundings are an important part of the experience;<br>• Communities where views contribute to the townscape setting enjoyed by residents; and<br>• Travellers on scenic routes |
| Medium | • Travellers on road, rail or other transport routes, where the view is moderately important to the quality of the journey; and<br>• Users of public space, where the view is a part of the wider experience of the place |
| Low | • People at their place of work, where the setting is not important to the quality of working life;<br>• Travellers on road, rail or other transport routes, where the view is fleeting and incidental to the journey; and<br>• People engaged in outdoor sport or recreation, or users of a public space, which does not involve appreciation of views. |

10.45 The Guidelines for Landscape and Visual Impact Assessment qualifies the above examples as follows:

*'This division is not black and white and in reality, there will be a gradation in susceptibility to change. Each project needs to consider the nature of the groups of people who will be affected and the extent to which their attention is likely to be focussed on views and visual amenity.' (page 114, paragraph 6.35).*

*Overall Sensitivity of Visual Receptors*

10.46 The assessment of receptor sensitivity combines judgements on the susceptibility of the receptor to the specific type of development proposed and the value attributed to that receptor along with professional judgement, as detailed in **Appendix 10.1** and **Appendix 10.2**.

### Predicted Landscape and Visual Impact Criteria

10.47 The predicted townscape and visual impacts of the Proposed Development are set out in this chapter and in **Appendix 10.1 and Appendix 10.2.**

### Size and Scale of Effects

10.48 The size and/or scale of effects relates to the scale of physical changes in the townscape and the scale of the visible change in views, such as the loss or addition of features. This is broadly rated along the following scale:

- No Change – change will not be perceptible
- Negligible – change will be just discernible
- Minor – a small change will be perceptible
- Moderate – change will be clearly noticeable
- Major – total change will occur

### Geographical Extent of Effects

10.49 The geographical extent of effects relates to:

- The area over which townscape effects are likely to be experienced, i.e. this could be limited to a local level, at a regional level, at a national level, or international level.
- The area over which the changes are likely to be visible, i.e. this could be limited to a local level, at a regional level, at a national level, or international level.

### Duration/ Reversibility

10.50 Effects may be experienced over a range of timescales. For this assessment, the following timescales are considered appropriate:

- Short-term: 1 year or below
- Medium-term: Between 1 and 10 years in duration
- Long-term: Greater than 10 years in duration
- Permanent

10.51 Effects may be temporary, permanent or reversible over time. For example, visual effects arising from construction activities may be limited solely to the construction period and therefore only temporary. The assessment therefore considers the practicality of effects being reversed.

## Determining the Magnitude of Change

### *Magnitude of Townscape Impact*

10.52 The magnitude of change has been considered as the change experienced from the baseline conditions at the sensitive receptor and has been considered on a scale of major, moderate, minor or imperceptible.

10.53 The magnitude of a change is assessed in terms of its size or scale, the geographical extent of the area influenced by that effect, its duration and degree of reversibility and the impact these are likely to have on the baseline character of the landscape element.

10.54 The magnitude of change in the townscape takes into consideration the following factors:

- The extent/proportion of townscape elements lost or added;
- The contribution of that element to townscape character and the degree to which aesthetic/perceptual aspects are altered; and
- Whether the effect is likely to change the key characteristics of the townscape, which are critical to its distinctive character.

10.55 The magnitude of change may be temporary, permanent or reversible over time. For example, visual effects arising from construction activities may be limited solely to the construction period and therefore only temporary. The assessment therefore considers the practicality of effects being reversed.

10.56 The criteria used to assess magnitude of townscape effects are described in **Table 10.6**, below:

*Table 10.6: Townscape Effects - Magnitude*

| Category | Criteria |
|---|---|
| Large adverse townscape effect | The proposals will result in a total change in the key characteristics of landscape character; will introduce elements totally uncharacteristic to the attributes of the receiving landscape; and/or will result in a substantial or total loss, alteration, or addition of key elements/features/characteristics. |
| Medium adverse townscape effect | The proposals will result in a partial change in the key characteristics of townscape character; will introduce elements partially uncharacteristic to the attributes of the receiving townscape; and/or will result in partial loss, alteration, or addition of key elements/features/characteristics. |
| Small adverse townscape effect | The proposals will result in a small change in the key characteristics of landscape character; will introduce elements that are not uncharacteristic to the attributes of the receiving townscape; and/or will result in a minor loss, alteration, or addition of elements/features/characteristics. |
| Negligible adverse townscape effect | The proposals will result in a just discernible change to townscape character/elements/features/characteristics. |

| Category | Criteria |
|---|---|
| No Change | The proposals will result in no discernible change to townscape character/elements/features/characteristics. |
| Negligible townscape benefit | The proposals will result in a just discernible improvement to the townscape character/elements/features/characteristics. |
| Small townscape benefit | The proposals will achieve a degree of fit with the townscape character/elements/features/characteristics and go some way towards improving the condition or character of the townscape |
| Medium townscape benefit | The proposals will achieve a good fit with the townscape character/elements/features/characteristics, or would noticeably improve the condition or character of the townscape. |
| Large townscape benefit | The proposals will totally accord with the townscape character/elements/features/characteristics, or would restore, recreate or permanently benefit the condition or character of the townscape. |

*Magnitude of Visual Impact*

10.57 The magnitude of a visual impact is assessed in terms of its size or scale, the geographical extent of the area influenced by that effect, its duration and degree of reversibility and the impact these are likely to have on the baseline character of the view.

10.58 The magnitude of change in the view relates to the degree of contrast or integration likely to result from the Proposed Development and is influenced by the relative time over which a view is experienced and whether it is a full, partial or glimpsed view.

10.59 The criteria identified in **Table 10.7** are used to assess the magnitude of visual impacts, based on the degree of change to the view or composition.

*Table 10.7: Visual Effects - Magnitude*

| Category | Criteria |
|---|---|
| Large adverse or beneficial visual effect | The proposals will cause a dominant or complete change or contrast to the view, resulting from the loss or addition of substantial features in the view and will substantially alter the appreciation of the view. |
| Medium adverse or beneficial visual effect | The proposals will cause a clearly noticeable change or contrast to the view, which would have some effect on the composition, resulting from the loss or addition of features in the view and will noticeably alter the appreciation of the view |

| Category | Criteria |
|---|---|
| Small adverse or beneficial visual effect | The proposals will cause a perceptible change or contrast to the view, but which would not materially affect the composition or the appreciation of the view |
| Negligible adverse or beneficial visual effect | The proposals will cause a barely perceptible change or contrast to the view, which would not affect the composition or the appreciation of the view |
| No change | The proposals will result in no discernible change to the view. |

### Significance Criteria

10.60 In determining the significance of the impact, account is taken of the sensitivity of the townscape or visual receptor, the importance of the view and the predicted magnitude of the impact. The impact is described in terms of either being beneficial, adverse or neutral, where the impact is clearly identifiable, and not signifcant where the impact is not clearly identifiable. An assessment of either major or moderate is considered significant for the purposes of the EIA Regulations.

- Major - Where there would be a very noticeable and highly significant alteration to the existing townscape or view.
- Moderate - Where there would be a clearly noticeable and moderately significant alteration to the existing townscape or view.
- Minor - Where there would be a perceptible alteration to the existing townscape or view, but one of low significance.
- Not significant - No discernible change in the existing view or townscape.

10.61 Neutral effects are also recorded that recognise that there will be a change to the receptors, however this change is in keeping with the existing characteristics of the receptor, and are not considered detrimental.

10.62 The scale shown in **Table 10.8** is used to guide the assessment of the significance of both townscape and visual effects, from a combination of the assessment of receptor sensitivity and the magnitude of effects:

*Table 10.8: Assessment of Townscape or Visual Significance*

| Sensitivity | Magnitude of Effect | | | | |
|---|---|---|---|---|---|
| | Large | Medium | Small | Negligible | No Change |
| High | Major | Moderate | Moderate | Minor | Not Significant |
| Medium | Moderately | Moderate | Minor | Not Significant | Not Significant |
| Low | Moderately | Minor | Not Significant | Not Significant | Not Significant |

10.63 For the purposes of this Townscape and Visual Impact Assessment, only effects deemed Moderate and Major are considered to be Significant in the meaning of EIA Regulations (2017).

### Probability

10.64 The predicted impact is assessed against the criteria set out below in order to attribute a level of confidence to the assessment: -

- Highly Likely- The predicted impact is either certain, or very likely to occur, based on reliable information or previous experience.
- Likely – The predicted impact and its level are best estimates, based on on-site and desktop study.
- Unlikely – The predicted impact and its level are best estimates, based on given knowledge and experience. More information may be needed to improve the level of confidence.

### Assumptions/Limitations

7.62 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- The assessment relies on available data, and best endeavours have been made to ensure that the data are accurate and up to date. It is assumed that OS mapping information, topographic and 3D data and Historic England heritage mapping information are all up to date.
- The GLVIA methodology (the Guidelines) provides a robust and transparent process for assessment of townscape and visual effects, and is used alongside visually verified photomontages which provide a high level of detail and technical accuracy. Significant effects will be determined through professional judgment, carried out by a team of assessors to provide scrutiny where this is relied upon.

- Assumptions have been made regarding construction phase embedded mitigation based on 'best practice'.
- A 'high-level' assessment has been carried out for scenarios 2b, 2c, 3b and 3c. Due to the early stage of the proposals there are no construction programmes, and assumptions have been made regarding layouts, materials and landscape.

### Consultation

10.21 Consultation with Manchester Council has been undertaken as part of this assessment. This is shown in **Table 10.1 below**:

*Table 10.1: Consultation*

| Consultee | Date and Time | Comments | Actions |
|---|---|---|---|
| MCC | October 2021 | Scoping Report set out structure and content of TVIA assessment. | MCC agreed TVIA elements to be included in the assessment. |
| MCC Jennifer Atkinson Principal Planner | 22/10/21<br>Initial email sent<br>22/10/21<br>Response received | Viewpoints plan sent for comment | MCC agreed with selection and location of viewpoints. |

## Baseline Conditions

10.65 The Site is irregular in shape and occupies an area of approximately 15.74 hectares ('ha'). It is located to the north-east of Victoria Station, Manchester.

10.66 The majority of the Site is a mixture of self-seeded woodland and scrub, with areas of hard standing of a low quality in the north-eastern corner. The study site's southwest corner is also formed by an area of hard standing which abuts Red Bank. Creamline Dairies is located to the west within the Site, off Red Bank, and incorporates an industrial building with large footprint and substantial associated hard standing. Red brick industrial buildings and hard standing car parking spaces are located towards the southern and eastern boundaries of the Site, forming an urbanised character in these areas. The River Irk meanders through the Site as key feature, bringing in potential ecological value. However, there is no formal public access into the Site. A secondary key vehicular route on Dantzic street runs alongside the southern boundary of the application site.

### Townscape Character

10.67 **Figure 10.3** of **Volume 2a: Main Text Figures** illustrates townscape character. Existing and proposed townscape character areas have been defined as part of the Northern Gateway SRF[8] report. The study area is largely located within the Lower Irk Valley neighbourhood, which occupies the western parts of the Northern Gateway, and the Site and wider study area 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 and potential contamination hot-spots, 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 include surface and commuter car parks, a waste management company 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 to the rear of the waste management facility. 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.

10.68 The Proposed Development area spans the majority of the Red Bank neighbourhood area, identified within the Northern Gateway SRF. There are 16 Grade II listed buildings and 1 Grade 11* listed building within 500m of the Site, the closest of which is the Grade II Listed Union Bridge, located on the south eastern boundary of the Site. The Red Bank Viaduct to the south of the Site forms a major structure which runs parallel to Red Bank and bisects the once heavily industrialised Irk Valley.

10.69 The townscape character within the study area has been assessed as 'medium' in value with a 'low' susceptibility to change and an overall sensitivity of '***medium/low'.***

### Urban Grain

10.70 **Figure 10.4** of **Volume 2a: Main Text Figures** illustrates the urban grain of the application site and the surrounding study area. 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

[8] Northern Gateway Strategic Regeneration Framework (MCC) (2019) http://northerngatewaymanchester.co.uk/framework/ [Access: 23.01.22]

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.

10.71 The urban grain within the study area has been assessed as 'low' in value with a 'low' susceptibility to change and an overall sensitivity of ***'low'.***

### Land Use

10.72 Land use surrounding the Site is shown in **Figure 10.5** of **Volume 2a: Main Text Figures.** 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 (Angel Meadows 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.

10.73 The land use within the study area has been assessed as 'low' in value with a 'low' susceptibility to change and an overall sensitivity of ***'low'***.

### Public Open Space and Woodland

10.74 **Figure 10.7** of **Volume 2a: Main Text Figures** illustrates the public open space within the Site and surrounding study area. St. Catherine's park 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. Angel Meadow is located to the south of the Site and forms a green connection to the city centre.

10.75 The public open space and woodland within the study area has been assessed as 'medium' in value with a 'medium/low' susceptibility to change and an overall sensitivity of '***medium/low'***.

### Movement and Linkages

10.76 **Figure 10.9** of **Volume 2a: Main Text Figures** illustrates the movement and linkages within the application site and across the study area. There are currently no public rights of way through the Site. 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.

10.77 The movement and linkages as a townscape receptor within the study area has been assessed as 'low' in value with a 'low' susceptibility to change and an overall sensitivity of **'low'**.

### Site Character

10.78 **Figure 10.11** of **Volume 2a: Main Text Figures** illustrates the features and characteristics of the application site which define its character. 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. There are no designated heritage assets (Scheduled Monuments, Grade I, 11* and II Listed Buildings, Conservation Areas, Registered Parks and Gardens or Registered Battlefields) within the Site boundary. There are no areas designated on account of their ecological value or landscape value within the Site. The tree cover within the Site was surveyed in March 2021. The majority of trees within the Site have been assessed as Category C, low quality trees due to their size or condition, and their self-set nature. Overall their value is mainly as habitat with some limited landscape value. Just under 40% of the trees on site have been assessed as Category B trees, and are considered to be of moderate quality. Topography within the Site is challenging, with substantial variation across the Site which impacts adversely on connectivity and linkages. The existing use of the Site does not promote use or interaction with the River.

10.79 The Site character as a townscape receptor within the study area has been assessed as 'medium' in value with a 'medium/low' susceptibility to change and an overall sensitivity of '***medium/low'***.

### Views, Visibility and Visual Character

#### Visual Context of the Site

10.80 The Site is visually well contained due to the combination of tree cover, ground levels and surrounding built form.

### Visual Receptors and Views of the Site

10.81 A total of 7 viewpoints have been identified, located primarily to the south, east and west of the Site. There are no views of the Site from the north. The key views are as follows:

- View 1: View from Listed Union Bridge/ Dantzic Street looking north across site.
- View 2: View from footway of Dalton Street looking across bridge into St Catherine's Wood.
- View 3: View from Collyhurst Road footway looking across River Irk and into St Catherine's Wood.
- View 4: Elevated view from Barney Steps bridge and public footpath looking south west over site
- View 5: Elevated View from footway at corner of St Chads Street/ Stanley Street looking east.
- View 6: View from viaduct gateway on Roger Street looking south east across the Site.
- View 7: Elevated view from Sand Street Park pathway looking west over site.

### Sensitivity of Visual Receptors

10.82 View 1 - The view appears urban in character and is located at a transitional node point, emerging from under the bridge – which gives added cultural value. However, the location is not popular as a viewpoint and is experienced by a low number of people. It has been assessed as 'low' in value with a 'low' susceptibility to change and an overall sensitivity of '***low'***.

10.83 View 2 - The view has an urbanised character. Trees frame the background of the view, glimpsing a dense woodland experience beyond and establishing a greener character. Viewpoint has no cultural associations. It has been assessed as 'low' in value with a 'medium' susceptibility to change and an overall sensitivity of '***low'***.

10.84 View 3 – The view has an open character which has urban influences in the roadway foreground and a dense woodland backdrop with St Catherine's Wood. It has no specific cultural associations or is particularly popular as a viewpoint along the roadway. It has been assessed as 'low' in value with a 'low' susceptibility to change and an overall sensitivity of '***low'***.

10.85 View 4 - The forefront of the view appears as derelict industrial land, predominantly hard standing with tree cover providing a green backdrop to the view. Some glimpsed views of the city centre skyline are available which provides legibility. The viewpoint is located on a designated public footpath route and has some cultural associations. It has been assessed as 'low' in value with a 'medium' susceptibility to change and an overall sensitivity of '***medium'***.

10.86 View 5 - This view is urban in character and overlooks industrial buildings with a rundown appearance. The viewpoint is open and elevated where views of the site are glimpsed, largely screened by trees and by the ground levels dropping away. The view is experienced by a small number of viewers. It has been assessed as 'low' in value with a 'low' susceptibility to change and an overall sensitivity of ***'low'***.

10.87 View 6 - View has an urbanised character, with a poor quality industrial building and minimal greenery visible, The open space appears run down, with little use or users, and no cultural associations. The view is experienced by a small number of viewers. It has been assessed as 'low' in value with a 'low' susceptibility to change and an overall sensitivity of '***low'***.

10.88 View 7 - The view is open in character and overlooks existing woodland to the south of the site. There is a clear urban setting with roads and mixed industrial buildings visible. Users of the park are likely to enjoy the wider experience of the place and its views, particularly due to the parks elevated topography. It has been assessed as 'low' in value with a 'medium' susceptibility to change and an overall sensitivity of '***low'***.

10.89 Refer to **Appendix 10.2** for the detailed visual analysis of key viewpoints.

# Embedded Mitigation

10.90 This section sets out the measures that have been incorporated into the scheme design as the masterplan has evolved to avoid or minimise potential effects on landscape features. It also includes environmental protection measures that are standard construction working practices that would always be employed and have a very high degree of success. Refer to the **Landscape General Arrangement Drawing** (see **Volume 2a: Main Text Figures, Figure 5.1**).

### The Completed and Operational Development

10.91 Embedded mitigation relating to landscape and views includes the following:

- A new vehicle access route from Red Bank to the new Plateau Avenue through the Creamline dairies site including a public space connected to the new Red Bank terraced landscape in order to make the Site more accessible to enhance accessibility to the Site and mitigate potentially negative impacts on movement and linkages as a townscape receptor.
- Retention of existing trees and vegetation to minimise negative impacts on the existing ecology and biodiversity and townscape and visual impacts through selective tree removal to establish new pedestrian pathways through the woods, including accessible routes for both pedestrians and cyclists.
- Integration of elevated walkways to minimise earthworks required around existing trees.
- Retention of existing trees to minimise the potential visual impacts of the proposals.
- Modified embankment adjacent to the River Irk in order to improve accessibility, create the opportunity to extend the enhanced woodland planting between areas of public realm.
- Removal of portions of the existing river wall and reprofiling of the riverbank to increase interaction with the river, with the addition of elevated deck structures to maintain circulation through the park and provide additional connectivity to the river.

- Low carbon solutions to landscape materials palette with emphasis on reuse of site won material where possible, such as bark paths, timber edgings and log piles using timber from tree clearance. This will minimise potential visual and townscape impacts from construction traffic.
- Lighting strategy to provide lighting along pedestrian and cycle routes, and key spaces to promote use and facilitate movement and connectivity.
- Use of a design palette of lighting and equipment to differentiate Victoria North from the surrounding city areas, creating a distinct identity for the development.
- Use of SuDs to further enhance the function and character of the landscape.

# Assessment of Likely Significant Effects

### Demolition and Construction

Assessment Scenario 1a – Proposed Development Only

*Townscape Character*

10.92 Demolition works to remove sections of retaining wall adjacent to the River Irk are minor in nature, and are not predicted to result in any significant effects on townscape character.

10.93 Construction works will include construction of new internal access roads including the new Plateau Road and new junctions including from the existing Red Bank Road, utility and services connections, remediation and earthworks, and the provision of green infrastructure including the creation of green links and first phase of the new City River Park.

10.94 The overall sensitivity of townscape character within the study area as a townscape receptor has been assessed as 'medium/low' due to the existing under-use of land within the Lower Irk Valley, poor connections and lack of positive features which allow it to contribute positively to the vision for the Red Bank neighbourhood. Due to the reuse of existing materials on-site where possible the potential effects on townscape character will be minimised due to fewer construction vehicle movements,

10.95 Construction works are likely to directly affect the local townscape character due to the presence of construction vehicles in the vicinity of the Site, and the presence of general construction works within and around the immediate site context.

10.96 The overall sensitivity of the receptor is Medium/ Low. It is predicted that there will be a short-term temporary ***small adverse*** effect at the local level which is of ***minor significance.***

*Urban Grain*

10.97 Demolition works to sections of retaining wall and are not predicted to result in any significant effects on urban grain.

10.98 Due to a lack of built form and urban grain within the Site, and the nature of the Proposed Development, the construction works are not predicted to result in any effects on urban grain within the study area.

10.99 The overall sensitivity of the receptor is Low. It is therefore predicted that there will be a short-term temporary ***no change*** effect at the local level which is ***not significant.***

*Land Use*

10.100 Demolition works to sections of retaining wall and are not predicted to result in any significant effects on land use. The existing site is under-utilised and therefore construction works are not predicted to impact on wider land use within the study area.

10.101 The overall sensitivity of the receptor is Low. It is therefore predicted that there will be a short-term temporary ***negligible adverse*** effect at the local level which is ***not significant.***

*Public Open Space and Woodland*

10.102 Demolition works to sections of retaining wall and are not predicted to result in in any significant effects on public open space and woodland.

10.103 The existing woodland is overgrown and under-utilised, therefore the construction works are not predicted to result in any significant effects on the public open space network within the study area. The construction works will include tree removal and management in order to incorporate new pathways and improve the structure of the existing woodland, however a key principle of the proposals is the retention of trees in order to protect existing habitat and biodiversity.

10.104 The overall sensitivity of the receptor is Medium/Low. It is predicted that there will be a short-term temporary ***small adverse*** effect at the local level which is **of *minor significance.***

*Movement and Linkages*

10.105 Demolition works to sections of retaining wall and are not predicted to result in in any significant effects on movement and linkages.

10.106 The Site currently lacks safe, well-used pedestrian and cycle routes, therefore construction works are not predicted to result in any significant effects on the movement network within the study area. Movement of construction vehicle traffic is likely to impact on the quality and character local routes, particularly via the access off Red Bank. However, reuse of materials on site will minimise potential traffic movement. Construction of the internal access roads and junctions is likely to result in visual effects that will be considered in the visual assessment within this report.

10.107 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary ***small adverse*** effect at the local level which is ***not significant.***

*Site Character*

10.46 Demolition works to sections of retaining wall and are not predicted to result in in any significant effects on the existing character of the Site.

10.47 The existing site character is poor due to a lack of management and under-utilisation. The construction works are therefore not predicted to result in any significant adverse effects, and will signal the regeneration of the Site. However, a proportion of the existing tree cover will be removed as part of the works.

10.48 The overall sensitivity of the receptor is Medium/Low. It is predicted that there will be a short-term temporary ***small adverse*** effect at the site level which is of ***minor significance.***

*Key Views*

***Viewpoint 1: View from Union Bridge/Dantzic Street looking north across the Site.***

10.49 The viewpoint will allow clear views of construction works due to the relatively open character of the view and the rising ground levels within the Site. The visible construction works will include works to the river frontage in the foreground of the view to improve access, clearance and the creation of new pathways, and tree clearance on the higher ground levels to create the development plots. Existing low quality buildings in the foreground of the view are not included in this application and will be retained.

10.50 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary ***medium adverse*** effect at the local level which is of ***minor significance.***

***Viewpoint 2: View footway off Dalton Street looking across bridge into St Catherine's Wood.***

10.108 The existing red brick building in the foreground of the view fronting onto Dantzic Street is not proposed for removal as part of this application. The woodland within the view is intended for retention, with potential views of works to selectively thin and manage trees, and the construction of footpaths, during the construction phase. In addition, there will be views of works to improve the bridge access into St Catherine's Wood.

10.109 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary ***small adverse*** effect at the local level which is ***not significant.***

***Viewpoint 3: View from Collyhurst Road footway looking across the River Irk and into St Catherine's Wood.***

10.51 The proposed bridge over the river at this location will not form part of this application. Changes to the view as a result of construction works will therefore be subtle when viewed from this location and will include minor works to thin and manage trees, and construction of pathways within the woodlands – although these changes will be across the mid/foreground of the view. Any minor views of construction works will show positive regeneration and management of the woodland.

10.52 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary ***small adverse*** effect at the local level which is ***not significant.***

***Viewpoint 4: Elevated view from Barney Steps bridge and public footpath looking south west over the Site.***

10.53 The existing character of the view is poor, due to the derelict character, lack of managed woodland, and redundant area of hardstanding. The slightly elevated and open character of the existing view will result in substantial views of construction works to remove existing scrub and trees, removal of existing hard standing, construction of hard standing for future development and construction of hard surfacing and landscape in accordance with the Landscape General Arrangement. Removal of trees will open up views of the skyline which will visually positively reconnect the Site to the surrounding context.

10.54 The overall sensitivity of the receptor is Medium/Low. Although the existing character of the view is poor, close range views of the construction works are predicted to result in a short-term temporary ***medium adverse*** effect at the local level which is ***moderately significant.***

***Viewpoint 5: Elevated view from footway at the corner of St Chads Street/Stanley Street looking east.***

10.55 Any works to the existing cleared areas in the foreground of the view, associated boundaries and scrub are not included within this application, and therefore this element of the existing character of the view will be unchanged. Open views of construction works to the new access route off Red Bank, substantial tree clearance and the future development plot beyond to the north will be available, and will form a perceptible change to the view – although this will visually show positive regeneration and reuse of the Site.

10.56 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary ***medium adverse*** effect at the local level which has ***minor significance.***

***Viewpoint 6: View from viaduct gateway on Roger Street looking south east across the Site.***

10.57 Existing low quality buildings in the foreground of the view are not included in this application and will be retained and will largely screen views of construction works beyond. There will be no works to improve Roger Street as part of this application. There is potential for minor glimpsed views of construction works to the river edge to the right within the view, and of tree removal works to create development platforms at upper ground levels to the left within the view. The overall view composition of urban street is retained.

10.58 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary ***small adverse*** effect at the local level which is ***not significant.***

***Viewpoint 7: Elevated view from Sand Street Park pathway looking west over the Site.***

10.59 The existing red brick building in the foreground of the view fronting onto Dantzic Street is not proposed for removal as part of this application. The woodland within the view is intended for retention, with potential views

of works to selectively thin and manage trees, and the construction of footpaths, during the construction phase. Removal of trees on higher ground levels will reveal views of the skyline beyond the Site, and help to reconnect the Site to the surrounding townscape context. Views of the works will symbolise positive regeneration of the woodland.

10.60 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary ***negligible adverse*** effect at the local level which is ***not significant.***

### Assessment Scenario 1b – Proposed Development plus impacts associated with Applications 1, 3 and 4

10.61 The Scenario 1b assessment identifies whether any non-significant townscape and visual effects 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 the associated future development in Applications 1, 3 and 4. The construction methodology of the works within these future applications, and the associated detailed assessments of the townscape and visual impact of these works, are ongoing. The ICA is therefore undertaken at a high-level and is qualitative, and is based on the information available at the time of writing. It is assumed that construction impacts from the separate applications are likely to arise at different times, and that application 4 construction impacts cannot occur at the same time as applications 1&2.

#### *Townscape Character*

10.62 The Red Bank Neighbourhood is predicted to result in a noticeable change to townscape character during the demolition and construction phase due to the extent of change within the wider study area for the construction of approximately 4,000 no. residential dwellings, additional land uses including retail and commercial, new open and amenity space and new movement and linkages as part of Application 4.

10.63 The overall sensitivity of the receptor is Medium/Low. It is predicted that there will be a short-term temporary **medium adverse** effect at the local level (wider study area) which is **moderately significant.**

#### *Urban Grain*

10.64 Substantial development as part of Application 4 will establish a new urban grain which will respond to the existing urban form, land use, topography and site features, as set out within the SRF. The construction works will replace the existing under-used land, fragmented green space and poor legibility within the Red Bank area which currently lacks development and a clear urban structure. However, until completed the construction impacts could still have an adverse impact on the wider study area due to temporary loss of basic street and block structures.

10.65 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.**

*Land Use*

10.66 Development of substantial new residential development, along with retail and commercial floorspace will transform land use within the study area. Large portions of the existing land within the Red Bank area is currently under-used or derelict land, but it would still experience some temporary adverse impacts due to extent of new construction areas and change across the study area.

10.67 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.**

*Public Open Space and Woodland*

10.68 The construction works are likely to impact on public open space and woodland due in particular to the scale of development proposed within Red Bank (Application 4). The existing woodland is valued at the local level but is poorly managed and, in accordance with the SRF, proposed development will include the retention and management of existing trees to conserve existing ecology and habitat value and promote biodiversity. In addition, much of the existing open space is fragmented, and poorly overlooked, and is lacking a clear function, but it would still experience some temporary adverse impacts due to the extent of new construction areas and change across the study area.

10.69 The overall sensitivity of the receptor is Medium/Low. It is predicted that there will be a short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.**

*Movement and Linkages*

10.110 The existing Red Bank area lacks a clear movement and circulation network of safe, well-overlooked routes. The construction works are likely to experience some temporary adverse impacts due to the extent of new construction areas, site compounds and change across the study area.

10.111 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.**

*Key Views*

***Viewpoint 1: View from Union Bridge/Dantzic Street looking north across the Site.***

10.112 The character of the view is likely to change substantially from largely undeveloped to developed if developed in accordance with the vision for the Red Bank neighbourhood (Application 4). Construction works associated with the new development fronting onto the river will be visible in the foreground of the view and will change the existing character of the view. Views of works to the river as part of Application 3 will also be visible in the foreground of the view. The overall extent of construction works that will be visible across the view is likely to result in temporary adverse impacts.

10.113 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary **medium adverse** effect at the local level (wider study area) which has **minor significance.**

***Viewpoint 2: View footway off Dalton Street looking across bridge into St Catherine's Wood.***

10.114 The existing red brick building in the foreground of the view will be demolished and the land redeveloped as part of Application 4. Construction works will be visible in the foreground of the view, and result in a partial change in character. There is also potential for glimpsed views of construction works on the upper ground levels to the north of St Catherine's Wood. Views of works to the river as part of Application 3 will also be visible in the foreground of the view. The overall extent of construction works that will be visible across the view is likely to result in minor temporary adverse impacts and views through to the green space.

10.115 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.**

***Viewpoint 3: View from Collyhurst Road footway looking across the River Irk and into St Catherine's Wood.***

10.116 Construction works to create a new bridge crossing proposed as part of Application 3, and any associated river improvement works, will be visible in the foreground of the view. There is potential for glimpsed views of construction works for new development through the trees beyond St Catherine's Wood due to more elevated ground levels and the proposed scale and extent of new development proposed in the Red Bank vision. The overall extent of construction works that will be visible across the view is likely to result in minor temporary adverse impacts and views through to the green space.

10.117 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.**

***Viewpoint 4: Elevated view from Barney Steps bridge and public footpath looking south west over the Site.***

10.70 Construction works as part of Application 4 will be substantial in order to achieve the Red Bank vision, and are likely to significantly change the character of the view due to the scale and extent of development, and the proximity to the view. The extent of construction works across the view which will change its composition and character are likely to be substantial, which will have an adverse impact on the view.

10.71 The overall sensitivity of the receptor is Medium. It is predicted that there will be a short-term temporary **medium adverse** effect at the local level (wider study area) which is **moderately significant.**

***Viewpoint 5: Elevated view from footway at the corner of St Chads Street/Stanley Street looking east.***

10.118 Construction works as part of Application 4 will be substantial in order to achieve the Red Bank vision, and are likely to significantly change the character of the view due to the scale and extent of development, and the proximity to the view. There is potential for construction of a tall building in the foreground of the view in

accordance with the vision. The extent of construction works across the view which will change its composition and character are likely to be substantial, which will have an adverse impact on the view.

10.119 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary ***medium adverse*** effect at the local level (wider study area) which has ***minor significance.***

***Viewpoint 6: View from viaduct gateway on Roger Street looking south east across the Site.***

10.120 The existing character of the view will be changed, with substantial demolition and construction works in the foreground of the view to achieve the Red Bank vision. Construction works will also be visible along Roger Street to create a local walking and cycling route with a public space in the distance adjacent to the river. Glimpsed longer-range views of construction works may be visible in the distance. The extent of construction works across the view which will change its composition and character are likely to be substantial, which will have an adverse impact on the view.

10.121 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary ***medium adverse*** effect at the local level (wider study area) which has ***minor significance.***

***Viewpoint 7: Elevated view from Sand Street Park pathway looking west over the Site.***

10.122 Construction works to demolish and redevelop the red brick building in the foreground of the view will be visible. St Catherine's Wood will provide some visual screening of development, however partial views of construction works to new development are likely to be available due to the elevated position of the viewpoint, and the proposed location of new development on higher ground to the north of St Catherine's Wood. The extent of construction works across the view which will change its composition and character are likely to be substantial, which will have an adverse impact on the view.

10.123 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term temporary ***medium adverse*** effect at the local level (wider study area) which has ***minor significance.***

### Assessment Scenario 1c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

10.124 The Scenario 1c assessment identifies whether any non-significant townscape and visual effects 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 the associated future development in Applications 2, 3 and 4, and with the wider SRF. The construction methodology of the works within these future applications, and the associated detailed assessments of the townscape and visual impact of these works, are ongoing. The ICA is therefore undertaken at a high-level and is qualitative, and is based on the information available at the time of writing. Within this assessment construction impacts in the 15-20 year build out period of the SRF are considered medium term/ temporary, as they are likely to be phased and associated with specific areas of Victoria North, rather than continuously across the whole study area.

*Townscape Character*

10.125 The proposed construction of the full SRF Area is likely to result in additional substantial change to townscape character within the study area due to the scale of the Proposed Development. A phased approach to development will help to reduce the potential effects, however the construction of approximately 15,000 dwellings over a 15-20 year period, along with employment and commercial use, retail provision, green and blue infrastructure and improved transport and access is predicted to result in substantial change to townscape character within the study area during the construction phase for Assessment Scenario 1c. The construction works are likely to have a substantial temporary adverse impact on the wider study area due to the extent of the proposed change.

10.126 The overall sensitivity of the receptor is Medium/Low. It is predicted that there will be a medium-term ***large adverse*** effect at the local level (wider study area) which is ***moderately significant.***

*Urban Grain*

10.127 The proposed construction of the full SRF will establish a new urban grain, which will infill the substantial gaps currently present which detracts from the overall townscape character on what is a key location on the city centre fringes. The construction works are likely to have a substantial temporary adverse impact on the wider study area due to the extent of the proposed changes and break down of the existing townscape structure.

10.128 The overall sensitivity of the receptor is Low. It is predicted that there will be a medium-term ***medium adverse*** effect at the local level (wider study area) which has ***minor significance.***

*Land Use*

10.129 The proposed construction of the full SRF will establish new land uses within dis-used and under-used areas, which will be residential-led. The construction works are likely to have a substantial temporary adverse impact on the wider study area due to the extent of the proposed changes and the disruption to existing uses.

10.130 The overall sensitivity of the receptor is Low. It is predicted that there will be a medium-term **large adverse** effect at the local level (wider study area) which is **moderately significant.**

*Public Open Space and Woodland*

10.131 The proposed construction of the full SRF will include a comprehensive approach to green and blue infrastructure, incorporating existing woodland and landscape features. Substantial new planting, management of existing woodland and the creation of new green open space will form part of the construction process. Although currently under-used, the scale of the construction works and loss of existing facilities are likely to have a temporary adverse impact on the wider study area due to the extent of the proposed change and disruption to existing green spaces.

10.132 The overall sensitivity of the receptor is Medium/Low. It is predicted that there will be a medium-term **medium adverse** effect at the local level (wider study area) which is **moderately significant.**

*Movement and Linkages*

10.133 The proposed construction of the full SRF includes creation of a comprehensive movement network which will connect to the wider established movement network. Although currently suffering from poor accessibility and a lack of a clear network of pedestrian and cycle routes, and a hierarchy of vehicular routes, the scale of the construction works and likely substantial disruption to the existing route network is likely to have a temporary adverse impact on the wider study area due to the extent of the proposed change.

10.134 The overall sensitivity of the receptor is Low. It is predicted that there will be a medium-term **large adverse** effect at the local level (wider study area) which is **moderately significant.**

*Key Views*

***Viewpoint 1: View from Union Bridge/Dantzic Street looking north across the Site.***

10.135 The character of the view is likely to change substantially from largely undeveloped to developed if developed in accordance with the vision for the Red Bank neighbourhood (Application 4). Construction works associated with the new development fronting onto the river will be visible in the foreground of the view and will change the existing character of the view. Views of works to the river as part of Application 3 will also be visible in the foreground of the view. There is limited potential for views of wider construction works within the wider SRF due to close proximity of the viewpoint to the Site and direction of view.

10.136 The overall sensitivity of the receptor is Low. It is predicted that there will be a medium-term **medium adverse** effect at the local level (wider study area) which has **minor significance.**

***Viewpoint 2: View footway off Dalton Street looking across bridge into St Catherine's Wood.***

10.137 The existing red brick building in the foreground of the view will be demolished and the land redeveloped as part of Application 4. Construction works will be visible in the foreground of the view, and result in a partial change in character. There is potential for glimpsed views of construction works on the upper ground levels to the north of St Catherine's Wood. Views of works to the river as part of Application 3 will also be visible in the foreground of the view. There is no potential for views of wider construction works within the wider SRF due to close proximity of the viewpoint to the Site and direction of view.

10.138 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term **small adverse** effect at the local level (wider study area) which is **not significant.**

***Viewpoint 3: View from Collyhurst Road footway looking across the River Irk and into St Catherine's Wood.***

10.139 Construction works to create a new bridge crossing proposed as part of Application 3, and any associated river improvement works, will be visible in the foreground of the view. There is potential for glimpsed views of construction works for new development through the trees beyond St Catherine's Wood due to more elevated ground levels and the proposed scale and extent of new development proposed in the Red Bank vision. There is

no potential for views of wider construction works within the wider SRF due to close proximity of the viewpoint to the Site and direction of view.

10.140 The overall sensitivity of the receptor is Low. It is predicted that there will be a short-term **small adverse** effect at the local level (wider study area) which is **not significant.**

***Viewpoint 4: Elevated view from Barney Steps bridge and public footpath looking south west over the Site.***

10.141 Construction works as part of Application 4 will be substantial in order to achieve the Red Bank vision, and are likely to significantly change the character of the view due to the scale and extent of development, and the proximity to the view. There is no potential for views of wider construction works within the wider SRF due to close proximity of the viewpoint to the Site and direction of view.

10.142 The overall sensitivity of the receptor is Medium. It is predicted that there will be a short-term **medium adverse** effect at the local level (wider study area) which is **moderately significant.**

***Viewpoint 5: Elevated view from footway at the corner of St Chads Street/Stanley Street looking east.***

10.143 Construction works as part of Application 4 will be substantial in order to achieve the Red Bank vision, and are likely to significantly change the character of the view due to the scale and extent of development, and the proximity to the view. There is potential for construction of a tall building in the foreground of the view in accordance with the vision. There is potential for glimpsed views of construction works within the wider SRF due to the elevated viewpoint location and the direction of view. Any views are likely to be partially screened by tree cover and falling ground levels.

10.144 The overall sensitivity of the receptor is Low. It is predicted that there will be a medium-term **medium adverse** effect at the local level (wider study area) which has **minor significance.**

***Viewpoint 6: View from viaduct gateway on Roger Street looking south east across the Site.***

10.145 The existing character of the view will be changed, with substantial demolition and construction works in the foreground of the view to achieve the Red Bank vision. Construction works will also be visible along Roger Street to create a local walking and cycling route with a public space in the distance adjacent to the river. Glimpsed longer-range views of construction works may be visible in the distance within the Red Bank (Application 4) area. There is limited potential for glimpsed views of construction works within the wider SRF beyond the railway to the south, due to the direction of view. However, the railway viaduct forms a strong visual barrier.

10.146 The overall sensitivity of the receptor is Low. It is predicted that there will be a medium-term **medium adverse** effect at the local level (wider study area) which has **minor significance.**

***Viewpoint 7: Elevated view from Sand Street Park pathway looking west over the Site.***

10.147 Construction works to demolish and redevelop the red brick building in the foreground of the view will be visible. St Catherine's Wood will provide visual screening of development, however partial views of construction works to new development are likely to be available due to the elevated position of the viewpoint, and the proposed location of new development on higher ground to the north of St Catherine's Wood. The immediate context around the viewpoint will be changed substantially as part of the construction works associated with the wider SRF development.

10.148 The overall sensitivity of the receptor is Low. It is predicted that there will be a medium-term **large adverse** effect at the local level (wider study area) which is **moderately significant.**

### The Completed and Operational Development

#### Assessment Scenario 2a – Proposed Development Only

*Townscape Character*

10.149 The Proposed Development will include the creation of new internal access road, works to existing woodland and the provision of green infrastructure including the creation of green links, pedestrian and cycle routes, and the first phase of the new City River Park. The development will contribute positively to achieving the vision for the Red Bank townscape character area as set out within the SRF (para.10.15) although this character will remain fully unrealised until supporting built form is completed.

10.150 The overall sensitivity of the receptor is Medium/ Low. It is predicted that there will be a long-term **small beneficial** effect at the local level which has **minor significance.**

*Urban Grain*

10.151 No new development is proposed as part of Assessment Scenario 2. Whilst a basic context for built form will be created in the proposed roadways, the lack of built form and urban grain within the Site, and the nature of the Proposed Development, the operational phase is not predicted to result in any substantial effects on urban grain within the study area.

10.152 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term **negligible beneficial** effect at the local level which is **not significant.**

*Land Use*

10.153 The Proposed Development will enhance land use within the Site through the creation of the River City Park, with new pathways and facilities provided within the park to encourage activity, and a lighting strategy to promote safety and security for users. The changes to land use will be beneficial in nature, and contribute positively to achieving the longer term vision for the green infrastructure network within the SRF.

10.154 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term **small beneficial** effect at the local level which is **not significant.**

*Public Open Space and Woodland*

10.155 The creation of the River City Park, new pedestrian and cycle linkages, addition of lighting and opening up of access to the River Irk will result in a substantial beneficial change as a result of the Proposed Development. Retention, management and enhancement of the woodland will also contribute positively to the wider vision, overall green infrastructure and habitat and biodiversity value.

10.156 The overall sensitivity of the receptor is Medium/ Low. It is predicted that there will be a long-term **medium beneficial** effect at the local level which is **moderately significant.**

*Movement and Linkages*

10.157 The Proposed Development includes a comprehensive access and movement strategy which will include the creation of new footpath and cycle routes that will provide access to the new park and also connect to the wider movement network, enhancing connections into the city centre, and along the Irk Valley. A key component of the strategy is to reconnect with the River Irk, providing access to and enjoyment of the river.

10.158 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term **medium beneficial** effect at the local level which has **minor significance.**

*Site Character*

10.159 The development of the River City Park, implementation of a comprehensive movement and access strategy, retention, management and enhancement of the woodland, and opening up of access to the River Irk will result in a transformation of the Site character and substantial beneficial change.

10.160 The overall sensitivity of the receptor is Medium/ Low. It is predicted that there will be a long-term **medium beneficial** effect at the local level which is **moderately significant.**

*Key Views*

10.161 Photomontage views at the operational / completed stage are provided in **Appendix 10.2.**

***Viewpoint 1: View from Union Bridge/Dantzic Street looking north across the Site.***

10.162 The viewpoint will allow clear views of proposed development due to the relatively open character of the view and the rising ground levels within the Site. The new development will include glimpsed views of enhanced access to the river frontage at the lower levels, with a series of platforms, steps and associated planting. The viewpoint will allow clear views of the new steps, pathways, terracing and planting which will allow access to the upper site levels. The terracing will form a substantial new feature which will symbolise regeneration of the Site, and enhance legibility for viewers. Existing low quality buildings in the foreground of the view are not included in this application and will be retained. Tree clearance at the upper levels to create the development plots will help to visually 'open up' the Site. New tree planting and ongoing management will help to retain the overall 'green' character, which will increase over time as the new landscape matures.

10.163 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***small beneficial*** effect at the local level which is ***not significant.***

***Viewpoint 2: View footway off Dalton Street looking across bridge into St Catherine's Wood.***

10.164 The existing red brick building in the foreground of the view fronting onto Dantzic Street is not proposed for removal as part of this application. The woodland within the view is intended for retention, with potential for glimpsed views of new pathways as a result of woodland management and minor tree clearance. There will be views of the improved bridge access into St Catherine's Wood. Views of the new pathways and enhanced access will enhance legibility and encourage use.

10.165 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***medium beneficial*** effect at the local level which has ***minor significance.***

***Viewpoint 3: View from Collyhurst Road footway looking across the River Irk and into St Catherine's Wood.***

10.166 The proposed bridge over the river at this location will not form part of this application. Changes to the view as a result of proposed development will therefore be subtle when viewed from this location, and will include minor changes to the woodland as a result of tree management and selective thinning to incorporate pathways. Glimpsed views will be available of the new paths, indicating a new green space destination. The minor change in the view is not predicted to result in any significant effects.

10.167 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***negligible beneficial*** effect at the local level which is ***not significant.***

***Viewpoint 4: Elevated view from Barney Steps bridge and public footpath looking south west over the Site.***

10.168 The existing character of the view is poor, due to the derelict character, lack of managed woodland, and redundant area of hardstanding. The slightly elevated and open character of the existing view will result in substantial views of new hard standing development plots and new landscape in accordance with the Landscape General Arrangement plan. Removal of trees will open up views of the skyline which will visually positively reconnect the Site to the surrounding context. The clearance of existing trees and minimal new landscape or built features included within this application are predicted to result in an adverse impact.

10.169 The overall sensitivity of the receptor is Medium/ Low. It is predicted that there will be a long-term ***medium adverse*** effect at the local level which is ***moderately significant.***

***Viewpoint 5: Elevated view from footway at the corner of St Chads Street/Stanley Street looking east.***

10.170 Any works to the existing cleared areas in the foreground of the view, associated boundaries and scrub are not included within this application, and therefore the existing character of the view will be unchanged. There will be glimpsed views of the new access route off Red Bank and the future development plot beyond to the north will

be available, but will form a relatively minor addition to the view which will indicate regeneration and reuse of the Site.

10.171 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***negligible adverse*** effect at the local level which is ***not significant.***

***Viewpoint 6: View from viaduct gateway on Roger Street looking south east across the Site.***

10.172 Existing low quality buildings in the foreground of the view are not included in this application and will be retained and will largely screen views of construction works beyond. There will be no works to improve Roger Street as part of this application. There is potential for minor glimpsed views of the proposed new access and enhancements to the river edge to the right within the view, and of pathways within tree reduced tree cover to left within the view however the existing character of the view will be largely unchanged.

10.173 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***negligible beneficial*** effect at the local level which is ***not significant.***

***Viewpoint 7: Elevated view from Sand Street Park pathway looking west over the Site.***

10.174 The elevated position of the viewpoint will allow for glimpsed views of new pathways as a result of selective tree removal and woodland management. Removal of trees on higher ground levels will reveal views of the skyline beyond the Site, and help to reconnect the Site to the surrounding townscape context. Changes to the view will be minor, but will contribute positively to legibility for viewers and indicate a new green space destination.

10.175 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***small beneficial*** effect at the local level which is ***not significant.***

## Assessment Scenario 2b – Proposed Development plus impacts associated with Applications 1, 3 and 4

*Townscape Character*

10.176 The Red Bank Neighbourhood is predicted to result in a substantial change to townscape character during the operational phase due to the addition of approximately 4,000 no. residential dwellings, additional land uses including retail and commercial, new open and amenity space and new movement and linkages as part of Application 4. The operational phase is likely to have a substantial impact on the townscape character within the wider study area due to the comprehensive nature of the proposed change.

10.177 The overall sensitivity of the receptor is Medium/Low. It is predicted that there will be a long-term ***medium beneficial*** effect at the local level (wider study area) which is ***moderately significant.***

*Urban Grain*

10.178 Substantial development as part of Application 4 will establish a new urban grain in place of the existing under-used land, fragmented green space and poor legibility within the Red Bank area which currently lacks development and a clear urban structure. The creation of a new grain to accord with the vision for Red Bank as set out within the SRF (para 10.15) and is likely to be beneficial in nature,

10.179 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.***

*Land Use*

10.180 Development of substantial new residential development, along with retail and commercial floorspace will transform land use within the study area. As a large portions of the land within the Red Bank area is currently under-used or derelict land, the effect is likely to be beneficial in nature,

10.181 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.***

*Public Open Space and Woodland*

10.182 The Proposed Development is likely to impact positively on public open space and woodland due in particular to the scale of development proposed within Red Bank (Application 4). The existing woodland is valued at the local level but is poorly managed and, in accordance with the SRF, proposed development will include the retention and management of existing trees to conserve existing ecology and habitat value and promote biodiversity. In addition, much of the existing open space is fragmented, and poorly overlooked, and is lacking a clear function. The Proposed Development will also include enhanced access and connectivity to the river. The operational phase of the Proposed Development in Assessment Scenario 2b is therefore likely to result in a beneficial effect on public open space and woodland

10.183 The overall sensitivity of the receptor is Medium/ Low. It is predicted that there will be a long-term ***medium beneficial*** effect at the local level (wider study area) which is ***moderately significant.***

*Movement and Linkages*

10.184 The existing Red Bank area lacks a clear movement and circulation network of safe, well-overlooked routes. The Proposed Development is likely to result in positive change from the introduction of new pedestrian and cycle which form connections along the river, and form part of the wider movement and connectivity network into the city centre and along the Irk Valley. The operational phase of the Proposed Development in Assessment Scenario 2b is therefore likely to result in a beneficial effect to movement and linkages.

10.185 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.***

*Key Views*

***Viewpoint 1: View from Union Bridge/Dantzic Street looking north across the Site.***

10.186 The character of the view is likely to change substantially from largely undeveloped to developed if developed in accordance with the vision for the Red Bank neighbourhood (Application 4). Proposed new development fronting onto the river will be visible in the foreground of the view and has the potential to positively change the existing character of the view. Views of completed works to the river as part of Application 3 may also be visible in the foreground of the view.

10.187 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***large beneficial*** effect at the local level (wider study area) which is ***moderately significant.***

***Viewpoint 2: View footway off Dalton Street looking across bridge into St Catherine's Wood.***

10.188 New development proposed as part of Application 4 will be visible in the foreground of the view, and result in a change in the character of the view. There is potential for partial views of new development on the upper ground levels to the north of St Catherine's Wood. Views of the completed river works (Application 3) will also be visible in the foreground of the view.

10.189 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.***

***Viewpoint 3: View from Collyhurst Road footway looking across the River Irk and into St Catherine's Wood.***

10.190 The new bridge crossing proposed as part of Application 3, and any associated completed river improvements, will be visible in the foreground of the view, and has the potential to create a high quality new entrance to St Catherine's Wood and enhanced legibility. There is potential for glimpsed views of new development through the trees beyond St Catherine's Wood due to more elevated ground levels and the proposed scale and extent of new development proposed in the Red Bank vision.

10.191 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.***

***Viewpoint 4: Elevated view from Barney Steps bridge and public footpath looking south west over the Site.***

10.192 New development proposed as part of Application 4 will be in the foreground of the view, and is likely to form a substantial new addition to the view. Any new development which achieves the vision for Red Bank is likely to result in the total block of existing longer-range views to the city and green spaces, and is likely to adversely change the character of the view due to the scale and extent of development, and the proximity to the view.

10.193 The overall sensitivity of the receptor is Medium. It is predicted that there will be a long-term ***large adverse*** effect at the local level (wider study area) which is ***moderately significant.***

***Viewpoint 5: Elevated view from footway at the corner of St Chads Street/Stanley Street looking east.***

10.194 New development proposed as part of Application 4 is likely to form a significant addition to the view, due to the extent of development proposed in order to achieve the Red Bank vision, and the proximity of the Proposed Development to the viewpoint. New development is likely to create screening of longer range views. There is potential for a tall building in the foreground of the view in accordance with the vision. There is potential for the rundown and derelict existing character of the view to be positively transformed and a clear new entrance/ gateway created.

10.195 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.***

***Viewpoint 6: View from viaduct gateway on Roger Street looking south east across the Site.***

10.196 The existing character of the view will be changed, with substantial new development in the foreground of the view to achieve the Red Bank vision. New public realm will also be visible along Roger Street to create a local walking and cycling route with a public space in the distance adjacent to the river. Glimpsed longer-range views of new development may be visible in the distance. There is potential for the rundown and derelict existing character of the view to be positively transformed.

10.197 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***large beneficial*** *effect* at the local level (wider study area) which is ***moderately significant.***

***Viewpoint 7: Elevated view from Sand Street Park pathway looking west over the Site.***

10.198 Substantial new contemporary development in the background of the view will be visible. St Catherine's Wood will provide visual screening, however clear views of are likely to be available due to the elevated position of the viewpoint, and the proposed location of new development on higher ground to the north of St Catherine's Wood. Changes to the view will contribute positively to legibility for viewers and indicate a new green space destination.

10.199 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.***

## Assessment Scenario 2c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

*Townscape Character*

10.200 The completed development of Applications 1, 3 and 4 and the wider SRF will result in a transformation of the area with a substantial enhancement in townscape character as a result of the comprehensive positive change in accordance with the SRF Principles (para 10.15).

10.201 The overall sensitivity of the receptor is Medium/Low. It is predicted that there will be a long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.***

*Urban Grain*

10.202 Implementation of the full SRF will result in a comprehensive change across the area with the introduction of a new legible network of streets, blocks and buildings which will replace the existing disjointed structure with derelict sites on what is a key location on the outer fringes of the city centre.

10.203 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.***

*Land Use*

10.204 The proposed residential-led land uses will replace the existing fragmented land use across the SRF area, and consolidate existing residential land use to create new neighbourhoods resulting in transformational change.

10.205 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.***

*Public Open Space and Woodland*

10.206 The existing public open spaces and woodland lack management and suffer from under-use, clear function, a lack of facilities and overlooking to promote feelings of safety and security. The implementation of the SRF will include a comprehensive green and blue infrastructure network which will incorporate existing green spaces and woodland of value, along with the creation of new spaces, additional planting and management to create a green corridor and reconnect to the river.

10.207 The overall sensitivity of the receptor is Medium/Low. It is predicted that there will be a long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.***

*Movement and Linkages*

10.208 The existing route network is fragmented and lacks safe pedestrian and cycle routes. New pedestrian and cycle linkages will be provided as part of the wider SRF development, along with a comprehensive route hierarchy to connect the SRF with the wider movement network, enhance connections to the river and linkages into the city centre.

10.209 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.***

*Key Views*

***Viewpoint 1: View from Union Bridge/Dantzic Street looking north across the Site.***

10.210 The character of the view is likely to change substantially from largely undeveloped to developed if developed in accordance with the vision for the Red Bank neighbourhood (Application 4). Proposed new development fronting onto the river will be visible in the foreground of the view and has the potential to positively change the existing character of the view. Views of completed works to the river as part of Application 3 may also be visible in the foreground of the view. There is limited potential for views of development within the wider due to the close proximity of the viewpoint to the Site, and direction of view.

10.211 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***large beneficial*** effect at the local level (wider study area) which is ***moderately significant.***

***Viewpoint 2: View footway off Dalton Street looking across bridge into St Catherine's Wood.***

10.212 New development proposed as part of Application 4 will be visible in the foreground of the view, and result in a change in the character of the view. There is potential for partial views of new development on the upper ground levels to the north of St Catherine's Wood. Views of the completed river works (Application 3) will also be visible in the foreground of the view. There is no potential for views of development within the wider SRF due to close proximity of the viewpoint to the Site and direction of view.

10.213 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.***

***Viewpoint 3: View from Collyhurst Road footway looking across the River Irk and into St Catherine's Wood.***

10.214 The new bridge crossing proposed as part of Application 3, and any associated completed river improvements, will be visible in the foreground of the view, and has the potential to create a high quality new entrance to St Catherine's Wood and enhanced legibility. There is potential for glimpsed views of new development through the trees beyond St Catherine's Wood due to more elevated ground levels and the proposed scale and extent of new development proposed in the Red Bank vision. There is no potential for views of development within the wider SRF due to close proximity of the viewpoint to the Site and direction of view.

10.215 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.***

***Viewpoint 4: Elevated view from Barney Steps bridge and public footpath looking south west over the Site.***

10.216 New development proposed as part of Application 4 will be in the foreground of the view, and is likely to form a substantial new addition to the view. Any new development which achieves the vision for Red Bank is likely to result in the screening of existing longer-range views, and is likely to significantly change the character of the

view due to the scale and extent of development, and the proximity to the view. There is no potential for views of development within the wider SRF due to close proximity of the viewpoint to the Site and direction of view.

10.217 The overall sensitivity of the receptor is Medium. It is predicted that there will be a long-term ***large adverse*** effect at the local level (wider study area) which is ***moderately significant.***

***Viewpoint 5: Elevated view from footway at the corner of St Chads Street/Stanley Street looking east.***

10.218 New development proposed as part of Application 4 is likely to form a significant addition to the view, due to the extent of development proposed in order to achieve the Red Bank vision, and the proximity of the Proposed Development to the viewpoint. New development is likely to create screening of longer range views. There is potential for a tall building in the foreground of the view in accordance with the vision. There is potential for the rundown and derelict existing character of the view to be positively transformed. There is potential for views of development within the wider SRF due to the elevated viewpoint location and the direction of view. Any views are likely to be partially screened by tree cover and falling ground levels.

10.219 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***large beneficial*** effect at the local level (wider study area) which is ***moderately significant.***

***Viewpoint 6: View from viaduct gateway on Roger Street looking south east across the Site.***

10.220 The existing character of the view will be changed, with substantial new development in the foreground of the view to achieve the Red Bank vision. New public realm will also be visible along Roger Street to create a local walking and cycling route with a public space in the distance adjacent to the river. Glimpsed longer-range views of new development within the Red Bank development (Application 4) may be visible in the distance. There is potential for the rundown and derelict existing character of the view to be positively transformed. There is limited potential for glimpsed views of development within the wider SRF beyond the railway to the south, due to the direction of view. However, the railway viaduct forms a strong visual barrier.

10.221 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***large beneficial*** *effect* at the local level (wider study area) which is ***moderately significant.***

***Viewpoint 7: Elevated view from Sand Street Park pathway looking west over the Site.***

10.222 Construction works to demolish and redevelop the red brick building in the foreground of the view will be visible. St Catherine's Wood will provide visual screening of development, however partial views of construction works to new development are likely to be available due to the elevated position of the viewpoint, and the proposed location of new development on higher ground to the north of St Catherine's Wood. The immediate context around the viewpoint will be changed substantially as part of the wider SRF development forming part of a green link along the river corridor.

10.223 The overall sensitivity of the receptor is Low. It is predicted that there will be a long-term ***large beneficial*** *effect* at the local level (wider study area) which is ***moderately significant.***

## Additional Mitigation / Enhancement Measures

10.224 This section describes the measures which are required to mitigate any significant environmental effects with regards to landscape character and visual amenity. This should detail mitigation measures which are not designed into the proposals and which requires a commitment from the applicants to carry out further actions.

### Demolition and Construction

10.225 A Construction Environmental Management Plan (CEMP) will be produced for the 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 indirect effects on the retained/adjacent woodland is encountered as a result of the Proposed Development.

10.22 Demolition and construction phase measures have been assumed in accordance with 'best practice'.

- Site hoarding to provide visual screening of demolition and construction at street level.
- Access to the Site during construction will be off existing routes in order to minimise potential adverse effects on the surrounding movement network.
- Material will be reused on site where possible in order to minimise construction traffic removing material off-site which could potentially result in townscape and visual impacts.
- Location of site compound and materials storage where visually screened within the Site, in order to minimise potential visual impacts.

### The Completed and Operational Development

10.226 There are no additional mitigation or enhancement measures proposed for Application 2 during the operational phase relating to townscape or views.

## Likely Residual Effects of the Development and their Significance

10.227 As there are no additional mitigation or enhancement measures proposed for the enabling works relating to townscape or views, the residual effects are unchanged from the assessment of likely significant effects. The residual effects are summarised in **Table 10.2** below.

*Table 10.10: Residual Effects Summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| *Assessment Scenario 1a – proposed development only* | | | |
| Change to Townscape Character due to presence of construction works across the site | short-term temporary ***small adverse*** effect at the local level which is of ***minor significance.*** | Best practice measures implemented via a CEMP. | short-term temporary ***small adverse*** effect at the local level which is of ***minor significance.*** |
| Change to Urban Grain from demolition works | short-term temporary ***no change*** effect at the local level which is ***not significant.*** | Best practice measures implemented via a CEMP. | short-term temporary ***no change*** effect at the local level which is ***not significant.*** |
| Change to Land Use due to construction works/ demolition | short-term temporary ***negligible adverse*** effect at the local level which is ***not significant.*** | Best practice measures implemented via a CEMP. | short-term temporary ***negligible adverse*** effect at the local level which is ***not significant.*** |
| Change to Public Open Space and Woodland due to construction works in green space / tree removal | short-term temporary ***small adverse*** effect at the local level which is **of *minor significance.*** | Best practice measures implemented via a CEMP. | short-term temporary ***small adverse*** effect at the local level which is **of *minor significance.*** |
| Change to Movement and Linkage – change to quality and character of local routes | short-term temporary ***small adverse*** effect at the local level which is ***not significant.*** | Best practice measures implemented via a CEMP. | short-term temporary ***small adverse*** effect at the local level which is ***not significant.*** |
| Change to Site Character due to removal of tree | short-term temporary ***small adverse*** effect at the site level which is of | Best practice measures implemented via a CEMP. | short-term temporary ***small adverse*** effect at the site level which is of ***minor significance.*** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| cover | ***minor significance.*** | | |
| Change to Viewpoint 1: clear views of construction works | short-term temporary ***medium adverse*** effect at the local level which is **of *minor significance.*** | Best practice measures implemented via a CEMP. | short-term temporary ***medium adverse*** effect at the local level which is **of *minor significance.*** |
| Change to Viewpoint 2: view of construction works within parkland | short-term temporary ***small adverse*** effect at the local level which is ***not significant.*** | Best practice measures implemented via a CEMP | short-term temporary ***small adverse*** effect at the local level which is ***not significant.*** |
| Change to Viewpoint 3: views of construction works in parkland | short-term temporary ***small adverse*** effect at the local level which is ***not significant.*** | Best practice measures implemented via a CEMP. | short-term temporary ***small adverse*** effect at the local level which is ***not significant.*** |
| Change to Viewpoint 4. Clear open views of construction/ tree removal works | short-term temporary ***medium adverse*** effect at the local level which is ***moderately significant.*** | Best practice measures implemented via a CEMP. | short-term temporary ***medium adverse*** effect at the local level which is ***moderately significant.*** |
| Change to Viewpoint 5. Open views of construction works to new access route | short-term temporary ***medium adverse*** effect at the local level which has ***minor significance.*** | Best practice measures implemented via a CEMP. | short-term temporary ***medium adverse*** effect at the local level which has ***minor significance.*** |
| Change to Viewpoint 6. Glimpsed views of construction works in background. | short-term temporary ***small adverse*** effect at the local level which is ***not significant.*** | Best practice measures implemented via a CEMP. | short-term temporary ***small adverse*** effect at the local level which is ***not significant.*** |
| Change to Viewpoint 7. Open views of construction works | short-term temporary ***negligible adverse*** effect at the local level | Best practice measures implemented via a CEMP. | short-term temporary ***negligible adverse*** effect at the local level which is ***not significant.*** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| and tree removal | which is ***not significant.*** | | |
| *Assessment Scenario 1b – proposed development plus Applications 1, 3 and 4* | | | |
| Change to Townscape Character due to extensive construction works across the study area | short-term temporary **medium adverse** effect at the local level (wider study area) which is **moderately significant.** | Best practice measures implemented via a CEMP. | short-term temporary **medium adverse** effect at the local level (wider study area) which is **moderately significant.** |
| Change to Urban Grain from extensive construction works across the study area | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** | Best practice measures implemented via a CEMP. | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** |
| Change to Land Use due to extensive construction works across the study area | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** | Best practice measures implemented via a CEMP. | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** |
| Change to Public Open Space and Woodland due to extensive construction works in green space / tree removal across the study area | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** | Best practice measures implemented via a CEMP. | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** |
| Change to Movement and Linkage – change to quality and character of local routes across the | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** | Best practice measures implemented via a CEMP. | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| study area | | | |
| Change to Viewpoint 1: clear views of construction works across the view | short-term temporary **medium adverse** effect at the local level (wider study area) which has **minor significance.** | Best practice measures implemented via a CEMP. | short-term temporary **medium adverse** effect at the local level (wider study area) which has **minor significance.** |
| Change to Viewpoint 2: view of construction works within parkland | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** | Best practice measures implemented via a CEMP. | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** |
| Change to Viewpoint 3: views of construction works in parkland | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** | Best practice measures implemented via a CEMP. | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** |
| Change to Viewpoint 4. Clear open views of substantial construction works | short-term temporary **medium adverse** effect at the local level (wider study area) which is **moderately significant.** | Best practice measures implemented via a CEMP. | short-term temporary **medium adverse** effect at the local level (wider study area) which is **moderately significant.** |
| Change to Viewpoint 5. Clear open views of substantial construction works | short-term temporary ***medium adverse*** effect at the local level (wider study area) which has ***minor significance.*** | Best practice measures implemented via a CEMP. | short-term temporary ***medium adverse*** effect at the local level (wider study area) which has ***minor significance.*** |
| Change to Viewpoint 6. Clear open views of substantial construction works | short-term temporary ***medium adverse*** effect at the local level (wider study area) which has ***minor significance.*** | Best practice measures implemented via a CEMP. | short-term temporary ***medium adverse*** effect at the local level (wider study area) which has ***minor significance.*** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Change to Viewpoint 7. Filtered views of substantial construction works | short-term temporary ***medium adverse*** effect at the local level (wider study area) which has ***minor significance.*** | Best practice measures implemented via a CEMP. | short-term temporary ***medium adverse*** effect at the local level (wider study area) which has ***minor significance.*** |
| *Assessment Scenario 1c – proposed development plus Applications 2, 3 and 4 and wider SRF* | | | |
| Change to Townscape Character due to extensive construction works across the SRF area | medium-term temporary ***large adverse*** effect at the local level (wider study area) which is ***moderately significant.*** | Best practice measures implemented via a CEMP. | medium-term temporary ***large adverse*** effect at the local level (wider study area) which is ***moderately significant.*** |
| Change to Urban Grain from extensive construction works across the SRF area | medium-term temporary ***medium adverse*** effect at the local level (wider study area) which has ***minor significance.*** | Best practice measures implemented via a CEMP. | medium-term temporary ***medium adverse*** effect at the local level (wider study area) which has ***minor significance.*** |
| Change to Land Use due to extensive construction works across the SRF area | medium-term temporary **large adverse** effect at the local level (wider study area) which is **moderately significant.** | Best practice measures implemented via a CEMP. | medium-term temporary **large adverse** effect at the local level (wider study area) which is **moderately significant.** |
| Change to Public Open Space and Woodland due to extensive construction works in green space / tree removal across the SRF area | medium-term temporary **medium adverse** effect at the local level (wider study area) which is **moderately significant.** | Best practice measures implemented via a CEMP. | medium-term temporary **medium adverse** effect at the local level (wider study area) which is **moderately significant.** |
| Change to | medium-term | Best practice measures | medium-term temporary **large** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Movement and Linkage – change to quality and character of local routes across the SRF area | temporary **large adverse** effect at the local level (wider study area) which is **moderately significant.** | implemented via a CEMP. | **adverse** effect at the local level (wider study area) which is **moderately significant.** |
| Change to Viewpoint 1: clear views of construction works across the view | medium-term temporary **medium adverse** effect at the local level (wider study area) which has **minor significance.** | Best practice measures implemented via a CEMP. | medium-term temporary **medium adverse** effect at the local level (wider study area) which has **minor significance.** |
| Change to Viewpoint 2: view of construction works within parkland | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** | Best practice measures implemented via a CEMP. | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** |
| Change to Viewpoint 3: views of construction works in parkland | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** | Best practice measures implemented via a CEMP. | short-term temporary **small adverse** effect at the local level (wider study area) which is **not significant.** |
| Change to Viewpoint 4. Clear open views of substantial construction works | short-term temporary **medium adverse** effect at the local level (wider study area) which is **moderately significant.** | Best practice measures implemented via a CEMP. | short-term temporary **medium adverse** effect at the local level (wider study area) which is **moderately significant.** |
| Change to Viewpoint 5. Clear open views of substantial construction works | medium-term temporary **medium adverse** effect at the local level (wider study area) which has **minor significance.** | Best practice measures implemented via a CEMP. | medium-term temporary **medium adverse** effect at the local level (wider study area) which has **minor significance.** |
| Change to | medium-term | Best practice measures | medium-term temporary **medium** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Viewpoint 6. Clear open views of substantial construction works | temporary **medium adverse** effect at the local level (wider study area) which has **minor significance.** | implemented via a CEMP. | **adverse** effect at the local level (wider study area) which has **minor significance.** |
| Change to Viewpoint 7. Filtered views of substantial construction works | medium-term temporary **large adverse** effect at the local level (wider study area) which is **moderately significant.** | Best practice measures implemented via a CEMP. | medium-term temporary **large adverse** effect at the local level (wider study area) which is **moderately significant.** |
| ***Completed Development*** | | | |
| *Assessment Scenario 2a – proposed development only* | | | |
| Change to Townscape Character - new roads, green infrastructure and links | long-term **small beneficial** effect at the local level which has **minor significance.** | Best practice measures implemented via a CEMP. | long-term **small beneficial** effect at the local level which has **minor significance.** |
| Change to Urban Grain with basic context for development created | long-term **negligible beneficial** effect at the local level which is **not significant.** | No additional mitigation/enhancement proposed under this phase of development. | long-term **negligible beneficial** effect at the local level which is **not significant.** |
| Change to Land Use with new City River Park and associated facilities | long-term **small beneficial** effect at the local level which is **not significant.** | No additional mitigation/enhancement proposed under this phase of development. | long-term **small beneficial** effect at the local level which is **not significant.** |
| Change to Public Open Space and Woodland due creation of City | long-term **medium beneficial** effect at the local level which is **moderately** | No additional mitigation/enhancement proposed under this phase of development. | long-term **medium beneficial** effect at the local level which is **moderately significant.** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| River Park | **significant.** | | |
| Change to Movement and Linkage –with new footpaths, cycle routes and roadways | long-term **medium beneficial** effect at the local level which has **minor significance.** | No additional mitigation/enhancement proposed under this phase of development. | long-term **medium beneficial** effect at the local level which has **minor significance.** |
| Change to Site Character with new roadways, woodland management and City River Park | long-term **medium beneficial** effect at the local level which is **moderately significant.** | No additional mitigation/enhancement proposed under this phase of development. | long-term **medium beneficial** effect at the local level which is **moderately significant.** |
| Change to Viewpoint 1: clear views of the proposed development hardstanding and river frontage | long-term ***small beneficial*** effect at the local level which is ***not significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***small beneficial*** effect at the local level which is ***not significant.*** |
| Change to Viewpoint 2: view of new park infrastructure and bridge crossing | long-term ***medium beneficial*** effect at the local level which has ***minor significance.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***medium beneficial*** effect at the local level which has ***minor significance.*** |
| Change to Viewpoint 3: with partial view to new park infrastructure | long-term ***negligible beneficial*** effect at the local level which is ***not significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***negligible beneficial*** effect at the local level which is ***not significant.*** |
| Change to Viewpoint 4. Clear open views of hard standing and roads | long-term ***medium adverse*** effect at the local level which is ***moderately significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***medium adverse*** effect at the local level which is ***moderately significant.*** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Change to Viewpoint 5. Opening up of view and new roadway entrance | long-term ***negligible adverse*** effect at the local level which is ***not significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***negligible adverse*** effect at the local level which is ***not significant.*** |
| Change to Viewpoint 6. With partial views of river and hillside works | long-term ***negligible beneficial*** effect at the local level which is ***not significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***negligible beneficial*** effect at the local level which is ***not significant.*** |
| Change to Viewpoint 7. Filtered views of park infrastructure and hardstanding areas | long-term ***small beneficial*** effect at the local level which is ***not significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***small beneficial*** effect at the local level which is ***not significant.*** |
| *Assessment Scenario 2b – proposed development plus Applications 1, 3 and 4* | | | |
| Change to Townscape Character - due to substantial new development, uses, infrastructure and open spaces. | long-term ***medium beneficial*** effect at the local level (wider study area) which is ***moderately significant.*** | Best practice measures implemented via a CEMP. | long-term ***medium beneficial*** effect at the local level (wider study area) which is ***moderately significant.*** |
| Change to Urban Grain with positive/ legible new structure to the area. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** |
| Change to Land Use with substantial new residential, commercial and retail uses | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Change to Public Open Space and Woodland due creation of new City River Park, and surrounding public realm links | long-term ***medium beneficial*** effect at the local level (wider study area) which is ***moderately significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***medium beneficial*** effect at the local level (wider study area) which is ***moderately significant.*** |
| Change to Movement and Linkage – with extensive new footpaths, cycle routes and roadways | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** |
| Change to Viewpoint 1: clear views of new development blocks, public realm and river frontage | long-term ***large beneficial*** effect at the local level (wider study area) which is ***moderately significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***large beneficial*** effect at the local level (wider study area) which is ***moderately significant.*** |
| Change to Viewpoint 2: view of new park infrastructure and bridge crossing, clear view of development blocks above. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** |
| Change to Viewpoint 3: new park infrastructure and bridge crossing, clear view of development blocks above. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Change to Viewpoint 4. Substantial reduction to openness, character and composition due to proximity of new development blocks. | long-term ***large adverse*** effect at the local level (wider study area) which is ***moderately significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***large adverse*** effect at the local level (wider study area) which is ***moderately significant.*** |
| Change to Viewpoint 5. Due to reduction in openness, character and composition of view. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** |
| Change to Viewpoint 6. Reduction in openness, character and composition due to proximity of new development blocks, roads and new public realm visible. | long-term ***large beneficial*** *effect* at the local level (wider study area) which is ***moderately significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***large beneficial*** *effect* at the local level (wider study area) which is ***moderately significant.*** |
| Change to Viewpoint 7. Filtered views of park infrastructure clear view of development above tree line. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** |
| *Assessment Scenario 2c – proposed development plus Applications 1, 3 and 4 and wider SRF* | | | |
| Change to Townscape | long-term ***large beneficial*** effect at the | No additional mitigation/enhancement | long-term ***large beneficial*** effect at the local level (wider SRF area) |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Character - due to substantial new development, uses, infrastructure and open spaces. | local level (wider SRF area) which is ***moderately significant.*** | proposed under this phase of development. | which is ***moderately significant.*** |
| Change to Urban Grain with positive/ legible new structure to the SRF area. | long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.*** |
| Change to Land Use with substantial new residential, commercial and retail uses across the SRF area. | long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.*** |
| Change to Public Open Space and Woodland due creation of new City River Park, and surrounding public realm links across the SRF area. | long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.*** |
| Change to Movement and Linkage – with extensive new footpaths, cycle routes and roadways across the SRF area. | long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***large beneficial*** effect at the local level (wider SRF area) which is ***moderately significant.*** |
| Change to Viewpoint 1: clear views of new development | long-term ***large beneficial*** effect at the local level (wider study area) which is | No additional mitigation/enhancement proposed under this | long-term ***large beneficial*** effect at the local level (wider study area) which is ***moderately significant.*** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| blocks, public realm and river frontage. No additional wider SRF effects. | ***moderately significant.*** | phase of development. | |
| Change to Viewpoint 2: view of new park infrastructure and bridge crossing, clear view of development blocks above. No additional wider SRF effects. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** |
| Change to Viewpoint 3: new park infrastructure and bridge crossing, clear view of development blocks above. No additional wider SRF effects. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***medium beneficial*** effect at the local level (wider study area) which has ***minor significance.*** |
| Change to Viewpoint 4. Substantial reduction to openness, character and composition due to proximity of new development blocks. No additional wider SRF effects. | long-term ***large adverse*** effect at the local level (wider study area) which is ***moderately significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***large adverse*** effect at the local level (wider study area) which is ***moderately significant.*** |
| Change to Viewpoint 5. Due to reduction in | long-term ***large beneficial*** effect at the local level (wider study | No additional mitigation/enhancement proposed under this | long-term ***large beneficial*** effect at the local level (wider study area) |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| openness, character and composition of view. Slight additional view of wider SRF effects. | area) which is ***moderately significant.*** | phase of development. | which is ***moderately significant.*** |
| Change to Viewpoint 6. Reduction in openness, character and composition due to proximity of new development blocks, roads and new public realm visible. No additional wider SRF effects. | long-term ***large beneficial*** *effect* at the local level (wider study area) which is ***moderately significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***large beneficial*** *effect* at the local level (wider study area) which is ***moderately significant.*** |
| Change to Viewpoint 7. Filtered views of park infrastructure clear view of development above tree line. Change to context of view within SRF proposals. | long-term ***large beneficial*** *effect* at the local level (wider study area) which is ***moderately significant.*** | No additional mitigation/enhancement proposed under this phase of development. | long-term ***large beneficial*** *effect* at the local level (wider study area) which is ***moderately significant.*** |

## Conclusions

10.228 This assessment has considered the demolition and construction phase, and the operational phase effects in relation to townscape and views for Application 2: HIF enabling works. As stated within the methodology, an assessment of either 'major' or 'moderate' is considered significant for the purposes of the EIA Regulations.

10.229 There was one significant townscape or visual effects predicted during the demolition and construction phase of the Proposed Development (Scenario 1a). This was a short-term temporary medium adverse effect at the local

level which is moderately significant on view 4, due to its elevated position looking over an extensive area subject to construction activities.

10.230 The high-level assessment of Scenario 1b has predicted short-term temporary medium adverse effect at the local level (wider study area) which is moderately significant on townscape character as a result of construction of the Proposed Development in conjunction with Applications, 1, 3, and 4. There are predicted short-term temporary medium adverse effects at the local level (wider study area) which is moderately significant on view 4 as a result of construction works due to the scale of proposed development and the proximity of the works to the viewpoints.

10.231 The high-level assessment of Scenario 1c has predicted medium-term temporary adverse effects at the local level (wider study area) which are moderately significant for all townscape receptors apart from Urban Grain, due to the scale of the proposed construction works within the wider SRF. There are predicted to short-term temporary adverse effects at the local level (wider study area) which are moderately significant for view 4 and view 7 as a result of construction works due to the scale of proposed development and the proximity of the works to the viewpoints.

10.232 There are predicted to be *permanent significant beneficial effects* on public open space and woodland and site character during the operational phase as a result of the Proposed Development (Scenario 2a).

10.233 The high-level assessment of Scenario 2b has predicted moderately significant beneficial effects on townscape character and public open space. There are predicted to be moderately significant beneficial effects on views 1, 5, and 6. This is primarily as a result of the substantial development of the Red Bank neighbourhood as part of Application 4. View 4 is predicted to have a long-term large adverse effect at the local level (wider study area) which is moderately significant. This is due to the proximity of new built form, that will completely change the character and composition of the view and block open views to the City Centre and surrounding green space.

10.234 The high-level assessment of Scenario 2c has predicted long-term beneficial effects at the local level (wider SRF area) which are moderately significant on all townscape receptors as a result of the transformative nature of the SRF. There are predicted to be long-termbeneficial effects at the local level (wider study area) which is moderately significant on viewpoints 1, 5, 6 and 7. View 4 will continue to have a long-term large adverse effect at the local level (wider study area) which is moderately significant.

## Assessment of Cumulative Effects and their Significance

10.235 The cumulative assessment seeks to determine whether any non-significant effects on townscape and views 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. Refer to **Table 10.11** for details of the other sites considered in respect of cumulative effects.

10.236 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.

*Table 10.11: Cumulative Sites*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | 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 | Approved Jun 2021 | Scoped out | Beyond 500m study area boundary. |
| 2 | 127971/FO/2020 | 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 | Scoped out | Beyond 500m study area boundary. |
| 3 | 128248/FO/2020 | THE GASWORKS. 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 | 150m south | Approved June 2021 | Scoped in | Within 500m study area boundary. |
| 4 | 116366/FO/2017 | ANGEL MEADOWS. 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 | 150m south | Approved Aug 2017<br><br>Under | Scoped in | Within 500m study area boundary. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | construction | | |
| 5 | 118120/FO/2017 | LAND BOUNDED BY ROCHDALE ROAD, THOMPSON STREET AND BENDIX STREET MANCHESTER 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 | 450m south | Approved May 2018<br><br>Under construction | Scoped in | Within 500m study area boundary. |
| 6 | 127537/FO/2020 | 25 ROCHDALE ROAD. 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 | 400m south | Approved Oct 2016 | Scoped in | Within 500m study area boundary. |
| 7 | 124973/FO/2019 | 3 ANGEL SQUARE. 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 | 350m south | Approved Feb 2016 | Scoped in | Within 500m study area boundary. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | Bounded By Co-op Headquarters Miller Street And Angel Street Manchester | | | | |
| 8 | 111777/FO/2016/C1 | NEW VICTORIA. 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 | 250m south east | Approved Sep 2016<br><br>Under construction | Scoped in | Within 500m study area boundary. |
| 9 | 121375/FO/2018 | 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. | 840m south | Approved Oct 2020 | Scoped out | Beyond 500m study area boundary. |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | Approved Oct 2018<br><br>Under construction | Scoped out | Beyond 500m study area boundary. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 11 | 20/76134/FUL | 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 | 1000m south west | Approved Feb 2020 | Scoped out | Beyond 500m study area boundary. |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br><br>Under construction | Scoped out | Beyond 500m study area boundary. |
| 13 | 19/74465/HYBEIA | 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 7BN | 960m south west | Validated Nov 2019 | Scoped out | Beyond 500m study area boundary. |
| 14 | 126944/FO/2020 | VICTORIA RIVERSIDE. Erection of a residential-led mixed use development comprising 3 no. towers (37, 26 and 18 storeys) and | 140m south | Approved Sep | Scoped in | Within 500m study area |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | east | 2020<br>Under Construction | | boundary. |
| 15 | 114860/FO/2016 | LAND TO THE SOUTH OF DANTZIC STREET. Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | 145m south east | Approved October 2017 | Scoped in | Within 500m study area boundary. |
| 16 | 131708/FO/2021 | 87 ROCHDALE ROAD. 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 | 450m south | Validated September 2021 | Scoped in | Within 500m study area boundary. |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | 635m south west | Approved June 2018 | Scoped out | Beyond 500m study area boundary. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | Scoped out | Beyond 500m study area boundary. |
| 19 | 124888/FO/2019 | 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>Under Construction | Scoped out | Beyond 500m study area boundary. |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | Scoped out | Beyond 500m study area boundary. |

## Approach

10.59 Set out the approach to the cumulative assessment A total of 9 other proposed developments have been identified as being located within the 500m study area around the Proposed Development, and have the potential for cumulative townscape and visual effects.

## Likely Residual Cumulative Effects and their Significance

### Demolition and Construction

### Assessment Scenario 3a – Proposed Development Only

10.237 The 9 cumulative schemes identified as located within the 500m study area for this assessment (schemes 3-8 and 14-16 in the above table) are located to the south of Dantzic Street, and are therefore located outside of the Red Bank neighbourhood as defined within the Northern Gateway Regeneration Strategy. There are therefore not predicted to be any short/ medium-term temporary cumulative townscape effects at the local level on the Red Bank neighbourhood during the demolition and construction phase. Refer to **Figure 10.14** of **Volume 2a: Main Text Figures** for the location of the 9 assessed schemes.

10.238 The railway line forms a physical barrier and separation between the Site and the identified cumulative schemes to the south. There are therefore not predicted to be any cumulative effects during demolition and construction with schemes located to the south of the railway line. Refer to **Figure 10.14** of **Volume 2a: Main Text Figures** for the location of cumulative sites located to the south of the railway.

10.239 The Victoria Riverside Scheme (126944/FO/2020) and Land to the South of Dantzic Street (114860/FO/2016) are located within the Northern Gateway to the immediate south of the Site, and to the north of the railway line. Due to the scale of the two proposed schemes and their proximity to the Site, there is potential for short/medium-term temporary cumulative adverse effects at the local level (wider study area) on townscape receptors due to the cumulative effects during demolition and construction, assuming 'worst-case scenario' that the demolition and construction phases will occur concurrently. The overall sensitivity of the Townscape receptors are low to medium/low, and the potential magnitude of change could be small to medium adverse, which would have minor to moderate significance.

10.240 There is potential for cumulative visual effects during the demolition and construction phase of the development from viewpoints 1, 5 and 6. Refer to **Figure 10.1** for the location of key views. There is potential for views of the Proposed Development in conjunction with the Victoria Riverside scheme (126944/FO/2020), Land to the south of Dantzic Street (114860/FO/2016) and The Gasworks (128248/FO/2020). There is potential to increase the adverse effects on visual receptors due to the cumulative effects during demolition and construction, assuming 'worst-case scenario' that the demolition and construction phases will occur concurrently. The overall sensitivity of the visual receptors are low and the potential magnitude of change could be small to medium adverse, which would be not significant/ have minor significance.

### Assessment Scenario 3b – Proposed Development plus impacts associated with Applications 1, 3 and 4

10.241 The Victoria Riverside Scheme (126944/FO/2020) and Land to the South of Dantzic Street (114860/FO/2016) are included within the application 4 Red Bank boundary, and as such the potential townscape cumulative effects are included within the assessment for this scenario. The overall sensitivity of the Townscape receptors are low to medium/low, and the potential magnitude of change could be small to medium adverse, which would have minor to moderate significance.

10.242 There is potential for further cumulative visual effects during the demolition and construction phase of the development from viewpoints 1, 5 and 6. Refer to **Figure 10.1** for the location of key views. There is potential for views of the Proposed Development, applications 3&4 and The Gasworks (128248/FO/2020). There is potential to increase the adverse effects on visual receptors due to the cumulative effects during demolition and construction, assuming 'worst-case scenario' that the demolition and construction phases will occur concurrently. The overall sensitivity of the visual receptors are low and the potential magnitude of change could be small to medium adverse, which would be not significant/ have minor significance.

### Assessment Scenario 3c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

10.243 4 cumulative schemes (schemes 1,7,8&9 in the above table) are located within the Northern Gateway Regeneration Strategy area, and as such the potential townscape cumulative effects are included within the assessment for scenario 1C.

10.244 Due to the scale of the remaining proposed schemes and their proximity to the SRF study area, there is potential for short/medium-term temporary cumulative adverse effects at the local level (wider SRF study area) on townscape receptors due to the cumulative effects during demolition and construction, assuming 'worst-case scenario' that the demolition and construction phases will occur concurrently. The overall sensitivity of the Townscape receptors are low to medium/low, and the potential magnitude of change could be small to large adverse, which would have minor to moderate significance.

10.245 There is potential for further cumulative visual effects during the demolition and construction phase of the development from viewpoints 1, 5 and 6. Refer to **Figure 10.1** for the location of key views. There is potential for views of the Proposed Development, applications 3&4 and The Gasworks (128248/FO/2020). There is not predicted to be cumulative visual effects with schemes 2-6 due to the direction of the views and intervening built form. There is potential to increase the adverse effects on visual receptors due to the cumulative effects during demolition and construction, assuming 'worst-case scenario' that the demolition and construction phases will occur concurrently. The overall sensitivity of the visual receptors are low and the potential magnitude of change could be small to medium adverse, which would be not significant/ have minor significance.

### The Completed and Operational Development

10.246 Give a summary of the cumulative effects associated with each cumulative site during the operational phase.

### Assessment Scenario 3a – Proposed Development Only

10.247 The 9 cumulative schemes identified as located within the 500m study area for this assessment (schemes 3-8 and 14-16 in the above table) are located to the south of Dantzic Street, and are therefore located outside of the Red Bank neighbourhood as defined within the Northern Gateway Regeneration Strategy. There are therefore not predicted to be any long-term cumulative townscape effects at the local level on the Red Bank neighbourhood during the operational phase. Refer to **Figure 10.14** of **Volume 2a: Main Text Figures** for the location of the 9 assessed schemes.

10.248 As described above, the railway line forms a physical barrier and separation between the Site and the identified cumulative schemes to the south. There are therefore not predicted to be any cumulative effects during the operational phase with schemes located to the south of the railway line. Refer **to Figure 10.14** of **Volume 2a: Main Text Figures** for the location of cumulative sites located to the south of the railway.

10.249 The Victoria Riverside Scheme (126944/FO/2020) and Land to the South of Dantzic Street (114860/FO/2016) are located within the Northern Gateway to the immediate south of the Site, and to the north of the railway line. Due to the scale of the two proposed schemes and their proximity to the Site, there is potential to increase the beneficial effects on townscape receptors due to the cumulative effects during operational phase due to new contemporary built form, new land uses, defined urban grain and public realm. The overall sensitivity of the Townscape receptors are low to medium/low, and the potential magnitude of change could be small to medium beneficial, which would have minor to moderate significance.

10.250 There is potential for cumulative visual effects during the operational phase of the development from viewpoints 1, 5 and 6. Refer to **Figure 10.1** for the location of key views. There is potential for views of the Proposed Development in conjunction with the Victoria Riverside scheme (126944/FO/2020), Land to the south of Dantzic Street (114860/FO/2016) and The Gasworks (128248/FO/2020). There is potential to increase the beneficial effects on visual receptors due to the cumulative effects during the operational phase. The view of the Proposed Development within the Site in conjunction with the 3 identified schemes will signal the wider regeneration of the Northern Gateway. The overall sensitivity of the visual receptors are low and the potential magnitude of change could be medium to large beneficial, which would have minor significance.

### Assessment Scenario 3b – Proposed Development plus impacts associated with Applications 1, 3 and 4

10.251 The Victoria Riverside Scheme (126944/FO/2020) and Land to the South of Dantzic Street (114860/FO/2016) are included within the application 4 Red Bank boundary, and as such the potential townscape cumulative effects are included within the assessment for this scenario 2b. The overall sensitivity of the Townscape receptors are low to

medium/low, and the potential magnitude of change could be small to medium beneficial, which would have minor to moderate significance.

10.252 There is potential for further cumulative visual effects during the demolition and construction phase of the development from viewpoints 1, 5 and 6. Refer to **Figure 10.1** for the location of key views. There is potential for views of the Proposed Development, applications 3&4 and The Gasworks (128248/FO/2020). There is potential for increased beneficial effects on visual receptors due to the cumulative effects during operational phase – due to the introduction of contemporary new buildings/ city skyline and new public realm. The overall sensitivity of the visual receptors are low and the potential magnitude of change could be medium to large beneficial, which would have minor to moderate significance.

### Assessment Scenario 3c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

10.253 4 cumulative schemes (schemes 1,7,8&9 in the above table) are located within the Northern Gateway Regeneration Strategy area, and as such the potential townscape cumulative effects are included within the assessment for scenario 2C.

10.254 Due to the scale of the remaining proposed schemes and their proximity to the SRF study area, there is potential for long-term beneficial cumulative effects at the local level (wider SRF study area) on townscape receptors due to the cumulative effects during the operational phase. This would be due to new contemporary built form, new land uses, defined urban grain and new areas of public realm. The overall sensitivity of the Townscape receptors are low to medium/low, and the potential magnitude of change could be ***small to large adverse***, which would have ***minor to moderate significance.***

10.255 There is potential for further cumulative visual effects during the demolition and construction phase of the development from viewpoints 1, 5 and 6. Refer to **Figure 10.1** for the location of key views. There is potential for views of the Proposed Development, applications 3&4 and The Gasworks (128248/FO/2020). There is not predicted to be cumulative visual effects with schemes 2-6 due to the direction of the views and intervening built form. There is potential for increased beneficial effects on visual receptors due to the cumulative effects during operational phase – due to the introduction of contemporary new buildings/ city skyline and new public realm. The overall sensitivity of the visual receptors are low and the potential magnitude of change could be ***small to large beneficial,*** which would be have ***minor to moderate significance.***

# 11. Transport and Access

## Introduction

11.1 This chapter has been prepared by Arup. It presents an assessment of the potential impacts of the Proposed Development (HIF Infrastructure Works, referred to hereafter as Application 2) on the local transport networks in the area surrounding the site.

11.2 As noted in Chapter 2: Approach, this ES assesses the Development Project, which is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in four planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – planning permission has been granted for the demolition of Creamline dairy, tree and shrub clearance and construction of a temporary haul road.
- HIF Infrastructure Works (referred to hereafter as 'Application 2') – the subject of this application. Creation of development platforms, demolition of sections of existing River Wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diversions and provision of green infrastructure including creation of green links and first phase of the new City River Park.
- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within flood zone 3.
- Land under control of the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. As noted in Chapter 2: Approach, the entire Red Bank Neighbourhood within the SRF, including third party land, will deliver up to 5,500 new dwellings.

11.3 Whilst the Applicant has the detail of the early applications, the later parts of the Development Project (and particularly Application 4) are still being designed and the details are not yet available. Therefore, the approach that has been taken in the ES is to break the Development Project into 3 elements, with each element being assessed in a level of detail commensurate with the detail that is available for the relevant part of the Development Project.

11.4 As such, a very full and detailed assessment is undertaken of Application 2, and then reasonable assumptions and judgements have informed and been made to assess Applications 1-4 together, and then Applications 1-4 and SRF.

11.5 This chapter describes:

- The assessment approach and method used to assess the likely significant effects;
- The baseline conditions currently existing at the Proposed Development Site and the surrounding area;
- The mitigation measures required to prevent, reduce or offset any significant adverse effects; and
- The likely residual effects after these mitigation measures have been adopted.

11.6 This chapter assesses the effects of the proposed development on transport and access. In particular, it considers the anticipated effects of the construction and demolition phase of the proposed development on existing traffic conditions in the local area.

11.7 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 from (insert relevant technical issues), the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It has been written by Arup/BAM.

# Planning Policy Context

## National Planning Policy

### National Planning Policy Framework

11.8 The National Planning Policy Framework (NPPF) was originally published by the Department for Communities and Local Government (DCLG) in March 2012, with the most recent revision being published on 20th July 2021.

11.9 Chapter 9 of the NPPF discusses how development should promote sustainable transport. Paragraph 109 states that 'development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe'.

11.10 In addition, Paragraph 111 states that 'all developments that will generate significant amounts of movements should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed'.

11.11 A Transport Statement (**Appendix 11.1**) has been produced for the Proposed Development in line with the above guidance to appropriately assess the potential transport impacts of the proposals and to promote sustainable transport as appropriate for the nature of the Proposed Development (i.e. construction of infrastructure).

## Local Planning Policy

### Greater Manchester Transport Strategy 2040

11.12 Transport for Greater Manchester (TfGM) developed the Greater Manchester Transport Strategy 2040 on behalf of the Greater Manchester Combined Authority (GMCA) and Greater Manchester Local Enterprise Partnership (LEP).

11.13 Informed by key trends that will influence transport infrastructure requirements between now and 2040, the Strategy sets out long-term proposals to create a cleaner, greener more prosperous city region through better connections and simpler travel.

11.14 The overall vision as set out in the Strategy is for Greater Manchester to have '*World class connections that support long-term, sustainable economic growth and access to opportunity for all'.* The Development Project, located within the city centre and with excellent transport links by walking, cycling, bus, rail and Metrolink, supports the Strategy's vision for sustainable growth in accessible locations.

### Manchester City Council Core Strategy

11.15 MCC's Core Strategy is the key Development Plan Document in the Local Development Framework (LDF). It sets out the long-term strategic policies for Manchester's future development and forms the framework that planning applications will be assessed against.

11.16 Transport forms one of the six spatial objectives within the Core Strategy. The overriding objective for transport is to *'improve the physical connectivity of the City, through sustainable and accessible transport networks, to enhance its functioning and competitiveness and provide access to jobs, education, services, retail, leisure and recreation'.*

11.17 Within the Core Strategy there are several policies that set out how this objective will be achieved. Key relevant policies are discussed in greater detail below.

11.18 Policy SP 1 relates to spatial planning principles, stating: *'New development will maximise the potential of the City's transport infrastructure, in particular promoting walking, cycling and use of the public transport*'.

11.19 Policy T1 relates to sustainable transport, and states that the Council will support proposals that:

- *"Improve pedestrian routes and the pedestrian environment.*
- *Improve and develop further Manchester's cycle network (for example the Manchester Cycleway and the Trans Pennine Trail).*
- *Facilitate modes of transport that reduce carbon emissions e.g. by incorporating charging points for electric vehicles, subject to their appropriate design and location.*

- *Would reduce the negative impacts of road traffic, for example, congestion, air pollution and road accident casualties.*
- *Take account of the needs of road users according to a broad hierarchy consisting of, in order of priority:*
  - *Pedestrians and disabled people*
  - *Cyclists, public transport*
  - *Commercial access*
  - *General off-peak traffic*
  - *General peak time traffic"*

11.20 The above policies emphasise the need for sustainable development in accessible locations. The Proposed Development is located within the city centre, with strong active travel and public transport links which will benefit future users of the Site, once operational. During construction, staff will be encouraged to take advantage of the accessibility of the site by sustainable modes, which help to minimise negative impacts of construction traffic associated with the development.

11.21 Policy T2 relates to accessible areas of opportunity and need. It states that new development must include proportionate Traffic Impact Assessments for any proposals where there may be access or transport issues. This document, along with the accompanying Transport Statement (**Appendix 11.1**), demonstrates that the potential transport impacts of the proposed development have been fully considered and appropriately mitigated.

### Other Relevant Policy, Standards and Guidance

11.22 The assessment has been further informed by the *Institute of Environmental Management and Assessment's (IEMA) "Guidelines on the Environmental Assessment of Road Traffic (Guidance Note 1)"*.

11.23 Considering this guidance, the focus of this chapter is on the following:

- Impacts of the construction and operational phases of the Proposed Development;
- The transport specific environmental topics as identified in the IEMA guidance, namely: driver and pedestrian delay, severance, pedestrian amenity, fear and intimidation and accidents and safety (no hazardous loads are anticipated during construction; hence this potential topic has been scoped out);
- Identifying and incorporating measures during evolution of the design of the Proposed Development to avoid, reduce or remedy potential adverse effects in relation to transport.

11.24 Within the context of Transport and Access, there are a range of best practice techniques which are frequently used to mitigate the likely effects of projects upon the operation of the surrounding transport networks. These often include a Project Execution Plan (PEP). This document is generally used as a means of identifying potential

management techniques to help mitigate the temporary effects associated with construction traffic. A detailed PEP will be prepared by BAM Nuttall for approval by MCC before commencement of the Proposed Development.

## Assessment Methodology and Significance Criteria

11.25 The EIA Regulations, supported by UK case law, provide the legal framework for the process of EIA and contents of Environmental Statements. In this case, proposals are being made by way of a detailed application and, as such, full detail as to the quantum and extent of development is presented and assessed in this ES.

11.26 As set out in Chapter 2, in order for this application to proceed independently it is supported by an EIA. The EIA approach is made as robust as possible by the presentation of a series of assessment scenarios. These assessment scenarios are presented by way of an In-Combination Assessment (ICA) in the body of this assessment chapter. This ensures that:

- The impacts of the Proposed Development (i.e. the HIF Infrastructure Works) are identified in isolation.
- The impacts of the Proposed Development (i.e. the HIF Infrastructure Works) within the wider development project (inclusive of all related applications 1-4) are identified.
- The impacts of the wider SRF, inclusive of the Proposed Development (i.e. the HIF Infrastructure Works) and wider development project (i.e. Applications 1, 3 and 4), are identified.

11.27 The assessment scenarios are presented in Table 11.1.

*Table 11.1: In-Combination Assessment Scenarios*

| Assessment | Stage | Scenario |
|---|---|---|
| In-Combination Assessment (ICA) | Stage 1 – Demolition and Construction Phase | Scenario 1a – Assessment of the impacts relating to the proposed development only |
| | | Scenario 1b – Assessment of the impacts relating to the proposed development, plus impacts associated with Application 1,3 and 4. |
| | | Scenario 1c – Assessment of the impacts relating to the proposed development, plus impacts associated with Application 1,3 and 4, and the wider SRF. |
| | Stage 2 – Completed Development and Operational Phase | Scenario 2a – Assessment of the impacts relating to the proposed development only |
| | | Scenario 2b – Assessment of the impacts relating to the proposed development, plus impacts associated with Application 1,3 and 4. |
| | | Scenario 2c – Assessment of the impacts relating to the |

| Assessment | Stage | Scenario |
|---|---|---|
| | | proposed development, plus impacts associated with Application 1,3 and 4, and the wider SRF. |

11.28 During demolition and construction, the Proposed Development has the potential to adversely affect road users due to increases in construction traffic. These potential effects have been assessed in Scenarios 1a, 1b and 1c.

11.29 During operation, the Proposed Development will not generate traffic movements and will not adversely affect traffic conditions. Therefore, in respect of the In-Combination Assessment (ICA), no assessment has been made of Scenario 2a as there would be no change from the baseline position and therefore no significant effects. Assessment Scenarios 2b and 2c have been assessed in order to understand the potential impacts of operational phases.

11.30 The likely significant air quality, and noise and vibration effects due to traffic are considered separately in Chapters 12 and 13 of this EIA, respectively.

11.31 A separate Transport Statement (see **Appendix 11.1**) has been prepared to accompany the planning application for the Proposed Development. The ES has been informed by the predicted transport impacts presented within the Transport Statement. The Transport Statement assesses the predicted impacts arising from the Proposed Development on all users of the local transport network. The Transport Statement has been undertaken in accordance with a scope agreed with MCC and TfGM.

11.32 The extent of the study area has been defined using a combination of the IEMA guidelines and the extent of the network being considered as part of the Transport Statement, which helps maintain consistency between the two assessment documents. This has been agreed with MCC through scoping discussions.

11.33 The study area is bounded by:

- Rochdale Road (A664) – a major radial route to and from the city centre from its junction with the Inner Ring Road to its junction with Queens Road;
- Cheetham Hill Road (A665) – a major radial route to and from the city centre;
- Queens Road (A6010) – part of the intermediate ring road connecting Cheetham Hill Road (A665) and Rochdale Road (A664); and
- The Inner Ring Road (A664) within Manchester City Centre.

11.34 The study area is presented in **Figure 11.1**.

## Characterisation of Effect

11.35 This section provides an overview of the assessment methodology employed to determine the likely significant effects of the Proposed Development on the surrounding transport networks and corresponding environmental effects during the demolition and construction phase.

11.36 The assessment methodology comprises three key stages, namely;

- Establishment of baseline conditions;
- Assessment of construction effects; and
- Assessment of residual and cumulative effects.

11.37 The methodology used for this assessment is based upon a comparison of predicted traffic flows along affected roads within the study area with and without the Proposed Development in accordance with the IEMA Guidelines for the Environmental Assessment of Road Traffic. The assessment is structured around a series of potential environmental effects relating to transport and access, namely:

- Driver delay;
- Pedestrian delay;
- Severance;
- Pedestrian amenity;
- Fear and intimidation; and
- Accidents and safety.

11.38 Hazardous Loads have not been included because the transport of hazardous loads is not expected to be associated with the Proposed Development.

11.39 When assessing the likely environmental effects, it is important to determine the magnitude of any individual effects and the combined effect of the Proposed Development on a range of receptors. In accordance with EIA Regulations, the likely environmental effects of the Proposed Development have been identified and their significance determined. Evaluation of their significance has been based upon specific criteria for each type of receptor and impact. This process has considered the following:

- Impact likelihood, extent and magnitude;
- Impact nature (whether beneficial or adverse, direct or indirect, primary or secondary, permanent, temporary and/or reversible;
- Importance and sensitivity of the environment receptor;
- The number of receptors impacted;

- Impact duration (whether short, medium or long term); and
- Whether it is a standalone impact or is cumulative.

### Magnitude of Impact

11.40 In accordance with Section 3.1 of the EIA guidelines, the impact of traffic is dependent upon a wide range of factors, including:

- The volume of traffic;
- Traffic speeds and operational characteristics; and
- Traffic composition (e.g. the percentage of HGVs).

11.41 In determining the impact of, and crucially, the significance of the above factors, the IEMA guidelines suggest in paragraph 3.15 that two basic rules are used to define the extent of the assessment. These rules are defined as follows:

- Rule 1: Highway links where traffic flows will increase by more than 30% (or the number of Heavy Goods Vehicles (HGVs) will increase by more than 30%);
- Rule 2: Any specifically sensitive areas where the traffic flows would increase by 10% or more. Sensitive areas include accident black-spots, conservation areas, hospitals and links with high pedestrian flows.

11.42 A summary of the impact thresholds is provided in **Table 11.2**. For the purposes of this assessment, it is necessary to be able to identify the magnitude of all impact types and able to justify the criteria used. In the absence of a set of consistent impact magnitude criteria for traffic, thresholds have been based on Paragraph 4.31 of the IEMA guidelines, which notes the following:

11.43 “Changes to traffic flows of 30%, 60% and 90% are regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ changes in severance, respectively”.

11.44 Whilst the IEMA guidelines suggest that these percentages should be applied within the context of assessing levels of severance, it is considered that they are also suitable as a basis of developing an appropriate set of quantifiable thresholds which can be used as a means of measuring the magnitude of other effects, particularly as levels of severance and other effects such as traffic delay or accident rates often increase as traffic flows increase.

11.45 For driver delay, lower thresholds have been applied to reflect the sensitivity of junction operation and capacity to more modest changes in traffic flows. With regards to driver delay, any increase in traffic flow below 10% is generally considered to be insignificant given that daily variations in background traffic flows on road links can typically fluctuate by this amount. Changes in traffic flow levels below this level have therefore been assumed to result in no discernible environmental impact upon driver delay. For driver delay, thresholds of 10%, 20% and 30% have been used to determine the magnitude of impact.

11.46 Driver and pedestrian delay are primarily related to the volume of total traffic rather than the number of HGVs. Changes in total traffic flow have therefore been used to quantify the magnitude of these effects (rather than the number of HGVs).

11.47 Table 11.2 sets out the specific magnitude criteria for assessing the impacts of traffic.

*Table 11.2: Magnitude of Impact*

| Subject | Magnitude of Impact | | | |
|---|---|---|---|---|
| **Driver Delay** - often caused by the impact of the works on the local road network, along with increases in overall traffic flow along existing routes. | Delay may have a major effect on journey times. The magnitude of delay is such that drivers may choose alternative route or time for their journey or may decide not to make journey at all.<br><br>Change in total traffic flows of >30%. | Delay may have a noticeable effect on journey times but is unlikely to cause drivers to choose alternative route or time for their journey.<br><br>Change in total traffic flows of 20-30%. | A measurable and perceptible change in driver delay. Unlikely to affect overall journey times.<br><br>Change in total traffic flows of 10-20%. | Little or no change in delays to drivers.<br><br>Change in total traffic flows of <10%. |
| **Pedestrian Delay** – results from increases in traffic flow, speed or composition along existing routes. | Delay may have a major effect on journey times. The magnitude of delay is such that pedestrians may choose alternative route or time for their journey or may decide not to make journey at all.<br><br>Change in total traffic flows of >90%. | Delay may have a noticeable effect on journey times but is unlikely to cause pedestrians to choose alternative route or time for their journey.<br><br>Change in total traffic flows of 60-90%. | A measurable and perceptible change in pedestrian delay.<br><br>Change in total traffic flows of 30-60%. | Little or no change in delays to pedestrians.<br><br>Change in total traffic flows of <30%. |
| **Severance** - results from the creation of new barriers such as roads combined with increased traffic flow along existing routes. | People are likely to be deterred from making pedestrian journeys to an extent sufficient to induce a reorganisation of their activities. Those who do make the journey on foot will experience considerable hindrance.<br><br>Change in total traffic flows of >90%. | Some people, particularly elderly people and children may be dissuaded from making a journey on foot. For others, pedestrian journey will be longer or less attractive.<br><br>Change in total traffic flows of 60-90%. | All people wishing to make pedestrian movements will be able to do so, but there will probably be some hindrance to movement.<br><br>Change in total traffic flows of 30-60%. | Little or no hindrance to pedestrian movement.<br><br>Change in total traffic flows of <30%. |

| Subject | Magnitude of Impact | | | |
|---|---|---|---|---|
| **Pedestrian Amenity** – relates to the relative pleasantness of a journey and can be affected by increases in traffic. | The magnitude of change in the pleasantness of journeys made by foot or cycle is such that pedestrians and cyclists may choose alternative route or may decide not to make journey at all.<br><br>Change in total traffic flows of >90%. | Change in the pleasantness of journeys made by foot or cycle may have a noticeable effect but is unlikely to cause pedestrians or cyclists to choose alternative route for their journey.<br><br>Change in total traffic flows of 60-90%. | A measurable and perceptible change in the pleasantness of journeys made by foot or cycle.<br><br>Change in total traffic flows of 30-60%. | Little or no change in the pleasantness of journeys made by foot or cycle.<br><br>Change in total traffic flows of <30%. |
| **Fear and Intimidation** - a pedestrian's level of fear and intimidation is linked to the volume of traffic on the local road network. | Change in the level of intimidation experienced by pedestrians due to road traffic, particularly HGVs may be such that pedestrians choose alternative route or may decide not to make journey at all.<br><br>Change in total traffic flows of >90%. | Change in the level of intimidation experienced by pedestrians due to road traffic, particularly HGVs may have a noticeable effect but is unlikely to cause pedestrians to choose alternative route for their journey.<br><br>Change in total traffic flows of 60-90%. | A measurable and perceptible change in level of intimidation experienced by pedestrians due to road traffic, particularly HGVs.<br><br>Change in total traffic flows of 30-60%. | Little or no change in the level of intimidation experienced by pedestrians due to road traffic, particularly HGVs.<br><br>Change in total traffic flows of <30%. |
| **Accidents and Safety** | Change in total traffic flows of >90%. | Change in total traffic flows of 60-90%. | Change in total traffic flows of 30-60%. | Change in total traffic flows of <30%. |
| | A qualitative assessment based on historical accident trends over the last five years. | | | |

Sensitivity of Receptors

11.48 The significance of an effect on a receptor is defined in accordance with the sensitivity of the receptor and the magnitude of the impact. A set of criteria has been defined and used as a means of determining the sensitivity of receptors which are likely to be affected by any changes in the composition of traffic, in particular the volume and movement patterns of total traffic and HGVs.

11.49 The criteria that have been used to make judgements on the value / sensitivity of receptor(s) within the context of the development proposals are based upon the UK Government's 'Design Manual for Roads and Bridges (DMRB) 11.2.5 - Table 2.1' and summarised in Table 11.3.

*Table 11.3 Sensitivity of Receptor*

| Sensitivity | Definition |
|---|---|
| High | The receptor/resource has little ability to absorb change without fundamentally altering its present character or is of international or national importance.<br><br>Examples of receptors of greatest sensitivity to traffic flow: schools, colleges, playgrounds, accident black spots, retirement homes, urban/residential roads without footways that are used by pedestrians. (Paragraph 2.5, IEA Guidelines, 1993). |
| Moderate | The receptor/resource has moderate capacity to absorb change without significantly altering its present character or is of high importance.<br><br>Examples of traffic-flow sensitive receptors include congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, un-segregated cycleways, community centres, parks and recreation facilities. |
| Low | The receptor/resource is tolerant of change without detriment to its character or is of low or local importance. |
| Negligible | Receptors with some sensitivity to traffic flow: places of worship, public open spaces, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision. |

11.50 Based upon the above descriptions, a qualitative assessment of the sensitivity of each of the receptors assessed has been undertaken and is presented in Table 11.4.

*Table 11.4 Sensitivity of Receiver on Assessed Links*

| Index | Link | Sensitivity of Receiver | Reason |
|---|---|---|---|
| L1 | Red Bank (south of Honey Street) | Moderate | Wide footways but no controlled crossings, proximity to city centre |
| L2 | North Street/Red Bank (north of Honey Street) | High | Proximity to school |
| L3 | Honey Street | Moderate | Limited footways with restricted access in places |
| L4 | Knowsley Street (east of Cheetham Hill Road) | Moderate | Limited footways with restricted access and pavement parking in places |

| Index | Link | Sensitivity of Receiver | Reason |
|---|---|---|---|
| L5 | Cheetham H Road (north of Knowsley Street) | Low | Radial route with controlled crossings |
| L6 | Cheetham H Road (south of Knowsley Street) | Low | Radial route with controlled crossings |
| L7 | Roger Street | Moderate | Limited footways with restricted access and pavement parking in places - route to bridge crossing for pedestrians and cyclists |
| L8 | Lord Street | Moderate | Adjacent to residential development (Green Quarter) |
| L9 | Red Bank (north of Roger St) | Moderate | Wide footways but no controlled crossings, proximity to city centre |
| L10 | Red Bank (south of Roger St) | Moderate | Wide footways but no controlled crossings, proximity to city centre |
| L11 | Cheetham H Road (north of Lord St) | Low | Radial route with controlled crossings |
| L12 | Cheetham H Road (south of Lord St) | Moderate | Adjacent to residential development (Green Quarter) and wider city centre. Controlled pedestrian crossings provided |
| L13 | Lord Street (west of CHR) | Moderate | Limited footways with restricted access and pavement parking in places |
| L14 | Lord Street (east of CHR) | Moderate | Adjacent to residential development (Green Quarter) |
| L15 | Cheetham Hill Road (north of Trinity Way) | Moderate | Adjacent to residential development (Green Quarter) and wider city centre. Controlled pedestrian crossings provided |
| L16 | Cheetham Hill Road (south of Trinity Way) | High | Proximity to city centre, station and arena generating high pedestrian movements. Accidents. |
| L17 | Trinity Way | High | Proximity to city centre, station and arena generating high pedestrian movements. Accidents. |
| L18 | Angel Street | High | Proximity to city centre, station and arena generating high pedestrian movements. Accidents. |
| L19 | Aspin Ln | High | Proximity to city centre, station and arena generating high pedestrian movements. Accidents. |
| L20 | Rochdale Road | High | Proximity to city centre, station and arena generating high |

| Index | Link | Sensitivity of Receiver | Reason |
|---|---|---|---|
| | | | pedestrian movements. Accidents. |
| L21 | Rochdale Road (north of Angel Street) | High | Proximity to city centre, station and arena generating high pedestrian movements. Accidents. |
| L22 | Rochdale Road (north of Gould Street) | Moderate | Adjacent to residential development and wider city centre. Controlled pedestrian crossings provided |
| L23 | Queens Road (west of Cheetham Hill Road) | Moderate | Major road with congestion at peak times, controlled pedestrian crossings provided |
| L24 | Cheetham Hill Road (south of Queens Road) | Moderate | Major road with congestion at peak times, controlled pedestrian crossings provided |
| L25 | Queens Road (east of Cheetham Hill Road) | Moderate | Major road with congestion at peak times, controlled pedestrian crossings provided |
| L26 | Queens Road (west of Rochdale Road) | Moderate | Major road with congestion at peak times, controlled pedestrian crossings provided |
| L27 | Rochdale Road (south of Queens Road) | Moderate | Major road with congestion at peak times, controlled pedestrian crossings provided |
| L28 | Queens Road (east of Rochdale Road) | Moderate | Major road with congestion at peak times, controlled pedestrian crossings provided |
| L29 | Collyhurst Road (south of Queens Road) | Moderate | Proximity to residential area and park. Footways provided though limited width in places |
| L30 | Collyhurst Road (south of Smedley Road) | Moderate | Narrow footways in places, significant on-street parking |

### Duration of the Effect

11.51 The duration of the effect will be taken into consideration. The duration of effect has been assessed based on the thresholds presented in Table 11.5.

*Table 11.5 Duration of Effect*

| Timescale | Definition |
|---|---|
| Short Term | 0 to 5 years including the construction period and on completion |
| Medium Term | 5 to 15 years including mitigation establishment |
| Long Term | 15+ years including operation of the development |

11.52 All potential effects during construction will be short-term. All operational effects would be long-term.

## Significance of Effect

### Significance Criteria

11.53 To assess the likely significant effects of the Proposed Development in transportation terms, the Significance Scale below has been used. The Significance Scale has been derived from the interaction of receptor sensitivity and magnitude of impact and is set out in Table 11.6.

*Table 11.6 Significance of Effect*

| Magnitude of Impact | Sensitivity of Receptor | | | |
|---|---|---|---|---|
| | High | Moderate | Low | Negligible |
| High | **Major** | **Major** | **Moderate** | Minor |
| Moderate | **Major** | **Moderate** | Minor | Negligible |
| Low | **Moderate** | Minor | Negligible | Negligible |
| Negligible | Minor | Negligible | Negligible | Negligible |

11.54 The following terms have been used to assess the significance of effects, and are based on the Design Manual for Roads and Bridges (DMRB) definitions:

- Major beneficial or adverse: where the Proposed Development is likely to cause an improvement or deterioration of the existing environment that represents a very important consideration and is likely to be material in the decision-making process;
- Moderate beneficial or adverse: where the Proposed Development is likely to cause a noticeable improvement or deterioration to the existing environment which may be important but is unlikely to be a key decision-making factor;

- Minor beneficial or adverse: where the Proposed Development is likely to cause a perceptible improvement or deterioration to the existing environment which is unlikely to be critical in the decision-making process but may be important to enhancing the design of the project at a local level; and
- Negligible: no effect or no discernible improvement or deterioration to the existing environment.

11.55 'Major' and 'moderate' significance represents effects which are considered to be significant in terms of the EIA Regulations. Effects judged to be of 'minor' or 'negligible' significance are not considered to be significant and therefore do not form any further part of the assessment process.

### Consultation

11.56 Consultation has been undertaken with MCC as the Highway Authority and TfGM. In addition to the formal scoping report and subsequent opinion/comments provided by MCC, additional discussions were held between Arup and MCC officers on 05 January 2022 to confirm the approach and scope of assessment.

*Table 11.7: Consultation*

| Consultee | Date and Time | Comments | Actions |
|---|---|---|---|
| Manchester City Council/TfGM | November 2021 | Issue of ES scoping report | Comments received back from MCC/TfGM in form of ES scoping report |
| Manchester City Council | 05 January 2022 | Additional discussion between Arup and MCC officers to confirm the approach and scope of assessment | Proposed scope of Transport Statement agreed and presented by Arup (as below) |
| Manchester City Council/TfGM | 07 January 2022 | Issue of ES scoping opinion (including MCC and TfGM comments) | ES Chapter prepared in accordance with scope |
| Manchester City Council | 10 January 2022 | Issue of Transport Scope for Transport Statement | included in Transport Statement appended at **Appendix 11.1.** |

## Baseline Conditions

11.57 This section of this ES Chapter describes the baseline environment for the Study Area. The existing baseline is described (2021), followed by a description of the predicted baseline for the construction year of the Proposed Development (2022).

### Local Highway Network

11.58 The highway network surrounding the site comprises of mixture of A-classified and unclassified roads. The key routes in the vicinity of the site are described below.

11.59 **Rochdale Road (A664)** runs from the M60 in the north in a southward direction and connects with Shudehill and the A665 Inner Ring Road to the south. The section of Rochdale Road (A664) in the vicinity of the site is a single lane two-way carriageway. One the southern approach to the Rochdale Road (A664) / Queens Road (A6010) junction, Rochdale Road diverges into a dual carriageway with a cycle lane on the eastern side of the road. A northbound bus lane is in place along most of Rochdale Road in the vicinity of the site. Footways are provided on both sides of the road along with street lighting. This highway has a speed limit of 30mph adjacent to the site.

11.60 **Cheetham Hill Road (A665)** is one of the major radial routes to and from Manchester city centre. It is connected to the Site by North Road/Red Bank as well as by other unclassified roads. Cheetham Hill Road is a two-lane two-way single carriageway with single yellow lines on both sides of the road in the vicinity of the site. Footways and street lighting are also provided.

11.61 **Queens Road (A6010)** is located to the north of the site and forms part of the intermediate ring road. The road mostly comprises a single lane two-way carriageway, with footways and street lighting on both sides. Parking is restricted at all times on both sides of the road.

11.62 **Dantzic Street** is an unclassified road that connects to Collyhurst Road to the north-east with the inner ring road (A664) to the south-west. The road is a two-way single carriageway. Single yellow lines are in place on the south-eastern side of the road, while no parking restrictions are observed along the majority of the north-western side of the road. Footways and lighting along most of Dantzic Street.

11.63 **Collyhurst Road** is an unclassified road that runs from its junction with Dantzic Street to Queens Road (A6010). This is a two-way single carriageway, with no parking restrictions in place along the majority of Collyhurst the road. Narrow footways and street lighting are provided on both sides of the road.

11.64 **Red Bank** is an unclassified road that runs from Corporation Street to the entrance of Creamline Dairy which is to be demolished to provide a site access (approved through a separate extant planning consent). The road is a two-way single carriageway lined by a mix of residential, commercial and industrial land uses. Footways and lighting are in place on both sides of the road, with some traffic calming and pedestrian crossing features provided.

11.65 **North Street** is an unclassified road that connects Red Bank to Cheetham Hill Road (A665), which forms a major radial route to and from the city centre. The road is a two-way single carriageway with no parking restrictions. Footways and lighting are provided on both sides of the road.

11.66 **Knowsley Street** is an unclassified road that connects Red Bank to Cheetham Hill Road (A665). The road is a wide two-way single lane carriageway with no parking restrictions. Footways and lighting are in place on both sides of the road.

### Highway Safety

11.67 Personal injury accident data for 2016 to 2020 published by the Department for Transport (DfT), has been obtained from Crashmap. The study area comprises the local highway network in the vicinity of Victoria North.

11.68 **Figure 11.2** shows the overview of incidents occurring between 2016 and 2020 (as recorded on Crashmap).

11.69 A total of 39 collisions were recorded within the study period, including six collisions involving pedal cycles and eleven involving pedestrians. A breakdown of collisions by location and severity is shown in Table 11.8.

*Table 11.8 Recorded collisions by severity*

| Location | No. of recorded collisions | No. of recorded collisions involving pedal cycles | No. of recorded collisions involving pedestrians | Severity | | |
|---|---|---|---|---|---|---|
| | | | | Slight | Serious | Fatal |
| Red Bank/ Honey Street; | 0 | 0 | 0 | 0 | 0 | 0 |
| Cheetham Hill Road/ Knowsley Street | 4 | 1 | 1 | 4 | 0 | 0 |
| Red Bank/Roger Street/ Lord Street | 0 | 0 | 0 | 0 | 0 | 0 |
| Cheetham Hill Road/ Lord Street | 5 | 1 | 2 | 4 | 1 | 0 |
| Cheetham Hill Road/ Trinity Way | 9 | 1 | 2 | 8 | 1 | 0 |
| Cheetham Hill Road/ Aspin Lane/ Miller Street/ Corporation Street | 7 | 2 | 1 | 4 | 3 | 0 |
| Angel Street / Dantzic Street | 1 | 0 | 0 | 0 | 1 | 0 |
| Rochdale Road/ Swan Street | 6 | 0 | 2 | 6 | 0 | 0 |

| Location | No. of recorded collisions | No. of recorded collisions involving pedal cycles | No. of recorded collisions involving pedestrians | Severity | | |
|---|---|---|---|---|---|---|
| | | | | Slight | Serious | Fatal |
| Rochdale Road/ Angel Street | 4 | 1 | 2 | 2 | 2 | 0 |
| Gould Street/ Rochdale Road | 3 | 0 | 1 | 2 | 1 | 0 |
| Bromley Street/ Rochdale Road/ Livesey Street | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | 39 | 6 | 11 | 30 | 9 | 0 |

11.70 In summary, the analysis reveals that there are no major 'accident blackspots' which indicate underlying issues within the layout of the surrounding highway network, and no existing highway safety issues which would be likely to be exacerbated by an increase in traffic due to the construction of the Proposed Development.

### Observed Traffic Flow Data

11.71 Given the current situation with COVID-19, it is not considered that traffic surveys undertaken at this time will be representative of typical future traffic levels. Data collected in 2018 for the surrounding highway network has therefore been used in the analysis. Traffic surveys were undertaken by an independent specialist traffic survey company. The surveys at the below junctions were undertaken on 11th December 2018 (Tuesday) from 07:00-10:00 and from 16:00-19:00.

- 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; and
- Bromley Street/ Rochdale Road/ Livesey Street.

11.72 Traffic flows for the six surveyed hours (i.e. 07:00-10:00 and 16:00-19:00) were factored to 24-hour flows using data obtained from Transport for Greater Manchester. 2016 Automatic Traffic Counter (ATC) data for 'Site 1413: Rochdale Road A664, Ancoats' is approximately 400m from the study area and on a road that fulfils a similar function to the roads within the study area (i.e. a key radial route into/out of Manchester City Centre). It is therefore considered that the ATC has a daily profile that is representative of the study area.

11.73 Based upon consideration of the above ATC count, traffic flows in the period 07:00-10:00 and 16:00-19:00 were observed to account for approximately 41% of the total daily traffic surveyed. As such, daily traffic flows were 2.46 times greater than the total traffic during the surveyed periods. This factor has therefore been used to factor surveyed flows to daily traffic flows.

11.74 In addition to the traffic flows obtained in the survey mentioned above, 2018 flows from the Road Traffic Statistics website (https://roadtraffic.dft.gov.uk/) provided by the DfT at four locations along Queens Road, Cheetham Hill Road and Rochdale Road are also used for assessment.

11.75 The 2018 surveyed locations and the AADF count locations are presented in **Figure 11.3**.

11.76 TEMPRO is an industry-standard tool for forecasting traffic growth when assessing the traffic impact of a development on the local highway network. Growth factors have been obtained from TEMPRO v7.2 and applied to the data to reflect growth up to a baseline year of 2021. It should however be noted that due to a decline in traffic volumes on the highway network as a result of the COVID-19 pandemic, the baseline traffic presented within this report is considered to be higher than the current traffic levels on the network.

11.77 Table 11.9 shows the growth factors used to obtain the 2021 and 2022 baseline flows from the 2018 surveyed flows / AADF counts. The average weekday factor has been used.

*Table 11.9 Growth factor from TEMPRO v7.2*

| Base | Future | Growth factor – Average Weekday (Mon-Fri) |
|---|---|---|
| 2018 | 2021 | 1.0496 |
| 2018 | 2022 | 1.0617 |
| 2021 | 2022 | 1.01155 |

11.78 The daily flows in 2022 have been calculated using the existing junction turning count data obtained in the surveys, 2018 DfT data and the growth factor in Table 11.8.

11.79 The assessed links are shown in **Figure 11.4**.

11.80 Observed traffic flow of Links L1-L22, L29-L30 are derived from the survey outlined in Paragraph 1.72. 2018 observed traffic flows of L23-L28 have been derived from AADF traffic counts from the DfT.

11.81 The results of the analysis for each link are presented in Table 11.10.

*Table 11.10 Daily Traffic Flows*

| Index | Road Name | 2018 Survey | | 2021 Baseline | | 2022 Baseline | |
|---|---|---|---|---|---|---|---|
| | | Daily Traffic Flows | No. of HGV (% of HGV) | Daily Traffic Flows | No. of HGV (% of HGV) | Daily Traffic Flows | No. of HGV (% of HGV) |
| L1 | Red Bank (south of Honey Street) | 7,133 | 160 (2.2%) | 7,487 | 168 (2.2%) | 7,573 | 170 (2.2%) |
| L2 | North Street/Red Bank (north of Honey Street) | 7,249 | 175 (2.4%) | 7,608 | 184 (2.4%) | 7,696 | 186 (2.4%) |
| L3 | Honey Street | 347 | 34 (9.9%) | 365 | 36 (9.9%) | 369 | 37 (9.9%) |
| L4 | Knowsley Street (east of Cheetham Hill Road) | 872 | 30 (3.4%) | 915 | 31 (3.4%) | 926 | 31 (3.4%) |
| L5 | Cheetham H Road (north of Knowsley Street) | 24,101 | 414 (1.7%) | 25,296 | 434 (1.7%) | 25,589 | 439 (1.7%) |
| L6 | Cheetham H Road (south of Knowsley Street) | 24,121 | 426 (1.8%) | 25,317 | 447 (1.8%) | 25,610 | 453 (1.8%) |
| L7 | Roger Street | 1,988 | 12 (0.6%) | 2,087 | 13 (0.6%) | 2,111 | 13 (0.6%) |
| L8 | Lord Street | 5,755 | 131 (2.3%) | 6,041 | 137 (2.3%) | 6,111 | 139 (2.3%) |
| L9 | Red Bank (north of | 7,389 | 153 (2.1%) | 7,755 | 160 (2.1%) | 7,845 | 162 (2.1%) |

| Index | Road Name | 2018 Survey | | 2021 Baseline | | 2022 Baseline | |
|---|---|---|---|---|---|---|---|
| | | Daily Traffic Flows | No. of HGV (% of HGV) | Daily Traffic Flows | No. of HGV (% of HGV) | Daily Traffic Flows | No. of HGV (% of HGV) |
| | Roger St) | | | | | | |
| L10 | Red Bank (south of Roger St) | 1,988 | 12 (0.6%) | 2,087 | 13 (0.6%) | 2,111 | 13 (0.6%) |
| L11 | Cheetham H Road (north of Lord St) | 23,532 | 421 (1.8%) | 24,699 | 442 (1.8%) | 24,984 | 447 (1.8%) |
| L12 | Cheetham H Road (south of Lord St) | 26,072 | 493 (1.9%) | 27,365 | 517 (1.9%) | 27,681 | 523 (1.9%) |
| L13 | Lord Street (west of CHR) | 2,557 | 76 (3%) | 2,684 | 80 (3%) | 2,715 | 81 (3%) |
| L14 | Lord Street (east of CHR) | 6,049 | 138 (2.3%) | 6,349 | 145 (2.3%) | 6,422 | 146 (2.3%) |
| L15 | Cheetham Hill Road (north of Trinity Way) | 26,112 | 503 (1.9%) | 27,407 | 528 (1.9%) | 27,723 | 534 (1.9%) |
| L16 | Cheetham Hill Road (south of Trinity Way) | 40,838 | 1217 (3%) | 42,863 | 1277 (3%) | 43,358 | 1292 (3%) |
| L17 | Trinity Way | 38,758 | 1266 (3.3%) | 40,681 | 1329 (3.3%) | 41,151 | 1345 (3.3%) |
| L18 | Angel Street | 18,939 | 527 (2.8%) | 19,879 | 553 (2.8%) | 20,108 | 560 (2.8%) |
| L19 | Aspin Ln | 17,592 | 505 (2.9%) | 18,464 | 530 (2.9%) | 18,677 | 536 (2.9%) |
| L20 | Rochdale Road | 14,571 | 372 (2.6%) | 15,294 | 390 (2.6%) | 15,470 | 395 (2.6%) |
| L21 | Rochdale Road (north of Angel Street) | 14,670 | 397 (2.7%) | 15,397 | 416 (2.7%) | 15,575 | 421 (2.7%) |
| L22 | Rochdale Road (north of Gould Street) | 8,840 | 234 (2.6%) | 9,279 | 246 (2.6%) | 9,386 | 249 (2.6%) |

| Index | Road Name | 2018 Survey | | 2021 Baseline | | 2022 Baseline | |
|---|---|---|---|---|---|---|---|
| | | Daily Traffic Flows | No. of HGV (% of HGV) | Daily Traffic Flows | No. of HGV (% of HGV) | Daily Traffic Flows | No. of HGV (% of HGV) |
| L23 | Queens Road (west of Cheetham Hill Road) | 14,428 | 274 (1.9%) | 15,144 | 288 (1.9%) | 15,319 | 291 (1.9%) |
| L24 | Cheetham Hill Road (south of Queens Road) | 18,017 | 233 (1.3%) | 18,911 | 245 (1.3%) | 19,129 | 247 (1.3%) |
| L25 | Queens Road (east of Cheetham Hill Road) | 19,078 | 404 (2.1%) | 20,024 | 424 (2.1%) | 20,256 | 429 (2.1%) |
| L26 | Queens Road (west of Rochdale Road) | 19,078 | 404 (2.1%) | 20,024 | 424 (2.1%) | 20,256 | 429 (2.1%) |
| L27 | Rochdale Road (south of Queens Road) | 13,946 | 186 (1.3%) | 14,638 | 195 (1.3%) | 14,807 | 197 (1.3%) |
| L28 | Queens Road (east of Rochdale Road) | 17,086 | 415 (2.4%) | 17,933 | 436 (2.4%) | 18,141 | 441 (2.4%) |
| L29 | Collyhurst Road (south of Queens Road) | 5,650 | 89 (1.6%) | 5,930 | 93 (1.6%) | 5,998 | 94 (1.6%) |
| L30 | Collyhurst Road (south of Smedley Road) | 5,650 | 89 (1.6%) | 5,930 | 93 (1.6%) | 5,998 | 94 (1.6%) |

# Embedded Mitigation

11.82 This section describes the measures which have been 'embedded' into the development.

### Demolition and Construction

11.83 The following mitigation has been embedded into the demolition and construction phase:

- Low parking provision for construction workers (c. 20 spaces) and promotion of sustainable and active travel modes;
- PEP to manage and mitigate construction traffic impacts arising.

### Completed Development and Operational Phase

11.84 Although details of the later applications are not yet defined, it is anticipated that the following measures will be proposed and would represent mitigation embedded into the completed development and operational phase:

- Limited on-site car parking provision;
- High quality cycle parking facilities;
- City centre location highly accessible by public transport and active travel modes;
- Ancillary retail units proposed, providing services that will reduce number of trips associated with residents.

## Assessment of Likely Significant Effects

11.85 The following considerations are particularly relevant to the assessment of the likely effects resulting from the demolition and construction phase of the Proposed Development on the surrounding transport network:

- Pedestrian and cyclist amenity and safety during construction;
- The volume of construction vehicles that will result in a temporary increase in traffic during the demolition and construction phase;
- Construction times and hours of operation with respect to construction vehicle movements; and
- Route options for the movement of construction vehicles.

### Demolition and Construction

11.86 This section provides an assessment of the significance of the likely effects of the demolition and construction phase, prior to the incorporation of any mitigation measures. In accordance with IEMA guidance, determination of the significance of effect has been undertaken in consideration of the anticipated highest level of construction traffic impact that might reasonably be expected. Where multiple receptors are affected by any one potential effect, then the receptor with the highest level of effect has been used in the calculation of the significance of effect. This allows for an assessment of the "worst case scenario".

11.87 The assessment scenarios are then presented by way of an In-Combination Assessment (ICA) with different scenarios as detailed in Table 11.1.

11.88 The demolition and construction phase involves import and export of materials, deliveries and general construction vehicle movements. The indicative construction programme is approximately 18-20 months with and anticipated commencement in September 2022 and completion in March 2024. All estimates of vehicle movements have been supplied by BAM Nuttall and are considered to represent a realistic worst-case scenario based upon their experience of similar projects and the specific requirements of this Project.

11.89 As agreed with MCC, the Site will operate 07:30-18:00 on Monday-Friday, and 08:30-14:00 on Saturdays. No works are permitted on Sundays or Bank Holidays.

### Forecast Peak HGV Movements

11.90 The peak forecast number of vehicle movements during the construction programme is 1,786 vehicles/month (one-way). Assuming 22 working days per month, this equates to approximately 80 vehicle entries to the site per day. It is assumed that the same number of vehicles (i.e. 80) will exit the site per day. This equates to a total of 160 vehicle movements in/out the site per day. As a worst-case it has been assumed that all of these construction vehicles will be HGVs. It should be noted that this peak month has approximately 30% more vehicle movements than the average month during the demolition and construction phase.

11.91 Primary site access would take place from Red Bank. For the purposes of this assessment, it has been assumed that 80% of construction vehicles will access the site using Red Bank. Based on the location of the site, it is anticipated that site traffic would be instructed (through the PEP) to arrive from the north (via the A665 Cheetham Hill Road) and North Street into Red Bank. This traffic would turn left into the site from Red Bank. Egressing site traffic would turn right and then use the same routes as on ingress. This would minimise delay to general traffic and could be safely managed, potentially with the assistance of a banksman. Once construction traffic is on Cheetham Hill Road it may travel south (towards the M62/M6) or north (towards the M60). Either route would use A-classified roads and is considered suitable for use by construction traffic. For the purposes of this assessment traffic has been distributed in proportion with surveyed traffic proportions accessing Cheetham Hill Road. This equates to 30% to/from the north and 70% to/from the south.

11.92 A secondary construction vehicle access will be provided onto Collyhurst Road. Vehicles would be directed to and from the site via Collyhurst Road and Queens Road (A6010). It is assumed that all vehicles would then travel towards Rochdale Road (in order to access the M60).

11.93 Error! Reference source not found. shows the proposed ingress/egress routes for construction vehicles.

11.94 The PEP also includes measures to ensure that mud and other debris arising from the demolition and construction activities do not adversely affect any internal or public roads; a wheel washing facility would be provided and used in this regard. Vehicles would be inspected by banksmen prior to leaving the site and further vehicle washing would be undertaken where necessary. Road cleaning of the highway would be undertaken using a mechanical brush or road sweepers. This would mitigate any potential adverse impacts of the demolition and construction activities on the highway due to mud and debris.

### Construction Workers

11.95 It is anticipated that the number of site operatives and other staff present on-site at any one time will vary throughout the course of the construction programme. As the site is highly accessible by bus, rail and Metrolink, staff will be encouraged to access the site using public transport.

11.96 A limited provision of c.20 parking spaces will be provided within the site for staff, located within a site compound on the existing Roger Street car park (which will be closed to the general public).

11.97 Proposed construction working hours are 07:30-18:00 on Monday-Friday, and 08:30-14:00 on Saturdays. No works are permitted on Sundays or Bank Holidays. For the purpose of this assessment, staff have been assumed to arrive within a one-hour period before site operations start. On weekdays, the majority of staff will therefore arrive between 06:30-07:30, and so outside of the AM highway network peak period. It is expected that the majority of staff will depart the site after construction activities cease on any particular day. This is likely to be after 18:00 on weekdays, and so after the PM highway network peak period.

11.98 Therefore, it is assumed the traffic associated with staff travelling to/ from the construction site will have a negligible effect on the operation of the local highway network during peak hours.

### Net Change in Vehicles During Construction

11.99 There is forecast to be an increase in HGV movements to and from the site in the 3 scenarios assessed, namely Scenario 1a, 1b and 1c, when compared to the existing situation.

#### Assessment Scenario 1a – Proposed Development Only

### Driver Delay

11.100 The Project could increase driver delay due to increased volumes of construction traffic accessing the site. This could also result in delays to bus users on Cheetham Hill Road, Queens Road and the Inner Ring Road.

11.101 As noted earlier, increases in driver delay are likely to arise from increases in total traffic as opposed to increases in the number or proportion of HGVs. As such, the percentage increase in total traffic has been used as the basis upon which to identify the magnitude of impact. Table 11.11 shows the impact of driver delay on links affected by construction traffic (note that links with no increase in traffic are not shown).

*Table 11.11 Driver delay impact on affected road links*

| Index | Link | Percentage change in total traffic | Magnitude of impact | Sensitivity of Receptors | Effect Significance |
|---|---|---|---|---|---|
| L1 | Red Bank (south of Honey Street) | 1.7% | Negligible | Moderate | Negligible |
| L2 | North Street/Red Bank (north of Honey Street) | 1.7% | Negligible | High | Minor |
| L5 | Cheetham H Road (north of | 0.3% | Negligible | Low | Negligible |

| Index | Link | Percentage change in total traffic | Magnitude of impact | Sensitivity of Receptors | Effect Significance |
|---|---|---|---|---|---|
| | Knowsley Street) | | | | |
| L6 | Cheetham H Road (south of Knowsley Street) | 0.3% | Negligible | Low | Negligible |
| L11 | Cheetham H Road (north of Lord St) | 0.4% | Negligible | Low | Negligible |
| L12 | Cheetham H Road (south of Lord St) | 0.3% | Negligible | Moderate | Negligible |
| L15 | Cheetham Hill Road (north of Trinity Way) | 0.3% | Negligible | Moderate | Negligible |
| L17 | Trinity Way | 0.2% | Negligible | High | Minor |
| L24 | Cheetham Hill Road (south of Queens Road) | 0.2% | Negligible | Moderate | Negligible |
| L26 | Queens Road (west of Rochdale Road) | 0.2% | Negligible | Moderate | Negligible |
| L28 | Queens Road (east of Rochdale Road) | 0.2% | Negligible | Moderate | Negligible |
| L29 | Collyhurst Road (south of Queens Road) | 0.5% | Negligible | Moderate | Negligible |
| L30 | Collyhurst Road (south of Smedley Road) | 0.5% | Negligible | Moderate | Negligible |

11.102 As presented in Table 11.11, the forecast increase in total traffic on all links is less than 10%. On that basis, it is concluded that the increase in traffic using all of the assessed links as a result of the Proposed Development would result in a 'negligible' magnitude of impact in terms of driver delay.

11.103 Combining the 'high' sensitivity of drivers on the above links (as a worst case), along with the 'negligible' magnitude of impact it is considered that the effects on driver delay associated with the demolition and

construction phase of the project will be of '**negligible**' significance. This is therefore considered to be **not significant** in EIA terms.

### Pedestrian Delay

11.104 The Project could increase pedestrian delay during demolition and construction due to increased levels of traffic on routes used by construction vehicles. As with driver delay, the delay caused to pedestrians would be influenced by the overall change in traffic rather than changes in HGVs. As such, the percentage increase in total traffic has been used as the basis upon which to identify the magnitude of impact.

11.105 Table 11.12 below shows the impact of pedestrian delay on links affected by the construction traffic.

*Table 11.12 Pedestrian delay impact on affected road links*

| Index | Link | Percentage change in total traffic | Magnitude of impact | Sensitivity of Receptors | Effect Significance |
|---|---|---|---|---|---|
| L1 | Red Bank (south of Honey Street) | 1.7% | Negligible | Moderate | Negligible |
| L2 | North Street/Red Bank (north of Honey Street) | 1.7% | Negligible | High | Minor |
| L5 | Cheetham H Road (north of Knowsley Street) | 0.3% | Negligible | Low | Negligible |
| L6 | Cheetham H Road (south of Knowsley Street) | 0.3% | Negligible | Low | Negligible |
| L11 | Cheetham H Road (north of Lord St) | 0.4% | Negligible | Low | Negligible |
| L12 | Cheetham H Road (south of Lord St) | 0.3% | Negligible | Moderate | Negligible |
| L15 | Cheetham Hill Road (north of Trinity Way) | 0.3% | Negligible | Moderate | Negligible |
| L17 | Trinity Way | 0.2% | Negligible | High | Minor |
| L24 | Cheetham Hill Road (south of Queens Road) | 0.2% | Negligible | Moderate | Negligible |

| Index | Link | Percentage change in total traffic | Magnitude of impact | Sensitivity of Receptors | Effect Significance |
|---|---|---|---|---|---|
| L26 | Queens Road (west of Rochdale Road) | 0.2% | Negligible | Moderate | Negligible |
| L28 | Queens Road (east of Rochdale Road) | 0.2% | Negligible | Moderate | Negligible |
| L29 | Collyhurst Road (south of Queens Road) | 0.5% | Negligible | Moderate | Negligible |
| L30 | Collyhurst Road (south of Smedley Road) | 0.5% | Negligible | Moderate | Negligible |

11.106 The forecast increase in total traffic on all links is less than 10%. On that basis, it is concluded that the increase in traffic using all of the assessed links as a result of the Proposed Development would result in a 'negligible' magnitude of impact in terms of pedestrian delay.

11.107 Combining the 'high' sensitivity of pedestrians on the above links (as a worst case), along with the 'negligible' magnitude of impact it is considered that the effects on pedestrian delay associated with the demolition and construction phase of the project will be of **'negligible'** significance. This is therefore considered to be **not significant** in EIA terms.

### Severance

11.108 As noted earlier, forecast increases in total traffic on all links are less than 10%. As such, the impact on severance due to increases in total traffic would be negligible. The assessment of severance effects is therefore based on the forecast increase in HGVs (which will be greater than the increase in total traffic in percentage terms).

11.109 Table 11.13 below shows the Severance Impact on links affected by construction traffic.

*Table 11.13 Severance effect on affected road links*

| Index | Link | Percentage change in HGV traffic | Magnitude of Impact | Sensitivity of Receptors | Effect significance |
|---|---|---|---|---|---|
| L1 | Red Bank (south of Honey Street) | 75.3% | Moderate | Moderate | Moderate |

| Index | Link | Percentage change in HGV traffic | Magnitude of Impact | Sensitivity of Receptors | Effect significance |
|---|---|---|---|---|---|
| L2 | North Street/Red Bank (north of Honey Street) | 68.9% | Moderate | High | Major |
| L5 | Cheetham H Road (north of Knowsley Street) | 20.0% | Negligible | Low | Negligible |
| L6 | Cheetham H Road (south of Knowsley Street) | 19.4% | Negligible | Low | Negligible |
| L11 | Cheetham H Road (north of Lord St) | 19.7% | Negligible | Low | Negligible |
| L12 | Cheetham H Road (south of Lord St) | 16.8% | Negligible | Moderate | Negligible |
| L15 | Cheetham Hill Road (north of Trinity Way) | 16.5% | Negligible | Moderate | Negligible |
| L17 | Trinity Way | 6.5% | Negligible | High | Minor |
| L24 | Cheetham Hill Road (south of Queens Road) | 16.2% | Negligible | Moderate | Negligible |
| L26 | Queens Road (west of Rochdale Road) | 7.5% | Negligible | Moderate | Negligible |
| L28 | Queens Road (east of Rochdale Road) | 7.3% | Negligible | Moderate | Negligible |
| L29 | Collyhurst Road (south of Queens Road) | 34.0% | Low | Moderate | Minor |
| L30 | Collyhurst Road (south of Smedley Road) | 34.0% | Low | Moderate | Minor |

11.110 The change in HGV numbers due to construction traffic on both Red Bank and North Street is higher than 60% and is therefore classified as 'moderate' magnitude.

11.111 The sensitivity of pedestrians on North Street to severance effects is considered to be 'high', primarily due to the potential presence of school children and constraints on the width of footways. Combining the 'high' sensitivity of the receptors on this link along with the 'moderate' magnitude of the effect, it is considered that severance effects of the traffic impacts associated with the demolition and construction phase on this highway link will be of **'major adverse'** significance in the short-term at a local level. The impact on severance is therefore considered to be **significant** in terms of the EIA Regulations.

11.112 The sensitivity of pedestrians on Red Bank to severance effects is considered to be 'moderate', primarily due to constraints on the width of footways. Combining the 'moderate' sensitivity of the receptors on this link along with the 'moderate' magnitude of the effect, it is considered that severance effects of the traffic impacts associated with the demolition and construction phase on this highway link will be of **'moderate adverse'** significance in the short-term at a local level. The impact on severance is therefore considered to be **significant** in terms of the EIA Regulations.

### Pedestrian Amenity

11.113 The main potential effects on pedestrian amenity would be caused by increases in HGV traffic associated with the Proposed Development. Table 11.14 below shows the Impact on Pedestrian Amenity on links affected by the construction traffic.

*Table 11.14 Effect on Pedestrian Amenity on affected road links*

| Index | Link | Percentage change in HGV traffic | Magnitude of Impact | Sensitivity of Receptors | Effect significance |
|---|---|---|---|---|---|
| L1 | Red Bank (south of Honey Street) | 75.3% | Moderate | Moderate | Moderate |
| L2 | North Street/Red Bank (north of Honey Street) | 68.9% | Moderate | High | Major |
| L5 | Cheetham H Road (north of Knowsley Street) | 20.0% | Negligible | Low | Negligible |
| L6 | Cheetham H Road (south of Knowsley Street) | 19.4% | Negligible | Low | Negligible |
| L11 | Cheetham H Road (north of Lord St) | 19.7% | Negligible | Low | Negligible |

| Index | Link | Percentage change in HGV traffic | Magnitude of Impact | Sensitivity of Receptors | Effect significance |
|---|---|---|---|---|---|
| L12 | Cheetham H Road (south of Lord St) | 16.8% | Negligible | Moderate | Negligible |
| L15 | Cheetham Hill Road (north of Trinity Way) | 16.5% | Negligible | Moderate | Negligible |
| L17 | Trinity Way | 6.5% | Negligible | High | Minor |
| L24 | Cheetham Hill Road (south of Queens Road) | 16.2% | Negligible | Moderate | Negligible |
| L26 | Queens Road (west of Rochdale Road) | 7.5% | Negligible | Moderate | Negligible |
| L28 | Queens Road (east of Rochdale Road) | 7.3% | Negligible | Moderate | Negligible |
| L29 | Collyhurst Road (south of Queens Road) | 34.0% | Low | Moderate | Minor |
| L30 | Collyhurst Road (south of Smedley Road) | 34.0% | Low | Moderate | Minor |

11.114 The change in HGV numbers due to construction traffic on both Red Bank and North Street is higher than 60% and is therefore classified as ‘moderate’ magnitude.

11.115 The sensitivity of pedestrians on North Street to changes in amenity is considered to be ‘high’, primarily due to the presence of school children and constraints on the width of footways. Combining the 'high' sensitivity of the receptors on this link along with the 'moderate' magnitude of the effect, it is considered that pedestrian amenity effects of the traffic impacts associated with the demolition and construction phase on this highway link will be of **'major adverse’** significance in the short-term at a local level. The impact on pedestrian amenity is therefore considered to be **significant** in terms of the EIA Regulations.

11.116 The sensitivity of pedestrians on Red Bank to changes in amenity is considered to be ‘moderate’, primarily due to constraints on the width of footways. Combining the 'moderate' sensitivity of the receptors on this link along with the 'moderate' magnitude of the effect, it is considered that pedestrian amenity effects of the traffic impacts

associated with the demolition and construction phase on this highway link will be of **'moderate adverse'** significance in the short-term at a local level. The impact on pedestrian amenity is therefore considered to be **significant** in terms of the EIA Regulations.

### Fear and Intimidation

11.117 The increase in the volume of HGVs as a result of the Proposed Development could potentially increase levels of fear and intimidation for pedestrians and cyclists. Table 11.15 shows the impact of fear and intimidation on the links affected by the construction traffic.

*Table 11.15 Effect of Fear and Intimidation on affected road links*

| Index | Link | Percentage change in HGV traffic | Magnitude of Impact | Sensitivity of Receptors | Effect significance |
|---|---|---|---|---|---|
| L1 | Red Bank (south of Honey Street) | 75.3% | Moderate | Moderate | Moderate |
| L2 | North Street/Red Bank (north of Honey Street) | 68.9% | Moderate | High | Major |
| L5 | Cheetham H Road (north of Knowsley Street) | 20.0% | Negligible | Low | Negligible |
| L6 | Cheetham H Road (south of Knowsley Street) | 19.4% | Negligible | Low | Negligible |
| L11 | Cheetham H Road (north of Lord St) | 19.7% | Negligible | Low | Negligible |
| L12 | Cheetham H Road (south of Lord St) | 16.8% | Negligible | Moderate | Negligible |
| L15 | Cheetham Hill Road (north of Trinity Way) | 16.5% | Negligible | Moderate | Negligible |
| L17 | Trinity Way | 6.5% | Negligible | High | Minor |
| L24 | Cheetham Hill Road (south of Queens Road) | 16.2% | Negligible | Moderate | Negligible |

| Index | Link | Percentage change in HGV traffic | Magnitude of Impact | Sensitivity of Receptors | Effect significance |
|---|---|---|---|---|---|
| L26 | Queens Road (west of Rochdale Road) | 7.5% | Negligible | Moderate | Negligible |
| L28 | Queens Road (east of Rochdale Road) | 7.3% | Negligible | Moderate | Negligible |
| L29 | Collyhurst Road (south of Queens Road) | 34.0% | Low | Moderate | Minor |
| L30 | Collyhurst Road (south of Smedley Road) | 34.0% | Low | Moderate | Minor |

11.118 The change in HGV numbers due to construction traffic on both Red Bank and North Street is higher than 60% and is therefore classified as 'moderate' magnitude.

11.119 The sensitivity of pedestrians and cyclists to fear and intimidation effects on North Street is considered to be 'high', primarily due to the presence of school children and constraints on the width of footways. Combining the 'high' sensitivity of the receptors on this link along with the 'moderate' magnitude of the effect, it is considered that fear and intimidation effects of the traffic impacts associated with the demolition and construction phase on this highway link will be of **'major adverse'** significance in the short-term at a local level. The impact on fear and intimidation is therefore considered to be **significant** in terms of the EIA Regulations.

11.120 The sensitivity of pedestrians and cyclists to fear and intimidation effects on Red Bank is considered to be 'moderate', primarily due to constraints on the width of footways. Combining the 'moderate' sensitivity of the receptors on this link along with the 'moderate' magnitude of the effect, it is considered that fear and intimidation effects of the traffic impacts associated with the demolition and construction phase on this highway link will be of **'moderate adverse'** significance in the short-term at a local level. The impact on fear and intimidation is therefore considered to be **significant** in terms of the EIA Regulations.

### Accidents and Safety

11.121 The construction of the Proposed Development would result in an increase in HGV movements and turning movements into the site at a temporary access. These movements will be managed through the provisions included within the PEP including site Banksmen and no existing accident blackspots have been identified in the study area. Footways are provided on all links, and all links to be used by construction traffic are already

currently used by HGVs. The magnitude of impact in relation to accidents and safety is therefore considered to be 'low'.

*Table 11.16 Effect of Accident and Safety on affected road links*

| Index | Link | Magnitude of Impact | Sensitivity of Receptors | Effect significance |
|---|---|---|---|---|
| L1 | Red Bank (south of Honey Street) | Low | Moderate | Minor |
| L2 | North Street/Red Bank (north of Honey Street) | Low | High | Moderate |
| L5 | Cheetham H Road (north of Knowsley Street) | Low | Low | Negligible |
| L6 | Cheetham H Road (south of Knowsley Street) | Low | Low | Negligible |
| L11 | Cheetham H Road (north of Lord St) | Low | Low | Negligible |
| L12 | Cheetham H Road (south of Lord St) | Low | Moderate | Minor |
| L15 | Cheetham Hill Road (north of Trinity Way) | Low | Moderate | Minor |
| L17 | Trinity Way | Low | High | Moderate |
| L24 | Cheetham Hill Road (south of Queens Road) | Low | Moderate | Minor |
| L26 | Queens Road (west of Rochdale Road) | Low | Moderate | Minor |
| L28 | Queens Road (east of Rochdale Road) | Low | Moderate | Minor |
| L29 | Collyhurst Road (south of Queens Road) | Low | Moderate | Minor |

| Index | Link | Magnitude of Impact | Sensitivity of Receptors | Effect significance |
|---|---|---|---|---|
| L30 | Collyhurst Road (south of Smedley Road) | Low | Moderate | Minor |

11.122 The sensitivity of pedestrians on North Street is considered to be 'high', primarily due to the presence of school children and constraints on the width of footways. Similarly Trinity Way is considered to be a 'high' sensitivity receptor given likely high pedestrian volumes due to the city centre location and proximity to the arena and station. Combining the 'high' sensitivity of the receptors on these links along with the 'low' magnitude of the effect, it is considered that accident and safety effects of the traffic impacts associated with the demolition and construction phase on the external highway network will be of **'moderate adverse'** significance in the short-term at a local level. The impact on accidents and safety is therefore considered to be **significant** in terms of the EIA Regulations.

### Summary

11.123 A summary of the likely effects of construction in Scenario 1a is presented in Table 11.17.

*Table 11.17 Summary of Construction Effects in Scenario 1a (worst case link)*

| | Description of Effect | Magnitude | Sensitivity | Significance |
|---|---|---|---|---|
| Driver Delay | Increase in traffic along the route for construction vehicles may cause delay for drivers. | Negligible | High | Minor |
| Pedestrian Delay | Increase in traffic along the route for construction vehicles delaying pedestrians crossing the road. | Negligible | High | Minor |
| Severance | Increase in construction vehicle movements (HGVs) discouraging pedestrians from crossing routes used by construction vehicles. | Moderate | High | **Major** |
| Pedestrian Amenity | Increase in construction vehicle movements (HGVs) impacting on the 'pleasantness' of pedestrian (and cycle) journeys. | Moderate | High | **Major** |
| Fear and Intimidation | An increase in the level of fear and intimidation perceived by pedestrian and cyclists as a result of increased levels of HGV movements. | Moderate | High | **Major** |

| | Description of Effect | Magnitude | Sensitivity | Significance |
|---|---|---|---|---|
| Accidents and Safety | Increased likelihood of road accidents occurring during the construction period due to the movement of construction vehicles. | Low | High | **Moderate** |

11.124 It should be noted that the above assessment is based upon peak anticipated construction traffic movements, which are approximately 30% higher than average construction vehicle movements across the construction programme. It should also be noted that all construction effects would be 'short-term' effects as they would have a duration of less than 5 years. The significance of effect is based upon the link with the greatest level of effect.

### Assessment Scenario 1b – Proposed Development plus impacts associated with Applications 1, 3 and 4

11.125 Scenario 1b includes the assessment of impacts relating to the Proposed Development as detailed in Scenario 1a, plus the impacts associated with Applications 1, 3 and 4.

11.126 Application 1 is the HIF Advance Enabling Works. Application 1 has an extant planning consent and a Transport Statement was produced to assess the impact of the works. Based on the programme for these works it is anticipated that construction traffic would be generated by Application 1 up until June 2022.

11.127 Based on the indicative programme for the Proposed Development, construction traffic movements would commence later in 2022 (with an estimated commencement of September 2022). The construction vehicle movements associated with Application 1 would therefore not coincide with the vehicle movements for the Proposed Development.

11.128 The proposed construction vehicle routes for Application 1 are the same as for the Proposed Development. The forecast HGV numbers associated with Application 1 are lower than those forecast to be generated by the Proposed Development (peak of 70 two-way movements for Application 1 versus 160 two-way movements for the Proposed Development). It is therefore concluded that Application 1 would not result in any additional or more significant effects above and beyond those already assessed above.

11.129 Application 3 is the HIF Flood Defence Works. It is anticipated that the works associated with Application 3 would coincide with the Proposed Development to some extent and would use similar routes to those assessed above. The volume of traffic that would be generated by this application is low in comparison to the Proposed Development. The assessment presented above is based on the peak month of construction traffic. This is approximately 30% higher than the average month across the programme of the Proposed Development. On that basis, it is considered that the low volume of construction vehicle movements associated with Application 3 would not result in more significant effects than those presented above.

11.130 The programme for Application 4 is not yet confirmed. However, it is anticipated that the majority of traffic movements associated with Application 4 (both during its construction and operation) would occur after the completion of the Proposed Development. One of the plots in Application 4 (NT02) is programmed to start on site prior to the completion of the Proposed Development. This plot would use different construction routes to the Proposed Development (as described and assessed in this chapter) as it fronts onto Dantzic Street. No cumulative impact with construction traffic associated with the Proposed Development is therefore anticipated. The construction vehicle movements associated with those elements of Application 4 that would be accessed via Red Bank would likely be of a similar magnitude to those assessed for this Project. Indeed, they may be lower as peak construction traffic movements are commonly associated with primary infrastructure works rather than the construction of buildings. It is noted that Application 4 will include developments that would generate traffic movements in its operational state (primarily residential development). Operational traffic movements are considered in Scenarios 2b and 2c.

11.131 In conclusion, when considering the in-combination assessment of Applications 1-4 together during the demolition and construction phase it is anticipated that the effects would be no more significant than those already assessed in Scenario 1a. This is due to the construction impacts of Applications 1-4 occurring during different timescales, the likely traffic routes for all applications being similar to those used in Scenario 1a and the overall construction traffic movements being of a similar magnitude to those assessed in Scenario 1a.

### Assessment Scenario 1c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

11.132 Scenario 1c includes the impacts covered in Scenario 1b above, plus the impact of the construction works associated with the wider SRF.

11.133 It is anticipated that any traffic movements associated with the wider SRF (both during its construction and operation) would occur after the completion of the Proposed Development. The construction vehicle movements associated with the wider SRF will potentially be of a greater magnitude to those assessed for this Project given the relative geographical scale of the SRF. However, at this time there is insufficient information available on the phasing and construction programme/method for developments within the SRF to be able to undertake any meaningful assessment. Effective management and liaison between the Contractors leading each site within the SRF will assist in limiting the effects of construction traffic.

11.134 In conclusion, as it is not likely there is a significant traffic impact generated by applications 1,2,4 or the wider SRF that would coincide with the traffic movements associated with the Proposed Development, the assessment of significance for Scenario 1b and 1c is assumed to be the same as that in Scenario 1a.

### Completed Development and Operational Phase

11.135 This section provides an assessment of the significance of the likely effects of the operational phase, prior to the incorporation of any mitigation measures. In accordance with IEMA guidance, determination of the significance

of effect has been undertaken in consideration of the anticipated peak operational traffic impact that might reasonably be expected. Where multiple receptors are affected by any one potential effect, then the receptor with the highest level of effect has been used in the calculation of the significance of effect. This allows for an assessment of the "worst case scenario".

11.136 The assessment scenarios are then presented by way of an In-Combination Assessment (ICA) with different scenarios as detailed in Table 11.1.

11.137 Scenario 2b considers the operational traffic impact relating to the Proposed Development (Application 2) and the impacts associated with Application 4. Any traffic generated by Application 1 (HIF Advance Enabling Works) would cease to occur after its completion date in 2022 and would therefore not be concurrent with Scenario 2b or 2c. Similarly, no traffic would be associated with Application 3 (HIF Flood Defence Works) during the operation of the Proposed Development.

11.138 Scenario 2c considers the traffic impact of Scenario 2b, together with the impact of the wider SRF.

### Assessment Scenario 2b– Proposed Development plus impacts associated with Applications 1, 3 and 4

11.139 The daily traffic increases during the operational phase of the Proposed Development are presented in Table 11.18. It should be noted that the Proposed Development in itself would not generate any operational traffic. Any impacts would therefore be due to traffic generated by Application 4.

11.140 As noted earlier, the later parts of the Development Project (and particularly Application 4) are still being designed and the details are not yet available. Estimates of the potential changes in traffic that might arise during the operation of these later parts of the Development Project have been made, drawn from information that supported the development of the SRF. As the details for the later parts of the Development Project are defined, a more refined traffic forecast and assessment of the impacts of these parts will be undertaken through subsequent Transport and Environmental Impact Assessments for Application 4.

*Table 11.18 Forecast Traffic Flows in Scenario 2b*

| Index | Link | Daily Traffic Flow (Veh) | | | Daily Traffic Flow (HGVs) | | |
|---|---|---|---|---|---|---|---|
| | | 'Do Minimum' | 'Do Something' | Change (%) | 'Do Minimum' | 'Do Something' | Change (%) |
| | | 2027 Operation Year | | | | | |
| L1 | Red Bank (south of Honey Street) | 7,997 | 8,604 | 7.6% | 188 | 195 | 3.2% |

| Index | Link | Daily Traffic Flow (Veh) | | | Daily Traffic Flow (HGVs) | | |
|---|---|---|---|---|---|---|---|
| | | 'Do Minimum' | 'Do Something' | Change (%) | 'Do Minimum' | 'Do Something' | Change (%) |
| | | 2027 Operation Year | | | | | |
| L2 | North Street/Red Bank (north of Honey Street) | 8,127 | 9,613 | 18.3% | 206 | 221 | 7.2% |
| L3 | Honey Street | 390 | 390 | 0.0% | 41 | 41 | 0.0% |
| L4 | Knowsley Street (east of Cheetham Hill Road) | 978 | 978 | 0.0% | 35 | 35 | 0.0% |
| L5 | Cheetham H Road (north of Knowsley Street) | 27,022 | 27,022 | 0.0% | 487 | 487 | 0.0% |
| L6 | Cheetham H Road (south of Knowsley Street) | 27,044 | 27,044 | 0.0% | 502 | 502 | 0.0% |
| L7 | Roger Street | 2,229 | 2,229 | 0.0% | 14 | 14 | 0.0% |
| L8 | Lord Street | 6,453 | 7,207 | 11.7% | 154 | 161 | 4.9% |
| L9 | Red Bank (north of Roger St) | 8,285 | 9,771 | 17.9% | 180 | 195 | 8.3% |
| L10 | Red Bank (south of Roger St) | 2,229 | 2,962 | 32.9% | 14 | 22 | 50.5% |
| L11 | Cheetham H Road (north of Lord St) | 26,384 | 26,384 | 0.0% | 496 | 496 | 0.0% |

| Index | Link | Daily Traffic Flow (Veh) | | | Daily Traffic Flow (HGVs) | | |
|---|---|---|---|---|---|---|---|
| | | 'Do Minimum' | 'Do Something' | Change (%) | 'Do Minimum' | 'Do Something' | Change (%) |
| | | 2027 Operation Year | | | | | |
| L12 | Cheetham H Road (south of Lord St) | 29,232 | 29,942 | 2.4% | 580 | 587 | 1.2% |
| L13 | Lord Street (west of CHR) | 2,867 | 2,992 | 4.3% | 90 | 91 | 1.4% |
| L14 | Lord Street (east of CHR) | 6,782 | 7,535 | 11.1% | 162 | 170 | 4.6% |
| L15 | Cheetham Hill Road (north of Trinity Way) | 29,276 | 29,987 | 2.4% | 591 | 599 | 1.2% |
| L16 | Cheetham Hill Road (south of Trinity Way) | 45,787 | 46,271 | 1.1% | 1,432 | 1,437 | 0.3% |
| L17 | Trinity Way | 43,456 | 44,108 | 1.5% | 1,490 | 1,497 | 0.4% |
| L18 | Angel Street | 21,235 | 22,076 | 4.0% | 620 | 629 | 1.4% |
| L19 | Aspin Ln | 19,724 | 19,966 | 1.2% | 594 | 597 | 0.4% |
| L20 | Rochdale Road | 16,337 | 16,547 | 1.3% | 438 | 440 | 0.5% |
| L21 | Rochdale Road (north of Angel Street) | 16,448 | 16,531 | 0.5% | 467 | 468 | 0.2% |

| Index | Link | Daily Traffic Flow (Veh) | | | Daily Traffic Flow (HGVs) | | |
|---|---|---|---|---|---|---|---|
| | | 'Do Minimum' | 'Do Something' | Change (%) | 'Do Minimum' | 'Do Something' | Change (%) |
| | | 2027 Operation Year | | | | | |
| L22 | Rochdale Road (north of Gould Street) | 9,912 | 9,995 | 0.8% | 275 | 276 | 0.3% |
| L23 | Queens Road (west of Cheetham Hill Road) | 16,177 | 16,177 | 0.0% | 322 | 322 | 0.0% |
| L24 | Cheetham Hill Road (south of Queens Road) | 20,201 | 20,808 | 3.0% | 274 | 280 | 2.2% |
| L25 | Queens Road (east of Cheetham Hill Road) | 21,390 | 21,943 | 2.6% | 475 | 481 | 1.2% |
| L26 | Queens Road (west of Rochdale Road) | 21,390 | 21,943 | 2.6% | 475 | 481 | 1.2% |
| L27 | Rochdale Road (south of Queens Road) | 15,636 | 15,804 | 1.1% | 219 | 221 | 0.8% |
| L28 | Queens Road (east of Rochdale Road) | 19,157 | 19,405 | 1.3% | 488 | 491 | 0.5% |
| L29 | Collyhurst Road (south of Queens Road) | 6,334 | 6,628 | 4.6% | 104 | 107 | 2.8% |
| L30 | Collyhurst Road (south of Smedley Road) | 6,334 | 6,628 | 4.6% | 104 | 107 | 2.8% |

### Driver Delay

11.141 The Development Project could increase driver delay due to increased volumes of operational traffic accessing the Development Project. As noted earlier, increases in driver delay are likely to arise from increases in total traffic, as opposed to increases in the number or proportion of HGVs. As such, the percentage increase in total traffic has been used as the basis upon which to identify the magnitude of impact. Table 11.19 shows the impact of driver delay on links affected by operational traffic (note that links with minor/ negligible effect significance are not included).

*Table 11.19 Driver delay impact on affected road links*

| Index | Link | Percentage change in total traffic | Magnitude of impact | Sensitivity of Receptors | Effect Significance |
|---|---|---|---|---|---|
| L2 | North Street/Red Bank (north of Honey Street) | 18.3% | Low | High | Moderate |
| L10 | Red Bank (south of Roger St) | 32.9% | High | Moderate | Major |

11.142 As presented in Table 11.19, on Red Bank (south of Roger Street (L10), the percentage change in total traffic is >30%. On that basis, it is concluded that the increase in traffic on L10 as a result of the Development Project would result in a 'high' magnitude of impact in terms of driver delay.

11.143 Combining the 'moderate' sensitivity of drivers on Red Bank (south of Roger Street) (L10), along with the 'high' magnitude of impact it is considered that the effects on driver delay associated with the operational phase of the Development Project will be of **'major adverse'** significance in the long-term at a local level. This is therefore considered to be **significant** in EIA terms.

11.144 On North Street/Red Bank (north of Honey Street (L2)), the percentage change in total traffic is 10-20%. On that basis, it is concluded that the increase in traffic on L2 as a result of the Development Project would result in a 'low' magnitude of impact in terms of driver delay.

11.145 Combining the 'high' sensitivity of drivers on Red Bank ((north of Honey Street (L2)), along with the 'low' magnitude of impact it is considered that the effects on driver delay associated with the operational phase of the Development Project will be of **'moderate adverse**' significance in the long-term at a local level. This is therefore considered to be **significant** in EIA terms.

### Pedestrian Delay

11.146 The Development Project could increase pedestrian delay during its operational phase due to increased levels of traffic on the local highway network, which may delay pedestrians crossing the road. As with driver delay, the delay caused to pedestrians would be influenced by the overall change in traffic rather than changes in HGVs. As such, the percentage increase in total traffic has been used as the basis upon which to identify the magnitude of impact.

11.147 All the assessed road links except L10 have a 'negligible' magnitude of impact as the forecast percentage increase in traffic is less than 30%. As per Table 11.6, any effect with a negligible magnitude of impact is not significant in EIA terms.

11.148 For L10, it is concluded that the increase in traffic using L10 as a result of the Development Project would be 30-60% resulting in a 'low' magnitude of impact in terms of pedestrian delay.

11.149 Combining the 'moderate' sensitivity of pedestrians on Red Bank (south of Roger Street) (L10), along with the 'low' magnitude of impact (the worst case) it is considered that the effects on pedestrian delay associated with the operational phase of the Development Project will be of '**minor adverse**' significance in the long-term at a local level. This is therefore considered to be **not significant** in EIA terms.

### Severance

11.150 The assessment of severance effects is based on the forecast increase in the total traffic

11.151 All the assessed road links except L10 have a 'negligible' magnitude of impact as the forecast percentage increase in traffic is less than 30%. As per Table 11.6, any effect with a negligible magnitude of impact is not significant in EIA terms.

11.152 For L10, the increase in traffic as a result of the Development Project would be 30-60% resulting in a 'low' magnitude of impact in terms of severance. The sensitivity of pedestrians on Red Bank (south of Roger Street) (L10) is considered to be 'moderate'. Combining the 'moderate' sensitivity of the receptors on this link along with the 'low' magnitude of the effect, it is considered that severance effects of the traffic impacts associated with the operational phase on this highway link will be of '**minor adverse**' significance in the long-term at a local level. This is therefore considered to be **not significant** in EIA terms.

### Pedestrian Amenity

11.153 The main potential effects on pedestrian amenity would be caused by the increase in total traffic associated with the Development Project.

11.154 All the assessed road links except L10 have a 'negligible' magnitude of impact as the forecast percentage increase in traffic is less than 30%. As per Table 11.6, any effect with a negligible magnitude of impact is not significant in EIA terms.

11.155 For L10, the increase in traffic as a result of the Development Project would be 30-60% resulting in a 'low' magnitude of impact on pedestrian amenity. The sensitivity of pedestrians on Red Bank (south of Roger Street) (L10) to changes in amenity is considered to be 'moderate'. Combining the 'moderate' sensitivity of the receptors on this link along with the 'low' magnitude of the effect, it is considered that pedestrian amenity effects of the traffic impacts associated with the operational phase on this highway link will be of '**minor adverse**' significance in the long-term at a local level. This is therefore considered to be **not significant** in EIA terms.

### Fear and Intimidation

11.156 The increase in the volume of total traffic as a result of the Development Project could potentially increase levels of fear and intimidation for pedestrians and cyclists.

11.157 All the assessed road links except L10 have a 'negligible' magnitude of impact as the forecast percentage increase in traffic is less than 30%. As per Table 11.6, any effect with a negligible magnitude of impact is not significant in EIA terms.

11.158 For L10, the increase in traffic as a result of the Development Project would be 30-60% resulting in a 'low' magnitude of impact. The sensitivity of pedestrians and cyclists to fear and intimidation effects on Red Bank (south of Roger Street) (L10) is considered to be 'moderate'. Combining the 'moderate' sensitivity of the receptors on this link along with the 'low' magnitude of the effect, it is considered that fear and intimidation effects of the traffic impacts associated with the operational phase on this highway link will be of '**minor adverse**' significance in the long-term at a local level. This is therefore considered to be **not significant** in EIA terms.

### Accidents and Safety

11.159 The operation of the Development Project would result in an increase in vehicle movements on the local highway network, as well as turning movements into the Development Project. There are no existing accident blackspots identified in the study area. Therefore, the magnitude of impact in relation to accidents and safety is considered to be either 'negligible' or 'low'.

11.160 As per Table 11.6, any effect with a negligible magnitude of impact is not significant in EIA terms.

11.161 Effects with a 'low' impact can only be significant if the sensitivity of the receptor is 'high' (as per Table 11.6). Where the magnitude of impact for accidents has been identified as 'low' the highest level of sensitivity is 'moderate'. As such, the resulting effect is of '**minor adverse**' significance in the long-term at a local level. This is therefore considered to be **not significant** in EIA terms.

### Summary

11.162 A summary of the likely effects of operation in Scenario 2b is presented in Table 11.20.

*Table 11.20 Summary of Operational Effects in Scenario 2b*

| Effect | Description of Effect | Magnitude | Sensitivity | Significance |
|---|---|---|---|---|
| Driver Delay | Increase in traffic on the local highway network may cause delay for drivers. | High | Moderate | **Major** |
| Pedestrian Delay | Increase in traffic on the local highway network delaying pedestrians crossing the road. | Low | Moderate | Minor |
| Severance | Increase in vehicle movements (total traffic or HGVs) discouraging pedestrians from crossing routes used by vehicles. | Low | Moderate | Minor |
| Pedestrian Amenity | Increase in vehicle movements (total traffic or HGVs) impacting on the 'pleasantness' of pedestrian (and cycle) journeys. | Low | Moderate | Minor |
| Fear and Intimidation | An increase in the level of fear and intimidation perceived by pedestrian and cyclists as a result of increased levels of vehicle or HGV movements. | Low | Moderate | Minor |
| Accidents and Safety | Increased likelihood of road accidents occurring due to the increased movement of vehicles. | Low | Moderate | Minor |

### Assessment Scenario 2c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

11.163 The daily traffic increases during the operational phase of the Proposed Development are presented in Table 11.21.

11.164 As noted earlier, the later parts of the Development Project (and particularly Application 4) and the wider SRF are still being designed and the details are not yet available. Estimates of the potential changes in traffic that might arise during the operation of these later parts of the Development Project have been made, drawn from information that supported the development of the SRF. As the details for the later parts of the Development Project are defined, a more refined assessment of the impacts of these parts will be undertaken through subsequent Transport and Environmental Impact Assessments for Application 4.

*Table 11.21 Forecast Traffic Flows in Scenario 2c*

| Index | Link | Daily Traffic Flow (Veh) | | | Daily Traffic Flow (HGVs) | | |
|---|---|---|---|---|---|---|---|
| | | 'Do Minimum' | 'Do Something' | Change (%) | 'Do Minimum' | 'Do Something' | Change (%) |
| | | 2027 Operation Year | | | | | |
| L1 | Red Bank (south of Honey Street) | 7,997 | 8,604 | 7.6% | 188 | 195 | 3.2% |
| L2 | North Street/Red Bank (north of Honey Street) | 8,127 | 9,613 | 18.3% | 206 | 221 | 7.2% |
| L3 | Honey Street | 390 | 390 | 0.0% | 41 | 41 | 0.0% |
| L4 | Knowsley Street (east of Cheetham Hill Road) | 978 | 978 | 0.0% | 35 | 35 | 0.0% |
| L5 | Cheetham H Road (north of Knowsley Street) | 27,022 | 27,478 | 1.7% | 487 | 492 | 0.9% |
| L6 | Cheetham H Road (south of Knowsley Street) | 27,044 | 27,501 | 1.7% | 502 | 506 | 0.9% |
| L7 | Roger Street | 2,229 | 2,229 | 0.0% | 14 | 14 | 0.0% |
| L8 | Lord Street | 6,453 | 7,207 | 11.7% | 154 | 161 | 4.9% |

| Index | Link | Daily Traffic Flow (Veh) | | | Daily Traffic Flow (HGVs) | | |
|---|---|---|---|---|---|---|---|
| | | 'Do Minimum' | 'Do Something' | Change (%) | 'Do Minimum' | 'Do Something' | Change (%) |
| | | 2027 Operation Year | | | | | |
| L9 | Red Bank (north of Roger St) | 8,285 | 9,771 | 17.9% | 180 | 195 | 8.3% |
| L10 | Red Bank (south of Roger St) | 2,229 | 2,962 | 32.9% | 14 | 22 | 50.5% |
| L11 | Cheetham H Road (north of Lord St) | 26,384 | 26,840 | 1.7% | 496 | 500 | 0.9% |
| L12 | Cheetham H Road (south of Lord St) | 29,232 | 30,366 | 3.9% | 580 | 591 | 2.0% |
| L13 | Lord Street (west of CHR) | 2,867 | 3,166 | 10.4% | 90 | 93 | 3.3% |
| L14 | Lord Street (east of CHR) | 6,782 | 7,535 | 11.1% | 162 | 170 | 4.6% |
| L15 | Cheetham Hill Road (north of Trinity Way) | 29,276 | 30,411 | 3.9% | 591 | 603 | 1.9% |
| L16 | Cheetham Hill Road (south of Trinity Way) | 45,787 | 47,810 | 4.4% | 1,432 | 1,453 | 1.4% |
| L17 | Trinity Way | 43,456 | 45,838 | 5.5% | 1,490 | 1,514 | 1.6% |
| L18 | Angel Street | 21,235 | 23,843 | 12.3% | 620 | 647 | 4.2% |

| Index | Link | Daily Traffic Flow (Veh) | | | Daily Traffic Flow (HGVs) | | |
|---|---|---|---|---|---|---|---|
| | | 'Do Minimum' | 'Do Something' | Change (%) | 'Do Minimum' | 'Do Something' | Change (%) |
| | | 2027 Operation Year | | | | | |
| L19 | Aspin Ln | 19,724 | 21,323 | 8.1% | 594 | 610 | 2.7% |
| L20 | Rochdale Road | 16,337 | 18,139 | 11.0% | 438 | 456 | 4.1% |
| L21 | Rochdale Road (north of Angel Street) | 16,448 | 19,270 | 17.2% | 467 | 495 | 6.0% |
| L22 | Rochdale Road (north of Gould Street) | 9,912 | 12,734 | 28.5% | 275 | 304 | 10.2% |
| L23 | Queens Road (west of Cheetham Hill Road) | 16,177 | 16,177 | 0.0% | 322 | 322 | 0.0% |
| L24 | Cheetham Hill Road (south of Queens Road) | 20,201 | 20,898 | 3.5% | 274 | 281 | 2.5% |
| L25 | Queens Road (east of Cheetham Hill Road) | 21,390 | 22,578 | 5.6% | 475 | 487 | 2.5% |
| L26 | Queens Road (west of Rochdale Road) | 21,390 | 22,578 | 5.6% | 475 | 487 | 2.5% |
| L27 | Rochdale Road (south of Queens Road) | 15,636 | 17,554 | 12.3% | 219 | 238 | 8.8% |

| Index | Link | Daily Traffic Flow (Veh) | | | Daily Traffic Flow (HGVs) | | |
|---|---|---|---|---|---|---|---|
| | | 'Do Minimum' | 'Do Something' | Change (%) | 'Do Minimum' | 'Do Something' | Change (%) |
| | | 2027 Operation Year | | | | | |
| L28 | Queens Road (east of Rochdale Road) | 19,157 | 20,256 | 5.7% | 488 | 499 | 2.3% |
| L29 | Collyhurst Road (south of Queens Road) | 6,334 | 8,096 | 27.8% | 104 | 122 | 16.9% |
| L30 | Collyhurst Road (south of Smedley Road) | 6,334 | 7,144 | 12.8% | 104 | 112 | 7.8% |

### Driver Delay

11.165 The Development Project could increase driver delay due to increased volumes of operational traffic accessing the site. As noted earlier, increases in driver delay are likely to arise from increases in total traffic as opposed to increases in the number or proportion of HGVs. As such, the percentage increase in total traffic has been used as the basis upon which to identify the magnitude of impact. Table 11.22 shows the impact of driver delay on links affected by operational traffic (note that links with minor/ negligible effect significance are not included).

*Table 11.22 Driver delay impact on affected road links*

| Index | Link | Percentage change in total traffic | Magnitude of impact | Sensitivity of Receptors | Effect Significance |
|---|---|---|---|---|---|
| L2 | North Street/Red Bank (north of Honey Street) | 18.3% | Low | High | **Moderate** |
| L10 | Red Bank (south of Roger St) | 32.9% | High | Moderate | **Major** |
| L18 | Angel Street | 12.3% | Low | High | **Moderate** |
| L20 | Rochdale Road | 11.0% | Low | High | **Moderate** |

| Index | Link | Percentage change in total traffic | Magnitude of impact | Sensitivity of Receptors | Effect Significance |
|---|---|---|---|---|---|
| L21 | Rochdale Road (north of Angel Street) | 17.2% | Low | High | **Moderate** |
| L22 | Rochdale Road (north of Gould Street) | 28.5% | Moderate | Moderate | **Moderate** |
| L29 | Collyhurst Road (south of Queens Road) | 27.8% | Moderate | Moderate | **Moderate** |

11.166 Table 11.22 shows links where the percentage change in total traffic has a moderate to major significance of effect. On Red Bank (south of Roger Street (L10)), the percentage change in total traffic is >30%. On that basis, it is concluded that the increase in traffic on L10 as a result of the Development Project would result in a 'high' magnitude of impact in terms of driver delay.

11.167 Combining the 'moderate' sensitivity of drivers on Red Bank (south of Roger Street (L10)), along with the 'high' magnitude of impact it is considered that the effects on driver delay associated with the operational phase of the project will be of **'major adverse'** significance in the long-term at a local level. This is therefore considered to be **significant** in EIA terms.

11.168 There are a further six links where the combination of magnitude of impact and sensitivity of receptor will result in effects on driver delay associated with the operational phase of the Development Project that are of **'moderate adverse'** significance in the long-term at a local level. These effects are also considered to be **significant** in EIA terms.

### Pedestrian Delay

11.169 The Development Project could increase pedestrian delay during the operational phase due to increased levels of traffic on route. As with driver delay, the delay caused to pedestrians would be influenced by the overall change in traffic rather than changes in HGVs. As such, the percentage increase in total traffic has been used as the basis upon which to identify the magnitude of impact.

11.170 All the assessed road links except L10 have a 'negligible' magnitude of impact as the forecast percentage increase in traffic is less than 30%. As per Table 11.6, any effect with a negligible magnitude of impact is not significant in EIA terms.

11.171 . For L10, the increase in traffic as a result of the Development Project would be 30-60% resulting in a 'low' magnitude of impact in terms of pedestrian delay. Combining the 'moderate' sensitivity of pedestrians on Red

Bank (south of Roger Street) (L10), along with the 'low' magnitude of impact (the worst case) it is considered that the effects on pedestrian delay associated with the operational phase of the Development Project will be of '**minor adverse**' significance in the long-term at a local level. This is therefore considered to be **not significant** in EIA terms.

### Severance

11.172 The assessment of severance effects is based on the forecast increase in the total traffic

11.173 All the assessed road links except L10 have a 'negligible' magnitude of impact as the forecast percentage increase in traffic is less than 30%. As per Table 11.6, any effect with a negligible magnitude of impact is not significant in EIA terms.

11.174 . For L10, the increase in traffic as a result of the Development Project would be 30-60% resulting in a 'low' magnitude of impact in terms of severance. The sensitivity of pedestrians on Red Bank (south of Roger Street) (L10) is considered to be 'moderate'. Combining the 'moderate' sensitivity of the receptors on this link along with the 'low' magnitude of the effect, it is considered that severance effects of the traffic impacts associated with the operational phase on this highway link will be of '**minor adverse**' significance in the long-term at a local level. This is therefore considered to be **not significant** in EIA terms.

### Pedestrian Amenity

11.175 The main potential effects on pedestrian amenity would be caused by the increase in total traffic associated with the Development Project.

11.176 All the assessed road links except L10 have a 'negligible' magnitude of impact as the forecast percentage increase in traffic is less than 30%. As per Table 11.6, any effect with a negligible magnitude of impact is not significant in EIA terms.

11.177 . For L10, the increase in traffic as a result of the Development Project would be 30-60% resulting in a 'low' magnitude of impact on pedestrian amenity. The sensitivity of pedestrians on Red Bank (south of Roger Street) (L10) to changes in amenity is considered to be 'moderate'. Combining the 'moderate' sensitivity of the receptors on this link along with the 'low' magnitude of the effect, it is considered that pedestrian amenity effects of the traffic impacts associated with the operational phase on this highway link will be of '**minor adverse**' significance in the long-term at a local level. This is therefore considered to be **not significant** in EIA terms.

### Fear and Intimidation

11.178 The increase in the volume of total traffic as a result of the Development Project could potentially increase levels of fear and intimidation for pedestrians and cyclists.

11.179 All the assessed road links except L10 have a 'negligible' magnitude of impact as the forecast percentage increase in traffic is less than 30%. As per Table 11.6, any effect with a negligible magnitude of impact is not significant in EIA terms.

11.180 . For L10, the increase in traffic as a result of the Development Project would be 30-60% resulting in a 'low' magnitude of impact. The sensitivity of pedestrians and cyclists to fear and intimidation effects on Red Bank (south of Roger Street) (L10) is considered to be 'moderate'. Combining the 'moderate' sensitivity of the receptors on this link along with the 'low' magnitude of the effect, it is considered that fear and intimidation effects of the traffic impacts associated with the operational phase on this highway link will be of '**minor adverse**' significance in the long-term at a local level. This is therefore considered to be **not significant** in EIA terms.

### Accidents and Safety

11.181 The operation of the Development Project would result in an increase in vehicle movements on the local highway network, as well as turning movements into the site. There are no existing accident blackspots identified in the study area. Therefore, the magnitude of impact in relation to accidents and safety is considered to be either 'negligible' or 'low'.

11.182 As per Table 11.6, any effect with a negligible magnitude of impact is not significant in EIA terms.

11.183 Effects with a 'low' impact can only be significant if the sensitivity of the receptor is 'high' (as per Table 11.6). Where the magnitude of impact for accidents has been identified as 'low' the highest level of sensitivity is 'moderate'. As such, the resulting effect is of '**minor adverse**' significance in the long-term at a local level. This is therefore considered to be **not significant** in EIA terms.

### Summary

11.184 A summary of the likely effects of the operational phase for Scenario 2c is presented in Table 11.23.

*Table 11.23 Summary of Operational Effects in Scenario 2c (worst case link)*

| | Description of Effect | Magnitude | Sensitivity | Significance |
|---|---|---|---|---|
| Driver Delay | Increase in traffic along the route for construction vehicles may cause delay for drivers. | High | Moderate | **Major** |
| Pedestrian Delay | Increase in traffic along the route for construction vehicles delaying pedestrians crossing the road. | Low | Moderate | Minor |
| Severance | Increase in construction vehicle movements (HGVs) discouraging pedestrians from crossing routes used by construction vehicles. | Low | Moderate | Minor |

| | Description of Effect | Magnitude | Sensitivity | Significance |
|---|---|---|---|---|
| Pedestrian Amenity | Increase in construction vehicle movements (HGVs) impacting on the 'pleasantness' of pedestrian (and cycle) journeys. | Low | Moderate | Minor |
| Fear and Intimidation | An increase in the level of fear and intimidation perceived by pedestrian and cyclists as a result of increased levels of HGV movements. | Low | Moderate | Minor |
| Accidents and Safety | Increased likelihood of road accidents occurring during the construction period due to the movement of construction vehicles. | Low | Moderate | Minor |

# Additional Mitigation / Enhancement Measures

### Demolition and Construction

11.185 The construction phase of the Proposed Development will be supported by a PEP The PEP will include the following measures, amongst others:

- A methodology for minimising vehicle movements and reducing the impact upon the surrounding highway network;
- An agreement on suitable construction vehicle routes and subsequent diversion and directional signage;
- An agreement on permitted timing of construction vehicles movements; and
- Details of any site access strategy including how to potentially minimise potential conflict between construction traffic and other vehicle movements, including pedestrians and cyclists.

### Completed Development and Operational Phase

11.186 The Development Project will be supported by a Travel Plan which will identify measures to reduce vehicle-related trips associated with the development and to promote the use of active and sustainable transport.

# Likely Residual Effects of the Development and their Significance

11.187 The residual effect assessment assumes that the mitigation described in the section above has been implemented.

*Table 11.24: Residual Effects Summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| *Assessment Scenario 1a – proposed development only* | | | |
| Driver Delay | Minor adverse in the short-term at a local level | ***PEP*** | Minor adverse in the short-term at a local level |
| Pedestrian Delay | Minor adverse in the short-term at a local level | | Minor adverse in the short-term at a local level |
| Severance | Major adverse in the short-term at a local level | | Moderate adverse in the short-term at a local level |
| Pedestrian Amenity | Major adverse in the short-term at a local level | | Moderate adverse in the short-term at a local level |
| Fear and Intimidation | Major adverse in the short-term at a local level | | Moderate adverse in the short-term at a local level |
| Accidents and Safety | Moderate adverse in the short-term at a local level | | Moderate adverse in the short-term at a local level |
| *Assessment Scenario 1b – proposed development plus impacts associated with Applications 1, 3 and 4* | | | |
| ***As per Assessment Scenario 1a*** | | | |
| *Assessment Scenario 1c – proposed development plus Applications 2, 3 and 4 and wider SRF* | | | |
| ***As per Assessment Scenario 1a*** | | | |
| ***Completed Development and Operational Phase*** | | | |
| *Assessment Scenario 2b – proposed development plus impacts associated with Applications 1, 3 and 4* | | | |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Driver Delay | Major adverse in the long-term at a local level | ***Travel Plan*** | Minor/Moderate adverse in the long-term at a local level |
| Pedestrian Delay | Minor adverse in the long-term at a local level | | Minor adverse in the long-term at a local level |
| Severance | Minor adverse in the long-term at a local level | | Minor adverse in the long-term at a local level |
| Pedestrian Amenity | Minor adverse in the long-term at a local level | | Minor adverse in the long-term at a local level |
| Fear and Intimidation | Minor adverse in the long-term at a local level | | Minor adverse in the long-term at a local level |
| Accidents and Safety | Minor adverse in the long-term at a local level | | Minor adverse in the long-term at a local level |
| *Assessment Scenario 2c – proposed development plus Applications 2, 3 and 4 and wider SRF* | | | |
| ***As per Assessment Scenario 2b*** | | | |

## Conclusions

11.188 This chapter presents an assessment of the potential impacts of Application 2 on the local transport networks in the area surrounding the site. As described in the assessment of Scenario 1a, the Proposed Development would have major adverse effects in the short-term at a local level in terms of severance, pedestrian amenity and fear and intimidation. There would be a moderate adverse effect in the short-term at a local level in terms of accidents and safety. These effects are due to the forecast increase in HGV movements associated with the construction of the infrastructure works. The effects are reversible and temporary in nature.

11.189 A PEP would help to mitigate the effects and would reduce the significance of the effects to moderate by managing the movements of HGVs accessing the site during construction.

11.190 The impacts during Scenario 1b and 1c would be similar in nature and scale to those in Scenario 1a (based upon current information).

11.191 During operation, the Proposed Development will not generate traffic movements and will not adversely affect traffic conditions. As such, it has been agreed with MCC to scope operational impacts out of the assessment. However, for completeness, an assessment of Scenarios 2b and 2c has been undertaken and is presented in this chapter. Scenario 2a (i.e. the Proposed Development in isolation during operation) would not result in any change in traffic movements and has therefore not been assessed.

11.192 The later parts of the Development Project (and particularly Application 4) and the wider SRF are still being designed and the details are not yet available. Estimates of the potential changes in traffic that might arise during the operation of these later parts of the Development Project have been made, drawn from information that supported the development of the SRF.

11.193 In both Scenario 2b and 2c the Development Project will have a major adverse effect on driver delay in the long-term at the local level. It should be noted however, that this is forecast based on the increase in total traffic. As the details for the later parts of the Development Project are defined, a more refined traffic forecast and assessment of the impacts of these parts will be undertaken through subsequent Transport and Environmental Impact Assessments for Application 4. This may demonstrate the impact on driver delay to be less significant, in particular building on the sustainable location of the Development Project and the aspiration of the Applicant to promote sustainable and active travel above the use of motorised vehicles.

11.194 As such, through the production of a comprehensive Travel Plan for Application 4 it is considered that the residual effect could be reduced to either minor or moderate significance. However, at this time the precise nature of the Travel Plan and the commitments to mitigation associated with Application 4 cannot be confirmed.

## Assessment of Cumulative Effects and their Significance

11.195 Table 11.25 provides a list of the developments which have been included within the cumulative sites assessment.

*Table 11.25: Cumulative Sites*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | 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 | Approved Jun 2021 | In | It is likely that there will be overlap between the two schemes in terms of programme and proposed construction routes. As both schemes are within the same ownership the construction operation is under the control of the applicant. The construction programmes of the two schemes will be managed as part of a combined PEP. In doing so, the overall construction traffic volumes will be manged such that they do not exceed the maximum two-way movements as assessed in this assessment. |
| 2 | 127971/FO/2020 | 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 | In | The construction traffic is unlikely to utilise the same routes therefore will not affect the same receptors, therefore no cumulative effects. |
| 3 | 128248/FO/2020 | Erection of 9 buildings ranging from 8 to 34 storeys in height to form 1202 residential apartments (Use Class C3a) | 150m south | Approved June 2021 | In | The construction traffic impacts are so small that the cumulative effect would be as presented for the Proposed |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | | | Development. |
| 4 | 116366/FO/2017 | 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 | 150m south | Approved Aug 2017<br>Under construction | In | There would not be any construction traffic impacts overlapping with the Proposed Development as the Proposed Development has been completed. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | Meadows And Land Bounded By Old Mount Street, School Street, Naples Street & Ludgate Street Manchester | | | | |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<br><br>Under construction | In | There would not be any construction traffic impacts overlapping with the Proposed Development as the Proposed Development has been completed. |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 | In | The construction traffic impacts are so small that the cumulative effect would be as presented for the Proposed Development. |
| 7 | 124973/FO/2019 | Erection of an 11 storey building and a 12 storey building with plant rooms above to form a mixed use development | 350m south | Approved Feb 2016 | In | There would not be any construction traffic impacts overlapping with the Proposed Development as the Proposed |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | | | Development has been completed. |
| 8 | 111777/FO/2016/C1 | 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 | 250m south east | Approved Sep 2016<br>Under construction | In | The construction traffic is unlikely to utilise the same routes therefore will not affect the same receptors, therefore no cumulative effects. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | associated works. \| New Victoria Land At Corporation Street Manchester M3 1NX | | | | |
| 9 | 121375/FO/2018 | 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. | 840m south | Approved Oct 2020 | In | The construction traffic is unlikely to utilise the same routes therefore will not affect the same receptors, therefore no cumulative effects. |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | Approved Oct 2018<br>Under construction | In | The construction traffic is unlikely to utilise the same routes therefore will not affect the same receptors, therefore no cumulative effects. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 11 | 20/76134/FUL | 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 | 1000m south west | Approved Feb 2020 | In | The construction traffic is unlikely to utilise the same routes therefore will not affect the same receptors, therefore no cumulative effects. |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br>Under construction | In | The construction traffic is unlikely to utilise the same routes therefore will not affect the same receptors, therefore no cumulative effects. |
| 13 | 19/74465/HYBEIA | 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 | 960m south west | Validated Nov 2019 | In | The construction traffic is unlikely to utilise the same routes therefore will not affect the same receptors, therefore no cumulative effects. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 7BN | | | | |
| 14 | 126944/FO/2020 | 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 | 140m south east | Approved Sep 2020<br>Under Construction | In | It is likely that there will be overlap between the two schemes in terms of programme and proposed construction routes. As both schemes are within the same ownership the construction operation is under the control of the |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | | | applicant. The construction programmes of the two schemes will be managed as part of a combined PEP. In doing so, the overall construction traffic volumes will be manged such that they do not exceed the maximum of 100 two-way movements as assessed in this assessment. |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | 145m south east | Approved October 2017 | In | The construction traffic impacts are so small that the cumulative effect would be as presented for the Proposed Development. |
| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 | In | It is likely that there will be overlap between the two schemes in terms of programme and proposed construction routes. Liaison with the contractor of the project might be needed to ensure the construction programmes of the two |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | | | schemes do not exceed the maximum of 100 two-way movements as assessed in this assessment. |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | 635m south west | Approved June 2018 | In | The construction traffic impacts are so small that the cumulative effect would be as presented for the Proposed Development. |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | In | The construction traffic impacts are so small that the cumulative effect would be as presented for the Proposed Development. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 19 | 124888/FO/2019 | 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 | In | There would not be any construction traffic impacts overlapping with the Proposed Development as the Proposed Development has been completed. |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | In | There would not be any construction traffic impacts overlapping with the Proposed Development as the Proposed Development has been completed. |

### Approach

11.196 The potential impacts of each of the identified cumulative sites during the demolition and construction phase are set out in the table above.

11.197 In terms of the completed development and operational phase, the traffic generated by the above developments will be included within the assessments described above either through the application of traffic growth factors to surveyed traffic flows (all Scenarios) or through the consideration of additional traffic associated with the wider SRF as per Scenarios 1c and 2c. As such, it is considered that the cumulative impacts of the above sites in the operational phase are already integrated into the Scenario 1a, 1b, 1c, 2b and 2c assessments as is the best practice approach for transport assessment.

## References

References must be provided as endnotes (as below), presented in the Harvard style:

Author, N.E. (YEAR) Full Title. Publisher, Place of Publication.

Author etc. References should then be listed at the end of each chapter, as follows:

Department for Environment, Food and Rural Affairs (DEFRA) (1991) The Water Resources Act, HMSO, London.

Statutory Instrument 2005 No. 895 (2005) The List of Wastes (England) Regulations, HMSO, London.

# 12. Air Quality and Dust

## Introduction

12.1 This ES chapter assesses the Development Project, which is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in 4 planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – planning permission has been granted for the demolition of Creamline diary, tree and shrub clearance and construction of a temporary haul road.
- HIF Infrastructure Works (referred to hereafter as 'Application 2' or the 'Proposed Development') – the subject of this application. Creation of development platforms, demolition of sections of existing River Wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diversions and provision of green infrastructure including creation of green links and first phase of the new City River Park.
- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within flood zone 3.
- Land controlled by the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. (As noted in Chapter 2: Approach, the entire Red Bank Neighbourhood of the SRF, including third party land, will deliver up to 5,500 new dwellings).

12.2 Whilst the Applicant has the detail of the early applications, the later parts of the Development Project (and particularly Application 4) are still being designed and the details are not yet available. Therefore, the approach that has been taken in the ES is to break the Development Project into 3 elements, with each element being assessed in a level of detail commensurate with the detail that is available for the relevant part of the Development Project.

12.3 As such, a very full and detailed assessment is undertaken of Application 2, and then reasonable assumptions and judgements have informed and been made to assess Applications 1-4 together, and then Applications 1-4 and SRF.

12.4 This chapter assesses the likely significant effects of the Proposed Development on local air quality. In particular it considers the potential effects of the construction and demolition phase of the Proposed Development on traffic emissions, dust and air quality at identified existing receptor locations.

12.5 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 Project arising from emissions to air of air pollutants and dust, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It has been written by Arup/BAM.

# Planning Policy Context

## Legislation

### The Environment Act 2021

12.6 The Environment Bill become an Act[1] (law) in November 2021. The Environment Act 2021 amends the Environment Act 1995[2]. It also amends the Clean Air Act 1993[3] to give local authorities more power at reducing local pollution, particularly that from domestic burning. It also amends the Environmental Protection Act 1990[4] to reduce smoke from residential chimneys by extending the system of statutory nuisance to private dwellings.

12.7 The following sections of the Environment Act 1995[2] below have been transposed into the Environment Act 2021:

- For the Secretary of State to develop, implement and maintain an Air Quality Strategy. This includes the statutory duty, also under Part IV of the Environment Act 1995, for local authorities to undergo a process of local air quality management and declare an AQMA where pollutant concentrations exceed the national air quality objectives. Where an AQMA is declared, the local authority needs to produce an Air Quality Action Plan (AQAP) which outlines the strategy for improving air quality in these areas.
- The Act will implement key parts of the government's Clean Air Strategy and include targets for tackling air pollution in the UK.
- Relevant to air quality[5]:
- For the Secretary of State for DEFRA to set long-term legally binding targets on air quality. These targets must be of at least 15 years in duration, and be proposed by late 2022;
- For the Secretary of State to publish a report reviewing the Air Quality Strategy every five years;
- For the government to set two targets by October 2022: the first on the amount of $PM_{2.5}$ pollutant in the ambient air (the figure and deadline for compliance remain unspecified) and a second long-term target set at least 15 years ahead to encourage stakeholder investment;

[1] Environment Act 2021. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted. Accessed 14/01/2022.
[2] Environment Act 1995, Chapter 25, Part IV Air Quality
[3] Clean Air Act 1993. Available at: https://www.legislation.gov.uk/ukpga/1993/11/contents. Accessed 14/01/2022
[4] Environmental Protection Act 1990. Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents. Accessed 14/01/2022
[5] Environment Act 2021. Part 4 Air Quality and Environmental Recall.

- For the Office for Environmental Protection to be established[6] to substitute the watchdog function previously exercised by the European Commission;
- For local authorities' powers to be extended under the current Local Air Quality Management framework, including responsibilities to improve local air quality and to reduce public exposure to excessive levels of air pollution;
- For "air quality partners" to have a duty to share responsibility for dealing with local air pollution among public bodies; and
- Introduces a new power for the government to compel vehicle manufacturers to recall vehicles and non-road mobile machinery if they are found not to comply with the environmental standards that they are legally required to meet.

## Air Quality Standards

12.8 Air quality limit values and objectives are quality standards for clean air. Some pollutants have standards expressed as annual average concentrations due to the chronic way in which they affect health or the natural environment, i.e., effects occur after a prolonged period of exposure to elevated concentrations. Other pollutants have standards expressed as 24-hour, 1-hour or 15-minute average concentrations due to the acute way in which they affect health or the natural environment, i.e., after a relatively short period of exposure. Some pollutants have standards expressed in terms of both long and short-term concentrations.

12.9 In this assessment, the term 'air quality standard' has been used to refer to both the UK objectives and European limit values. Table 12.1: Air quality standards sets out the national air quality objectives for $NO_2$, $PM_{10}$ and $PM_{2.5}$. Other pollutants have been screened out of this air quality assessment since they are not likely to cause exceedances of their respective standards.

*Table 12.1: Air quality standards*

| Pollutant | Averaging Period | Air Quality Standard |
|---|---|---|
| **Human Health** | | |
| Nitrogen dioxide ($NO_2$) | Annual mean | 40µg/m$^3$ |
| | 1-hour mean | 200µg/m$^3$ [1] |
| Particulate matter ($PM_{10}$) | Annual mean | 40µg/m$^3$ |
| | 24-hour mean | 50µg/m$^3$ [2] |
| Particulate matter ($PM_{2.5}$) | Annual mean | 20µg/m$^3$ |
| *[1] not to be exceeded more than 18 times a year (99.79th percentile)* | | |

[6] Environment Act 2021. Chapter 2. The Office for Environmental Protection.

| Pollutant | Averaging Period | Air Quality Standard |
|---|---|---|
| [2] *not to be exceeded more than 35 times a year (90.41th percentile)* | | |

### Non-Road Mobile Machinery regulations

12.10 The Non-Road Mobile Machinery (NRMM) (Emission of Gaseous and Particulate Pollutants) (Amended) Regulations 2014 (SI 2014/1309)[7], which implement EU Directive 2012/46/EU[8] has been superseded by the Environment Act 2021[1]. The Act introduces a new power for the government to compel vehicle manufacturers to recall vehicles and NRMM if they are found not to comply with the environmental standards that they are legally required to meet.

### Dust Nuisance

12.11 Dust is the generic term used in the British Standard document BS 6069 (Part Two) to describe particulate matter in the size range 1–75 µm in diameter. Dust nuisance is the result of the perception of the soiling of surfaces by excessive rates of dust deposition. Under provisions in the Environmental Protection Act 1990[9], dust nuisance is defined as a statutory nuisance.

12.12 There are currently no standards or guidelines for dust nuisance in the UK, nor are formal dust deposition standards specified. This reflects the uncertainties in dust monitoring technology and the highly subjective relationship between deposition events, surface soiling and the perception of such events as a nuisance. In law, complaints about excessive dust deposition would have to be investigated by the local authority and any complaint upheld for a statutory nuisance to occur. However, dust deposition is generally managed by suitable on-site practices and mitigation rather than by the determination of statutory nuisance and/or prosecution or enforcement notice(s).

## National Planning Policy

### National Planning Policy Framework

12.13 The land-use planning process is a key means of improving air quality, particularly in the long term, through the strategic location and design of new developments. Any air quality consideration that relates to land-use and its development can be material planning consideration in the determination of planning applications, dependent on the details of the Proposed Development.

[7] Non-Road Mobile Machinery (Emission of Gaseous and Particulate Pollutants) (Amendment) Regulations 2014, SI 2014/1309
[8] Defra (2016) Local Air Quality Management Technical Guidance TG(16)
[9] Environmental Protection Act 1990, Chapter 43, Part III Statutory Nuisances and Clean Air

12.14 The National Planning Policy Framework (NPPF)[10] was updated in July 2021 with the purpose of planning to achieve sustainable development. Paragraph 186 of the NPPF on air quality states that:

> *"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."*

12.15 In addition, paragraph 105 states that:

> *"The planning system should actively manage patterns of growth in support of these objectives. 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. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making."*

12.16 Paragraph 174(e) discusses how planning policies and decisions should contribute to and enhance the natural and local environment. In relation to air quality, NPPF notes that this can be achieved 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."*

## Local Planning Policy

### Manchester's Local Development Framework, Core Strategy Development Framework

12.17 Manchester's Local Development Framework, 2012[11] will guide the location, scale and type of future development in the city of Manchester up to 2027. This strategy is the adopted local plan. The strategy provides policies that will be used in determining planning applications and will guide the local plan for air quality.

12.18 Relating to air quality, 'Policy EN16 – Air Quality' states that

> *"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,*

[10] Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework

[11] Manchester's Local Development Framework 2012-2027. Available at: https://secure.manchester.gov.uk/info/200074/planning/6573/core_strategy_2012-2027

*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."*

### Greater Manchester Air Quality Action 2016–2021 and Greater Manchester Low-Emission Strategy

12.19 On behalf of the GMCA[12], Transport for Greater Manchester (TfGM) prepared the Greater Manchester Air Quality Action Plan (AQAP) for 2016 to 2021 and the Greater Manchester Low-Emission Strategy.

12.20 The AQAP outlines "*actions that will be ratified by TfGM and district authorities to tackle air quality in Key Priority Areas, whilst supporting the sustainable economic growth of the region*". The common objectives of the AQAP and Low Emission Strategy are:

- To improve air quality across Greater Manchester;
- Embed low emission behaviours in organisations and lifestyles by 2025; and
- Support the UK Government in meeting and maintaining all EU thresholds for key air quality pollutants at the earliest date to reduce health impacts.

### Greater Manchester Transport Strategy

12.21 TfGM has also produced a Transport Strategy[13] which identifies the influence of transport on air quality and the plan for Greater Manchester for the future.

### Manchester Clean Air Zone (CAZ)

12.22 The Manchester Clean Air Zone, due to be implemented on 30th May 2022, is "*Designed to protect everyone's health by bringing harmful nitrogen dioxide air pollution at the roadside within legal limits as soon as possible"*[14].

### Clean Air Strategy

12.23 Defra published an updated Clean Air Strategy in 2019[15], which sets targets for improving air quality across the country. It is aimed at tackling all sources of air pollution across the country, making air healthier to breathe, protecting nature and boosting the economy. It also includes actions for reducing emissions from various sources, such as transport, domestic activities, farming and industry. There is also a long-term target for reducing population exposure to $PM_{2.5}$ concentrations to meet the World Health Organisation (WHO) target of 10 µg/m$^3$ as an annual mean. In particular, the Clean Air Strategy states:

[12] GMCA 2016-2021. Available at: https://secure.manchester.gov.uk/download/downloads/id/24676/greater_manchester_air_quality_action_plan_-_2016-2021.pdf. Accessed 14/01/2022

[13] Manchester City Council and GMPTE (2040), Transport Strategy for Manchester City Centre. Available from: https://tfgm.com/2040-transport-strategy. Accessed 14/01/2022

[14] Manchester CAZ. Available from: https://cleanairgm.com/technical-documents/. Accessed 14/01/2022

[15] Defra (2019). Clean Air Strategy 2019.

*"New legislation will create a stronger and a more coherent framework for action to tackle air pollution. This will be underpinned by new England-wide powers to control major sources of air pollution, in line with the risk they pose to public health and the environment, plus new local powers to take action in areas with an air pollution problem. These will support the creation of Clean Air Zones to lower emissions from all sources of air pollution, backed up with clear enforcement mechanism."*

12.24 It is important to note that in September 2021, the WHO published updated air quality guideline (AQG) levels[16], these include interim targets and ultimately, lower annual mean levels than previous. These include an annual mean reduction of $NO_2$ from the previous level of 40 µg/m$^3$ to 10 µg/m$^3$, $PM_{2.5}$ from 10 µg/m$^3$ to 5 µg/m$^3$ and $PM_{10}$ from the previous level of 20 µg/m$^3$ to 15 µg/m$^3$. However, the new WHO guidelines are currently not legally binding in the UK, and the Clean Air Strategy will continue with the aim of meeting the previous WHO levels until an amendment or new legislation supersedes this document.

### Development Policies

12.25 The Greater Manchester Air Quality Action Plan[12] outlines actions for managing new developments in Section 6. This guidance outlines the use of the IAQM Guidance of Dust and Demolition being adopted for use across all Greater Manchester councils. In addition, the Action Plan also outlines that during development, "*Emissions associated with sites (once operational) may be assessed at planning application stage on an individual basis. Whilst the GMSF identifies the broad policy and planning approach that will be used by local authorities in potential development areas, it is typically the responsibility of the developers to demonstrate that environmental impacts are acceptable*"[12].

## Other **Relevant** Policy, Standards and Guidance

### Local Air Quality Management Policy Guidance and Technical Guidance

12.26 The policy guidance note, LAQM.PG(16)[8] provides additional guidance on the links between transport and air quality and the links between air quality and the land use planning system. It summarises the main ways in which the land-use planning system can help deliver compliance with the air quality objectives. This is relevant to any external organisations who may wish to engage with the local authority to assist in the delivery of their statutory duties on managing air quality. The technical guidance, LAQM.TG(16)[8] is designed to support local authorities in carrying out their duties to review and assess air quality in their area. It provides detailed guidance on how to assess the impact of measures using existing air quality tools. Where relevant, this guidance has been taken into account in this assessment.

[16] WHO Global Air Quality Guidelines, 2021. Available at: https://apps.who.int/iris/bitstream/handle/10665/345334/9789240034433-eng.pdf?sequence=1&isAllowed=y

### Institute of Air Quality Management Dust Guidance

12.27 The latest Institute of Air Quality Management (IAQM) guidance[17] provides guidance to development consultants and environmental health officers on how to assess air quality impacts from construction. The IAQM guidance provides a method for classifying the significance of effect from construction activities based on the 'dust magnitude' (high, medium or low) and proximity of the Site to the closest receptors. The guidance recommends that once the significance of effect from construction is identified, the appropriate mitigation measures are implemented. Experience has shown that once the appropriate mitigation measures are applied in most cases the resulting dust impacts can be reduced to negligible levels.

### EPUK/IAQM Land-use Planning and Development Control

12.28 The 2017 Land-Use Planning & Development Control guidance document[18] produced by Environmental Protection UK (EPUK) and the IAQM provides a framework for professionals operating within the planning system to provide a means of reaching sound decisions, with regard to the air quality implications of development proposals.

12.29 The document provides guidance on when air quality assessments are required by providing screening criteria regarding the size of a development, changes to traffic flows/composition energy facilities or combustion processes associated with the development.

## Assessment Methodology and Significance Criteria

12.30 The overall approach to the air quality assessment comprises:

- A review of existing air quality conditions at, and in the vicinity of the Site;
- An assessment of the dust risk from construction phase activities;
- An assessment of construction traffic impacts; and
- Formulation of mitigation measures, where appropriate, to ensure any adverse effects on air quality are minimised.

### Assessment Scenarios

12.31 The assessment scenarios in respect of the EIA for the Proposed Development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
    - Scenario 1a - Assessment of the air quality impacts relating to the Proposed Development (Application 2) only.

[17] IAQM (2016) Guidance on the Assessment of Dust from Demolition and Construction (Version 1.1)
[18] EPUK/IAQM, (2017) Land-Use Planning & Development Control: Planning for Air Quality

- Scenario 1b - Assessment of the air quality impacts relating to the Proposed Development, plus air quality impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
- Scenario 1c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.

- Assessment Stage 2 - Completed Development and Operational Phase:
  - Scenario 2a - Assessment of the impacts relating to the Proposed Development only.
  - Scenario 2b Assessment of the impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4.
  - Scenario 2c – Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.

12.32 The completed development for this application (Scenario 2a) will not include any new buildings or operational phase emissions. As agreed within the Scoping Opinion[19] (see **Appendix 2.2**) there would be no risk of significant impacts to air quality and can be scoped out of further assessment.

### Method of Baseline Assessment

12.33 Existing or baseline ambient air quality refers to the concentrations of relevant substances that are already present in the environment. These are present from various sources, such as industrial processes, commercial and domestic activities, traffic and natural sources.

12.34 The following data sources have been used to determine the baseline and future conditions of air quality in the study area:

- Greater Manchester Combined Authority (GMCA) Air Quality Annual Status Report (ASR)[20];
- The Defra Local Air Quality Management website[21]; and
- The Environment Agency (EA) website[22].

[19] Manchester City Council Red Bank Neighbourhood Infrastructure Works, Scoping Opinion. Accessed 07/01/2022
[20] Greater Manchester Combined Authority, 2021. Air Quality Annual Status Report (ASR).
[21] Defra, Local Air Quality Management website. Available at: http://laqm.defra.gov.uk/[Accessed: November 2021]
[22] Environment Agency website, https://environment.data.gov.uk/public-register/view/searchindustrial-installations [Accessed: November 2021]

12.35 The review identified the main sources of air pollution within the study area, local air quality monitoring data for recent years and local background pollutant concentrations. The baseline is the same for all assessments.

### Method of Construction Phase Assessment

12.36 This section refers to the method applied for 1a, 1b, and 1c to assess the construction dust impacts.

#### Construction Dust

12.37 The effects from demolition and construction of the Proposed Development have been assessed using the qualitative approach described in the latest guidance by the IAQM[17].

12.38 An 'impact' is described as a change in pollutant concentrations or dust deposition, while an 'effect' is described as the consequence of an impact. The main impacts that may arise during demolition and construction of the Proposed Development are:

- Dust deposition, resulting in the soiling of surfaces;
- Visible dust plumes;
- Elevated $PM_{10}$ concentrations as a result of dust generating activities on site; and
- An increase in $NO_2$ and $PM_{10}$ concentrations due to exhaust emissions from NRMM and vehicles accessing the Site.

12.39 The IAQM guidance[22] considers the potential for dust emissions from dust generating activities such as demolition of existing structures, earthworks, construction of new structures and trackout. Trackout is the transport of dust and dirt from the Site onto the public road network where it may be deposited and then re-suspended by vehicles using the network. This arises when vehicles leave the Site with dust materials, which may then spill onto the road, or when they travel over muddy ground on site and then transfer dust and dirt onto the road network.

12.40 For each of these dust-generating activities, the guidance considers three separate effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to a significant increase in $PM_{10}$ exposure.

12.41 The receptors can be human or ecological and are chosen based on their sensitivity to dust soiling and $PM_{10}$ exposure.

12.42 The methodology takes into account the scale on which the above effects are likely to be generated (classed as small, medium or large), the levels of background $PM_{10}$ concentrations and the distance to the closest receptor, in order to determine the sensitivity of the area. These factors are then taken into consideration when deriving

the overall risk for the Site. Suitable mitigation measures are suggested to reduce the risk of the Proposed Development.

12.43 There are five steps in the assessment process described in the IAQM guidance. These are summarised in **Appendix 12.1**, **Figure A.12.1** and a further description is provided in the following paragraphs.

*Step 1: Need for assessment*

12.44 The first step is the initial screening for the need for a detailed assessment. According to the IAQM guidance, an assessment is required where there are sensitive receptors within 350 m of the redline boundary (for ecological receptors that is 50 m) and/or within 50 m of the route(s) used by the construction vehicles on the public highway and up to 500 m from the Site entrance(s).

*Step 2: Assess the risk of dust impacts*

12.45 This step is split into three sections as follows:

- 2A. Define the potential dust emission magnitude;
- 2B. Define the sensitivity of the area; and
- 2C. Define the risk of impacts.

12.46 Each of the dust-generating activities is given a dust emission magnitude depending on the scale and nature of the works (step 2A) based on the criteria shown in Table 1 in **Appendix 12.1**. The sensitivity of the surrounding area is then determined (step 2B) for each dust effect from the above dust-generating activities, based on the proximity and number of receptors, their sensitivity to dust, the local $PM_{10}$ background concentrations and any other site-specific factors. The criteria for defining the sensitivity of the area to different dust effects is shown in Table 1 to Table 4 in **Appendix 12.1**. The overall risk of the impacts for each activity is then determined (step 2C) prior to the application of any mitigation measures using Table 5 in **Appendix 12.1** and an overall risk for the Site derived.

*Step 3: Determine the Site-specific mitigation*

12.47 Once each of the activities is assigned a risk rating, appropriate mitigation measures are identified. Where the risk is negligible, no mitigation measures beyond those required by legislation are necessary.

*Step 4: Determine any significant residual effects*

12.48 Once the risk of dust impacts has been determined and the appropriate dust mitigation measures identified, the final step is to determine whether there are any residual significant effects. The IAQM guidance notes that it is anticipated that with the implementation of effective site-specific mitigation measures, the environmental effect will not be significant in most cases.

*Step 5: Prepare a dust assessment report*

12.49 The last step of the assessment is the preparation of a Dust Assessment Report. This forms part of this report.

### Construction Traffic Assessment

12.50 This section refers to the assessment of construction traffic impacts from 1a only. Construction phase traffic information from 1b and 1c were not available and a qualitative comment has been provided. It is possible that Plot NT02 of Application 4 would come forward before the construction works of the Proposed Development have been completed. The Transport team have noted that NT02 would be using different construction routes as it fronts onto Dantzic Street and therefore no cumulative impact with the Proposed Development construction traffic which would be onto Cheetham Hill Road.

12.51 The EPUK/IAQM screening criteria[17]**Error! Bookmark not defined.** for areas in or outside an AQMA were used as appropriate across the road network. Meeting any of the respective criteria indicates that detailed dispersion modelling of road traffic emissions is likely to be required.

12.52 The screening criteria in relation to change in traffic flows and road realignment are as follows:

- For an area within or adjacent to an AQMA:
    - A change of Light Duty Vehicle (LDV) flows of more than 100 Annual Average Daily Traffic (AADT) movements;
    - A change of Heavy-Duty Vehicle (HDV) flows of more than 25 AADT movements; and
    - Realign roads, i.e. changing the proximity of receptors to traffic lanes 5 m where change is 5 m or more and the road is within an AQMA.
- For areas elsewhere:
    - A change of LDV flows of more than 500 AADT movements; and
    - A change of HDV flows of more than 100 AADT movements.

#### Assessment Scenarios

12.53 The assessment scenarios are summarised as follows:

- Baseline scenario for 2018 (using 2018 traffic volumes);
- Do Minimum (DM) scenario, which is the future year (2022) without the Proposed Development; and
- Do Something (DS) scenario, which is the same as the DM scenario (2022) but includes construction traffic generated by the Proposed Development.

12.54 Emission rates have been calculated using the Defra Emissions Factor Toolkit (EFT) v11 Impacts on air quality during operation have been modelled using 2022 vehicle emission factors and 2022 background concentrations.

## Sensitive Receptors

12.55 Dispersion modelling has been undertaken to calculate predicted concentrations at sensitive receptor locations. Sensitive receptors are defined as those residential properties/schools/hospitals that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction of the Proposed Development.

12.56 A desk-top study was undertaken to identify the existing sensitive receptors in the vicinity of the Proposed Development to assess the impact of changes to road traffic. Future receptors for the Proposed Development have been included.

12.57 Receptors have been modelled at a height of 4.5 m for first floor residential receptors and 1.5 m for all other receptors. Receptors to represent multiple heights were also included where necessary, including at the verification sites (MA36NO and MA88NO), which were modelled at heights of 3 m.

12.58 The closest sensitive receptor to the primary access point to the Site has been modelled as receptor R18, located on a residential building directly adjacent north-west of the Site boundary. The closest sensitive receptor to the additional access point used within the Construction DS scenario only, is receptor R11, a residential first-floor receptor located at 4.5 m off ground level, Red Bank, 38 m north-east of the Site boundary.

12.59 There are no sensitive ecological sites within 500 m of the Site; therefore, this element of the assessment has not been considered further.

12.60 Details of the receptors used are presented within Table 12.2: Modelled sensitive receptors, with the receptor locations shown in **Figure 12.5**, which shows proposed receptors, as well as monitoring locations in **Figure 12.2**, used in the model verification.

*Table 12.2: Modelled sensitive receptors*

| Receptor ID | Description | NGR (m) | | Height (m) |
|---|---|---|---|---|
| | | X | Y | |
| R1 | Nursery/Residential | 385328 | 399909 | 1.5 |
| R2 | Primary School | 384996 | 399371 | 1.5 |
| R3 | Medical Centre | 385144 | 399580 | 1.5 |
| R4 | Primary School | 385252 | 400245 | 1.5 |
| R5 | Residential | 384441 | 400656 | 1.5 |
| R6 | Residential | 385388 | 400656 | 1.5 |
| R7 | Residential | 385148 | 400647 | 1.5 |
| R8 | Car Park | 384371 | 399585 | 1.5 |
| R9 | Residential | 385348 | 400343 | 1.5 |
| R10 | Car Park | 384996 | 400097 | 1.5 |
| R11 | Residential – first floor | 384415 | 399600 | 4.5 |

| Receptor ID | Description | NGR (m) | | Height (m) |
|---|---|---|---|---|
| | | X | Y | |
| R12 | Residential | 385395 | 400635 | 1.5 |
| R13 | Industrial | 384944 | 399837 | 1.5 |
| R14 | Car Park | 384323 | 399383 | 1.5 |
| R15 | Residential | 384655 | 400468 | 1.5 |
| R16 | Residential – first floor | 384438 | 398993 | 4.5 |
| R17 | Residential | 384107 | 399374 | 1.5 |
| R18 | Residential | 384255 | 399358 | 1.5 |
| R19 | Residential | 385457 | 400209 | 1.5 |
| R20 | Residential | 384271 | 399400 | 1.5 |
| R21 | Commercial | 384111 | 399480 | 1.5 |
| R23 | Commercial development | 384198 | 399038 | 1.5 |
| R24 | Residential - first floor | 384430 | 398888 | 4.5 |
| R25 | Residential - first floor | 384503 | 398910 | 4.5 |
| R26 | Residential | 384517 | 399003 | 1.5 |
| R27 | Residential - first floor | 384560 | 398969 | 4.5 |
| R28 | Residential | 385704 | 400594 | 1.5 |
| R29 | Residential | 385571 | 400625 | 1.5 |
| R30 | Residential - first floor | 384252 | 399801 | 4.5 |

### Dispersion Model Setup

12.61 This section details the inputs and set-up for the construction traffic dispersion modelling. The ADMS Roads dispersion model (version 5.0.0.1) has been used for the assessment of road traffic.

### Meteorological Data

12.62 The meteorological data used in this assessment were measured at Manchester Airport meteorological station. The data was collected over the period 1st January 2018 to 31st December 2018 (inclusive). Manchester Airport is located approximately 27 km south-west of the Proposed Development. This meteorological site was chosen due to its proximity to the Proposed Development.

12.63 Most dispersion models of roads do not use meteorological data if modelling calm wind conditions, as dispersion of air pollutants is more difficult to calculate in these circumstances. ADMS-Roads treats calm wind conditions by setting the minimum wind speed to 0.75m/s. Defra's LAQM.TG16 guidance**Error! Bookmark not defined.** recommends that the meteorological data file is tested in a dispersion model and the relevant output log file checked to confirm the number of missing hours and calm hours that cannot be used by the dispersion model. This is important when considering predictions of high percentiles and the number of exceedances. The guidance

recommends that meteorological data should only be used if the percentage of usable hours is greater than 75% and preferably 90%.

12.64 Hourly sequential observation data was used. The dataset includes 8,499 lines of usable hourly data, out of a total of 8,760 lines of data. This corresponds to over 97% of the year and hence is above the 90% threshold, so meets the requirements of the Defra guidance and is adequate for the dispersion modelling. **Figure 12.6** in shows the wind rose for Manchester Airport for 2018. It can be seen that the predominant wind direction is southerly.

### Other Input Parameters

12.65 The extent of mechanical turbulence (and hence, mixing) in the atmosphere is affected by the surface/ground over which the air is passing. Typical surface roughness values range from 0.0001 m (for water or sandy deserts) to 1.5 m (for cities, forests and industrial areas). In this assessment, the general land use in the local study area can be described as "Large urban areas" with a corresponding surface roughness of 1.5 m. The surface roughness value used for the meteorological station site was "parkland, open suburbia" with a corresponding surface roughness of 0.5 m which is considered representative of the Site.

12.66 The minimum Monin-Obukhov length is a model parameter which describes the extent to which the urban heat island effect limits stable atmospheric conditions. A Monin-Obukhov length of 100 m has been used in this dispersion modelling study. It is suggested in ADMS-Roads that this length is suitable for "Large conurbations >1 million". The same Monin-Obukhov length was used for the meteorological station site. Which is considered representative of the Site.

### $NO_x$ to $NO_2$ Conversion

12.67 The dispersion model predicts $NO_x$ concentrations which comprise nitric oxide (NO) and nitrogen dioxide ($NO_2$). $NO_x$ is emitted from combustion processes, primarily as NO with a small percentage of $NO_2$. The emitted NO reacts with oxidants in the air (mainly ozone) to form $NO_2$. $NO_2$ is associated with effects on human health. The air quality standards for the protection of human health are based on $NO_2$ rather than total $NO_x$ or NO.

12.68 LAQM.TG168 details an approach for calculating the roadside conversion of $NO_x$ to $NO_2$. This approach takes into account the difference between ambient $NO_x$ concentrations with and without the Proposed Development, the concentration of ozone and the different proportions of primary $NO_2$ emissions in different years. This approach is available as a spreadsheet calculator, with the most up-to-date version being version 8.1, released in August 2020[23].

### Model Verification

12.69 Model verification refers to the comparison of modelled and measured pollutant concentrations at the same locations to determine the performance of the model. Should the majority of model results for $NO_2$ be within ±25% of the measured values and there is no systematic over or under-prediction of concentrations, then the

LAQM.TG16[Error! Bookmark not defined.] guidance advises that no adjustment is necessary. If this is not the case, modelled concentrations are adjusted based on the observed relationship between modelled and measured $NO_2$ concentrations to provide a better agreement.

### Method of Future Phase Assessment

#### Construction Dust Assessment

12.70 Construction dust assessment for the future phases 1b and 1c have been assessed following the IAQM construction dust assessment method detailed in section 12.36. No detailed information for the future phases 1b and 1c were available at the time of assessment, however professional judgement to assess the dust risk has been used. The assumptions regarding the magnitude of work expected are detailed within the assessment.

#### Construction Traffic Assessment

12.71 No future phase construction traffic data was available at the time of assessment. A qualitative review of risk has been carried out based on the expected quantum of development and potential impacts as a result of additional vehicle movements.

#### Operational Phase Assessment

12.72 Operational phase traffic has been assessed for the full operational scenario (2c).

12.73 As noted above and as agreed in the scoping opinion there are no 'operational' traffic emissions associated with scenario 2a. Traffic data has therefore been modelled for the scenario 2c (Applications 1, 3 and 4, and the wider SRF) which is when the maximum predicted movements would take place. A conservative assumption for opening year has been applied as pessimistic assumption.

##### Assessment Scenarios

12.74 The assessment scenarios are summarised as follows:

- Baseline scenario for 2018 (using 2018 traffic volumes);
- Do Minimum (DM) scenario, which is the future year (2027) without the Proposed Development; and
- Do Something (DS) scenario, which is the same as the DM scenario (2027) but includes operational traffic generated by the Proposed Development.

12.75 Emission rates have been calculated using the Defra Emissions Factor Toolkit (EFT) v11. Impacts on air quality during operation have been modelled using 2027 vehicle emission factors and 2027 background concentrations.

12.76 All other modelling information, sensitive receptors and model set up remains the same as detailed in sections 12.55 to 12.69.

## Characterisation of Impact

### Construction Dust

12.77 The IAQM guidance notes that it is anticipated that with the implementation of effective site-specific mitigation measures, the environmental effect will not be significant in most cases. Any significant effects would be determined based on the impact after mitigation is implemented. These would be determined based on the potential magnitude of risk and sensitivity of the area (as detailed in paragraph 12.46).

### Construction and Operational Traffic

12.78 The 2017 EPUK/IAQM guidance note 'Land-Use Planning & Development Control'[18] provides an approach to determining the air quality impacts resulting from a proposed development and the overall significance of local air quality effects arising from a proposed development.

12.79 Firstly, impact descriptors are determined based on the magnitude of incremental change as a proportion of the relevant assessment level, in this instance the annual mean $NO_2$, $PM_{10}$, and $PM_{2.5}$ objectives. The change is then examined in relation to the predicted total pollutant concentrations in the assessment year and its relationship with the annual mean $NO_2$, $PM_{10}$, and $PM_{2.5}$ objectives.

12.80 If the impact descriptor is negligible or slight, this is considered to not have a significant effect. The overall significance is determined by professional judgement.

## Significance Criteria

### Construction Dust

12.81 The IAQM guidance[17] for the assessment of dust impacts has been used to determine dust risk and significance following any required mitigation as detailed in paragraph 12.104

### Construction and Operational Traffic

12.82 The assessment framework for determining impact descriptors at any assessed receptors is shown in Table 12.3: Impact descriptors.

*Table 12.3: Impact descriptors*

| Annual average concentrations at receptor in the assessment year | % Change in concentrations relative to annual mean $NO_2$ and $PM_{10}$ objectives | | | |
|---|---|---|---|---|
| | 1 | 2-5 | 6-10 | >10 |
| 75% or less of objective | Negligible | Negligible | Slight | Moderate |
| 76-94% of objective | Negligible | Slight | Moderate | Moderate |
| 95-102% of objective | Slight | Moderate | Moderate | Substantial |
| 103-109% of objective | Moderate | Moderate | Substantial | Substantial |
| 110% of more of objective | Moderate | Substantial | Substantial | Substantial |
| Note: Changes in pollutant concentrations of less than 0% i.e. <0.5% would be described as negligible | | | | |

12.83 The impact descriptors at each of the assessed receptors can then be used as a starting point to making a judgement on the overall significance of effect of a proposed development, however other influences would also need to be taken into account, such as:

- The existing and future air quality in the absence of the development;
- The extent of current and future population exposure to the impacts; and
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

12.84 Professional judgement should be used to determine the overall significance of effects of the Proposed Development, however in circumstances where the Proposed Development can be judged in isolation, it is likely that a 'moderate' or 'substantial' impact will give rise to a significant effect and a 'negligible' or 'slight' impact will not result in a significant effect.

### Assumptions/Limitations

12.85 Assumptions for the future phase assessment have been based on professional judgement regarding the type and potential impact of effects.

12.86 In undertaking the air quality assessment of the application site and wider surrounding area, there are a number of limitations and constraints affecting the outputs from this work. These include:

- The traffic data used in the model;
- The traffic emissions data;
- Simplifications in model algorithms and empirical relationships that are used to simulate complex physical and chemical processes in the atmosphere;
- The background concentrations; and

- The meteorological data.

12.87 Road traffic flows and speed used in the assessment were provided by the project transport consultants for all construction and operational assessment scenarios. The traffic forecasting is in-line with the current guidance. Further details are available in the transport assessment (add ref). The limitations noted are addressed by the model verification (detailed in Section 12.132).

### Consultation

12.88 The EIA scoping report provided details of the baseline situation and proposed methodology for the assessment. A summary of comments provided in the Scoping Opinion are provided in Table 12.4: Consultation.

*Table 12.4: Consultation*

| Consultee | Date and Time | Comments | Actions |
|---|---|---|---|
| Manchester Council | December 2021 | The comments within your Scoping Report are noted and are acceptable in terms of their consideration in the ES. | Noted |

## Baseline Conditions

### Sources of Air Pollution

#### Industrial Processes

12.89 Industrial air pollution sources are regulated through a system of operating permits or authorisations, requiring stringent emission limits to be met and ensuring that any releases to the environment are minimised or rendered harmless. Regulated (or prescribed) industrial processes are classified as Part A or Part B processes and are regulated through the Pollution Prevention and Control (PPC) system[23,24]. The larger more polluting processes are regulated by the EA, and the smaller less polluting ones by the local authorities. Local authorities tend also to regulate only for emissions to air, whereas the EA regulates emissions to air, water and land.

12.90 There are no EA regulated processes with relevant releases to air within 2 km of the Proposed Development.

12.91 The contribution of all industrial processes to local air quality are assumed to be included in the background concentrations for this assessment (paragraph 12.101).

[23] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)
[24] The Environmental Permitting (England and Wales) (Amendment) Regulations 2013, SI 2013/390

### Road Traffic

12.92 In recent decades, atmospheric emissions from transport on a national basis have grown to match or exceed other sources in respect of many pollutants, particularly in urban areas.

12.93 The main air quality issues are associated with the emission of pollutants from road traffic. The main pollutant of concern is $NO_2$. Within the ASR[20], road traffic has consistently been cited as the principal reason for the declaration of AQMAs in MCC.

12.94 The Site is bound by Dantzic Street and Collyhurst Road to the southeast, Roger Street and Hargreave's Street to the south and Red Bank to the north.

12.95 The main sources of traffic emissions within 2 km of the development site are the A665, A6010, A665 and the A62. These major roads carry significant volumes of traffic.

## Local Air Quality Management

### Local Air Quality

12.96 The Environment Act 1995[6] requires local authorities to review and assess air quality with respect to the objectives for seven pollutants specified in the National Air Quality Strategy. Local authorities are required to carry out an assessment and produce an ASR. If the ASR identifies potential hotspot areas likely to exceed air quality objectives, then a detailed assessment of those areas is required. Where objectives are not predicted to be met, local authorities must declare the area an AQMA. In addition, local authorities are required to produce an AQAP, which includes measures to improve air quality within the AQMA.

12.97 The Proposed Development site is within an AQMA to the southwest, and northeast, shown in **Figure 12.1**. MCC declared the Manchester AQMA in 2001 due to exceedances of the nitrogen dioxide ($NO_2$) annual mean objective and particulate matter ($PM_{10}$) 24-hour mean objective[25]. The Manchester AQMA was amended in 2007, to refer only to the exceedances of the annual mean $NO_2$ objective of 40 µg/m$^3$. Since this declaration the Greater Manchester Combined Authority (GMCA) has been formed, the title of the AQMA has been amended to the GMCA AQMA. The GMCA AQMA is described as the area covering Manchester city centre, around Manchester Airport and the main arterial traffic routes in the city.

### Local Monitoring Data

12.98 MCC undertakes passive monitoring of air quality with the use of diffusion tubes. There are seven diffusion tube sites for $NO_2$ within 2 km of the Proposed Development, with the nearest site (MA36NO) being approximately 510 m northeast of the Site. Table 12.5: Local air quality monitoring data for annual mean $NO_2$ concentrations at non-automatic monitoring sites within 2 km of the Site presents details and monitoring data for these sites for

[25] Defra. Available at: https://uk-air.defra.gov.uk/aqma/list [Accessed 26/10/21]

the past five years. There is one continuous monitoring sites within 2 km of the Proposed Development. The locations of the monitoring sites considered in this assessment are provided in **Figure 12.2**.

12.99 The $NO_2$ annual mean standard was exceeded at six of the seven monitoring sites within 2 km of the Site in 2016 – 2019. During 2020, all seven sites had a decrease in $NO_2$ concentration likely due to Covid-19 reducing road travel throughout the year.

12.100 All the monitoring sites below are in the AQMA; six of these sites were recording exceedances of the annual mean $NO_2$ objective in 2016, this had fallen to two sites in 2019 and zero in 2020. However, it is important to note that 2020 concentrations will have been heavily influenced by the marked drop in traffic as a result of the national lockdowns, and therefore, will likely be an outlier. The majority of the development site is not within an AQMA and is set back from major roads, therefore, it is expected that concentrations across the Site will fall towards background levels and as a result, will be in compliance of all relevant standards.

*Table 12.5: Local air quality monitoring data for annual mean $NO_2$ concentrations at non-automatic monitoring sites within 2 km of the Site*

| ID | Site | X OS Grid Ref | Y OS Grid Ref | Location Type | Distance from Site (km) | Annual mean $NO_2$ Concentration (µg/m$^3$) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 2016 | 2017 | 2018 | 2019 | 2020 |
| MA9A NO | 9A | 384601 | 398303 | Kerbside | 1.7 | **51.9** | **51.1** | **45.8** | **44.9** | 32.5 |
| MA26 ANO | 26A | 383971 | 398876 | Urban Background | 1.1 | 37.1 | 35.5 | 33.4 | 33.0 | 22.9 |
| MA36 NO | 36 | 385205 | 399750 | Roadside | 0.5 | **40.1** | 34.0 | 33.1 | 31.7 | 24.3 |
| MA59 NO | 59 | 384310 | 398337 | Urban Background | 1.6 | **40.8** | 35.7 | 31.6 | 33.1 | 22.3 |
| MA60 NO | 60 | 384310 | 398337 | Urban Background | 1.6 | **40.8** | 35.7 | 31.6 | 33.1 | 22.3 |
| MA61 NO | 61 | 384310 | 398337 | Urban Background | 1.6 | **40.8** | 35.7 | 31.6 | 33.1 | 22.3 |
| MA88 NO | 88 | 384469 | 398981 | Roadside | 0.5 | **57.8** | **57.9** | **46.8** | **45.2** | 30.1 |
| Note: **Bold** indicates an exceedance of the $NO_2$ annual mean concentration of 40µg/m$^3$. | | | | | | | | | | |

*Table 12.6: Local air quality monitoring data for annual mean $NO_2$ concentrations at automatic monitoring sites within 2 km of the Site*

| ID | Site | X OS Grid Ref | Y OS Grid Ref | Location Type | Distance from Site (km) | Annual mean $NO_2$ Concentration (µg/m$^3$) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 2016 | 2017 | 2018 | 2019 | 2020 |
| MAN3 | Manchester Piccadilly | 384310 | 398337 | Urban Centre | 1.6 | **40.0** | 36.0 | 35.0 | 36.0 | 27.0 |
| Note: **Bold** indicates an exceedance of the $NO_2$ annual mean concentration of 40µg/m$^3$. | | | | | | | | | | |

### Background Concentrations

12.101 Background concentrations refer to the existing levels of pollution in the atmosphere, produced by a variety of stationary and non-stationary sources, such as roads and industrial processes. The Defra website includes estimated background pollutant concentrations for $NO_x$, $NO_2$, $PM_{10}$, $PM_{2.5}$ for each 1 km by 1 km OS grid square in the UK.

12.102 The Defra background pollutant concentrations are shown below in Table 12.7: Defra background pollutant concentrations and are all well below the annual mean air quality objectives for $NO_2$ (40 µg/m$^3$), $PM_{10}$ (40 µg/m$^3$) and $PM_{2.5}$ (25 µg/m$^3$).

12.103 Grid Squares 384500; 399500 and 384500; 399500 represents the grid location of the Site, that spans across both 1 km by 1 km grid squares. It can be observed that the annual mean background concentrations are all below the relevant air quality standards for all pollutants.

*Table 12.7: Defra background pollutant concentrations*

| OS Grid Square | Year | Annual mean Concentration (µg/m$^3$) | | |
|---|---|---|---|---|
| | | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| 384500; 399500 | 2018 | 23.3 | 12.8 | 8.4 |
| 384500; 400500 | 2018 | 19.8 | 12.8 | 8.5 |
| 384500; 399500 | 2022 | 19.6 | 12.0 | 7.9 |
| 384500; 400500 | 2022 | 16.7 | 12.0 | 8.0 |
| 384500; 399500 | 2027 | 17.1 | 11.7 | 7.6 |
| 384500; 400500 | 2027 | 14.4 | 11.7 | 7.8 |

## Embedded Mitigation

12.104 There is no embedded mitigation for air quality related to this Proposed Development. It would be recommended that design interventions to reduce future air quality impacts are considered for the future Red Bank development and wider SRF. For example:

- Measures to encourage modal shift;

- Implementation of electric vehicle charging points; and
- Design residential properties with a distance buffer from main roads.

# Assessment of Likely Significant Effects

## Demolition and Construction

### Assessment Scenario 1a – Proposed Development Only

#### Sensitive Receptors

12.105 Sensitive receptors are defined as those properties/schools/hospitals that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction of the Proposed Development.

12.106 There are more than 100 sensitive receptors within 50 m of the Site. These include residential properties and flats located on the surrounding roads. Residential properties are considered 'high sensitivity receptors' by the IAQM guidance.

12.107 There are no sensitive ecological sites sensitive within 500 m of the Site; therefore, this element of the assessment has not been considered further. **Figure 12.3** in displays the construction dust buffers around the Site.

#### Dust Emission Magnitude

12.108 Following the methodology outlined in paragraph 12.30, each dust-generating activity has been assigned a dust emission magnitude as shown in Table 12.8**: Dust emission magnitude for Scenario 1a**.

*Table 12.8: Dust emission magnitude for Scenario 1a*

| Activity | Dust Emission Magnitude | Reasoning |
|---|---|---|
| Demolition | Negligible | No demolition activities proposed.<br>The potential dust risk magnitude is therefore **'Negligible'**. |
| Earthworks | Large | Total site area >10,000m$^2$.<br>Potentially dusty soil type (e.g. silt).<br>>10 heavy earth moving vehicles active at any one time.<br>Total material moved >100,000 tonnes.<br>The potential earthworks magnitude is therefore '**Large**'. |
| Construction | Small | Total building volume <25,000m$^3$.<br>Construction material with low potential for |

| Activity | Dust Emission Magnitude | Reasoning |
|---|---|---|
| | | dust release (e.g. metal cladding or timber).<br>The potential dust risk magnitude is therefore **'Small'**. |
| Trackout | Large | >50 HDV (>3.5t) outward movements in any one day.<br>Potentially dusty surface material (e.g. high clay content)<br>The potential dust risk magnitude is therefore **'Large'**. |

### Sensitivity of the area

12.109 There are more than 100 high sensitivity receptors within 50m of the scheme boundary. As such, the areas sensitivity to dust soiling has been classified as High in accordance with the IAQM guidance.

12.110 The lower criterion for background $PM_{10}$ concentrations in the IAQM guidance is 24µg/$m^3$. The estimated Defra $PM_{10}$ background concentration is 12.8 µg/$m^3$ for 2018. The sensitivity of the area to human health impacts has therefore been assigned as low.

### Risk of impacts

12.111 Taking into consideration the dust emission magnitude and the sensitivity of the area, the scheme can be classified as High risk to dust soiling and Low risk to human health impacts from demolition, earthworks, construction and trackout (see Table 12.9**: Summary dust risk table prior to mitigation**).

12.112 Specific mitigation to minimise the risk of dust soiling and human health impacts of the Proposed Development is described in paragraph 12.47.

*Table 12.9: Summary dust risk table prior to mitigation for Scenario 1a*

| Activity | Dust soiling | Human health |
|---|---|---|
| Earthworks | High risk | Low risk |
| Construction | Low risk | Low risk |
| Trackout | High risk | High risk |

12.113 Following the implementation of appropriate mitigation, the effects of dust soiling and effects on human health should be **negligible** and the impacts would therefore be **not significant**.

### Assessment Scenario 1b – Proposed Development, Application 1, 3, and 4

#### Sensitive Receptors

12.114 Sensitive receptors are defined as those properties/schools/hospitals that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction of the Proposed Development.

12.115 There are more than 100 sensitive receptors within 50 m of the Site. These include residential properties and flats located on the surrounding roads. Residential properties are considered 'high sensitivity receptors' by the IAQM guidance. It is likely the development would be built in phases, therefore there may well be other new sensitive receptors located within 50m of the construction works.

12.116 There are no sensitive ecological sites sensitive within 500 m of the Site; therefore, this element of the assessment has not been considered further. **Figure 12.3** displays the construction dust buffers around the Site.

#### Dust Emission Magnitude

12.117 Following the methodology outlined in paragraph 12.30, each dust-generating activity has been assigned a dust emission magnitude as shown in Table 12.10**: Dust emission magnitude for construction activities in Scenario 1b**

*Table 12.10: Dust emission magnitude for construction activities in Scenario 1b*

| Activity | Dust Emission Magnitude | Reasoning |
|---|---|---|
| Demolition | Negligible | No demolition activities proposed.<br>The potential dust risk magnitude is therefore **'Negligible'**. |
| Earthworks | Large | Total site area >10,000m$^2$.<br>Potentially dusty soil type (e.g. silt).<br>>10 heavy earth moving vehicles active at any one time.<br>Total material moved >100,000 tonnes.<br>The potential earthworks magnitude is therefore '**Large**'. |
| Construction | Large | Total building volume >100,000m$^3$.<br>Construction material including concrete, batching, and sandblasting.<br>The potential dust risk magnitude is therefore **'Large'**. |
| Trackout | Large | >50 HDV (>3.5t) outward movements in any one day.<br>Potentially dusty surface material (e.g. high |

| Activity | Dust Emission Magnitude | Reasoning |
|---|---|---|
| | | clay content)<br>The potential dust risk magnitude is therefore **'Large'**. |

### Sensitivity of the area

12.118 There are more than 100 high sensitivity receptors within 50m of the scheme boundary. As such, the areas sensitivity to dust soiling has been classified as High in accordance with the IAQM guidance.

12.119 The lower criterion for background $PM_{10}$ concentrations in the IAQM guidance is 24µg/$m^3$. The estimated Defra $PM_{10}$ background concentration is 12.8µg/$m^3$ for 2018. The sensitivity of the area to human health impacts has therefore been assigned as low.

### Risk of impacts

12.120 Taking into consideration the dust emission magnitude and the sensitivity of the area, the scheme can be classified as High risk to dust soiling and Low risk to human health impacts from demolition, earthworks, construction and trackout (see Table 12.11)

12.121 Specific mitigation to minimise the risk of dust soiling and human health impacts of the Proposed Development is described in paragraph 12.47.

*Table 12.11: Summary dust risk table prior to mitigation for Scenario 1b*

| Activity | Dust soiling | Human health |
|---|---|---|
| Earthworks | High risk | Low risk |
| Construction | High risk | Low risk |
| Trackout | High risk | Low risk |

12.122 Following the implementation of appropriate mitigation, the effects of dust soiling and effects on human health should be **negligible** and the impacts would therefore be **not significant**.

### Assessment Scenario 1c – Proposed Development, Application 1, 3, 4, and the wider SRF

### Sensitive Receptors

12.123 Sensitive receptors are defined as those properties/schools/hospitals that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction of the Proposed Development.

12.124 There are more than 100 sensitive receptors within 50 m of the Site. These include residential properties and flats located on the surrounding roads. Residential properties are considered 'high sensitivity receptors' by the

IAQM guidance. It is likely the development would be built in phases, therefore there may well be other new sensitive receptors located within 50m of the construction works.

12.125 There are no sensitive ecological sites sensitive within 500 m of the Site; therefore, this element of the assessment has not been considered further. **Figure 12.3** displays the construction dust buffers around the Site.

### Dust Emission Magnitude

12.126 Following the methodology outlined in paragraph 12.30, each dust-generating activity has been assigned a dust emission magnitude as shown in Table 12.11.

*Table 12.11: Dust emission magnitude for construction activities for Scenario 1c*

| Activity | Dust Emission Magnitude | Reasoning |
|---|---|---|
| Demolition | Negligible | No demolition activities proposed.<br>The potential dust risk magnitude is therefore **'Negligible'**. |
| Earthworks | Large | Total site area >10,000m$^2$.<br>Potentially dusty soil type (e.g. silt).<br>>10 heavy earth moving vehicles active at any one time.<br>Total material moved >100,000 tonnes.<br>The potential earthworks magnitude is therefore '**Large**'. |
| Construction | Large | Total building volume >100,000m$^3$.<br>Construction material including concrete, batching, and sandblasting.<br>The potential dust risk magnitude is therefore **'Large'**. |
| Trackout | Large | >50 HDV (>3.5t) outward movements in any one day.<br>Potentially dusty surface material (e.g. high clay content)<br>The potential dust risk magnitude is therefore **'Large'**. |

### Sensitivity of the area

12.127 There are more than 100 high sensitivity receptors within 50m of the scheme boundary. As such, the areas sensitivity to dust soiling has been classified as High in accordance with the IAQM guidance.

12.128 The lower criterion for background $PM_{10}$ concentrations in the IAQM guidance is 24µg/m$^3$. The estimated Defra $PM_{10}$ background concentration is 12.8µg/m$^3$ for 2018. The sensitivity of the area to human health impacts has therefore been assigned as low.

### Risk of impacts

12.129 Taking into consideration the dust emission magnitude and the sensitivity of the area, the scheme can be classified as High risk to dust soiling and Low risk to human health impacts from demolition, earthworks, construction and trackout (see Table 12.12).

12.130 Specific mitigation to minimise the risk of dust soiling and human health impacts of the Proposed Development is described in paragraph 12.47.

*Table 12.12: Summary dust risk table prior to mitigation for Scenario 1c*

| Activity | Dust soiling | Human health |
|---|---|---|
| Earthworks | High risk | Low risk |
| Construction | High risk | Low risk |
| Trackout | High risk | Low risk |

12.131 Following the implementation of appropriate mitigation, the effects of dust soiling and effects on human health should be **negligible** and the impacts would therefore be **not significant**.

## Construction Traffic Assessment

### Model verification

12.132 Model verification used the diffusion tubes at monitoring site MA36NO which is a roadside site on the modelled road network. The location is shown in **Figure 12.5**.

12.133 Other monitoring sites, including MA88NO, were not included in the model verification as they were either too far from the Proposed Development site, not representative (in the case of MA88NO due to being in canyon), or not located on the modelled road network.

12.134 Monitoring results for this location from 2018 were obtained from the respective 2018 ASRs[18,19] and were compared with modelled concentrations at the same locations. The model verification was undertaken following the methodology described in LAQM.TG16[8]. The model under-predicted concentrations at the verification sites.

12.135 A comparison of monitored and modelled annual mean $NO_2$ concentrations for 2018 before and after adjustment are shown in Table 12.13. The percentage difference between the monitored and modelled results before adjustment is -1.2% which is within the recommended guideline stated in LAQM.TG16[8] of ±25%. However, as the model verification shows underpredictions at both sites, an adjustment factor of 2.96 has been applied to

all modelled $NO_x$ concentrations (which increases the resulting $NO_2$ concentrations). Following model adjustment, the percentage difference of the monitored and modelled result is 0%.

12.136 Graphs showing the model verification before and after adjustment are shown in **Figure 12.7**.

*Table 12.13: Comparison of modelled and monitored annual mean $NO_2$ concentrations*

| Site ID | Site type | Background $NO_2$ concentration ($\mu g/m^3$) | Monitored $NO_2$ concentration ($\mu g/m^3$) | Modelled $NO_2$ concentration ($\mu g/m^3$) | % Difference (modelled - monitored)/ monitored |
|---|---|---|---|---|---|
| **Before adjustment** | | | | | |
| MA36NO | Roadside | 21.9 | 33.1 | 7.5 | -1.2% |
| **After adjustment** | | | | | |
| MA36NO | Roadside | 21.9 | 33.1 | 33.1 | 0% |

## Model Results

### $NO_2$

12.137 The predicted annual mean concentrations of $NO_2$ for the DM and DS scenarios at each receptor are presented in Table 12.14. The magnitude of impact with the scheme in operation has been assessed using the EPUK significance criteria. Predicted concentrations are below the annual mean air quality objective (40 $\mu g/m^3$) at all of the sensitive receptor locations for each modelled scenario. The highest concentration was predicted at R16 (an existing residential receptor) and was 44.3 $\mu g/m^3$ in both the DM and DS scenarios (to one decimal place). The change in concentration at this location is negligible.

12.138 The magnitude of change to annual mean $NO_2$ concentrations at all receptor locations is predicted to be negligible.

*Table 12.14: $NO_2$ annual mean results*

| Receptor ID | DM $NO_2$ ($\mu g/m^3$) | DS $NO_2$ ($\mu g/m^3$) | Change (DS - DM) | Impact descriptor |
|---|---|---|---|---|
| 1 | 25.5 | 25.5 | 0.0 | Negligible |
| 2 | 22.4 | 22.5 | 0.1 | Negligible |
| 3 | 21.6 | 21.7 | 0.1 | Negligible |
| 4 | 18.9 | 19.0 | 0.0 | Negligible |
| 5 | 28.0 | 28.1 | 0.1 | Negligible |
| 6 | 33.8 | 33.9 | 0.1 | Negligible |
| 7 | 26.7 | 26.7 | 0.0 | Negligible |
| 8 | 27.7 | 27.8 | 0.1 | Negligible |

| Receptor ID | DM $NO_2$ (µg/m$^3$) | DS $NO_2$ (µg/m$^3$) | Change (DS - DM) | Impact descriptor |
|---|---|---|---|---|
| 9 | 20.4 | 20.5 | 0.1 | Negligible |
| 10 | 23.0 | 23.1 | 0.1 | Negligible |
| 11 | 22.4 | 23.5 | 1.1 | Negligible |
| 12 | 25.6 | 25.7 | 0.1 | Negligible |
| 13 | 25.5 | 26.0 | 0.5 | Negligible |
| 14 | 22.0 | 23.2 | 1.2 | Negligible |
| 15 | 23.5 | 23.6 | 0.1 | Negligible |
| 16 | **44.3** | **44.3** | 0.0 | Negligible |
| 17 | 30.8 | 30.9 | 0.1 | Negligible |
| 18 | 23.1 | 23.2 | 0.1 | Negligible |
| 19 | 21.1 | 21.2 | 0.0 | Negligible |
| 20 | 24.9 | 25.0 | 0.2 | Negligible |
| 21 | 33.4 | 33.6 | 0.2 | Negligible |
| 23 | 33.8 | 33.9 | 0.0 | Negligible |
| 24 | **43.5** | **43.5** | 0.0 | Negligible |
| 25 | 32.4 | 32.4 | 0.0 | Negligible |
| 26 | 24.9 | 24.9 | 0.0 | Negligible |
| 27 | 31.6 | 31.7 | 0.0 | Negligible |
| 28 | 26.4 | 26.4 | 0.1 | Negligible |
| 29 | 27.7 | 27.8 | 0.0 | Negligible |
| 30 | 27.1 | 27.3 | 0.2 | Negligible |

Note: Predicated concentrations are shown to one decimal place
Note: **Bold** indicates an exceedance of the $NO_2$ annual mean concentration of 40 µg/m$^3$.

$PM_{10}$

12.139 The predicted annual mean concentrations of $PM_{10}$ for the DM and DS scenarios at each receptor are presented in Table 12.15. The magnitude of impact with the scheme in operation has been assessed using the EPUK significance criteria. Predicted concentrations are below the annual mean air quality objective (40 µg/m$^3$) at all of the sensitive receptor locations for each modelled scenario. The highest concentration was predicted at receptor R16 (an existing residential receptor) and was 14.8 µg/m$^3$ in both the DM and DS scenarios (to one decimal place). The change in concentration at this location is negligible.

12.140 The magnitude of change to annual mean $PM_{10}$ concentrations at all receptor locations is predicted to be negligible.

*Table 12.15: $PM_{10}$ annual mean results*

| Receptor ID | DM $PM_{10}$ (µg/m$^3$) | DS $PM_{10}$ (µg/m$^3$) | Change (DS - DM) | Impact descriptor |
|---|---|---|---|---|
| 1 | 12.3 | 12.3 | 0.0 | Negligible |
| 2 | 12.2 | 12.2 | 0.0 | Negligible |
| 3 | 12.1 | 12.1 | 0.0 | Negligible |
| 4 | 12.4 | 12.4 | 0.0 | Negligible |
| 5 | 13.1 | 13.1 | 0.0 | Negligible |
| 6 | 13.5 | 13.5 | 0.0 | Negligible |
| 7 | 13.2 | 13.2 | 0.0 | Negligible |
| 8 | 12.9 | 12.9 | 0.0 | Negligible |
| 9 | 12.6 | 12.6 | 0.0 | Negligible |
| 10 | 12.6 | 12.6 | 0.0 | Negligible |
| 11 | 12.3 | 12.3 | 0.1 | Negligible |
| 12 | 13.0 | 13.0 | 0.0 | Negligible |
| 13 | 12.8 | 12.8 | 0.0 | Negligible |
| 14 | 12.2 | 12.3 | 0.1 | Negligible |
| 15 | 12.7 | 12.7 | 0.0 | Negligible |
| 16 | 14.8 | 14.8 | 0.0 | Negligible |
| 17 | 13.0 | 13.1 | 0.0 | Negligible |
| 18 | 12.3 | 12.3 | 0.0 | Negligible |
| 19 | 12.6 | 12.6 | 0.0 | Negligible |
| 20 | 12.4 | 12.4 | 0.0 | Negligible |
| 21 | 13.1 | 13.2 | 0.0 | Negligible |
| 23 | 13.2 | 13.2 | 0.0 | Negligible |
| 24 | 14.4 | 14.4 | 0.0 | Negligible |
| 25 | 13.5 | 13.5 | 0.0 | Negligible |
| 26 | 12.4 | 12.4 | 0.0 | Negligible |
| 27 | 13.5 | 13.5 | 0.0 | Negligible |
| 28 | 13.1 | 13.1 | 0.0 | Negligible |
| 29 | 13.1 | 13.1 | 0.0 | Negligible |
| 30 | 12.7 | 12.7 | 0.0 | Negligible |

| Receptor ID | DM $PM_{10}$ (µg/m³) | DS $PM_{10}$ (µg/m³) | Change (DS - DM) | Impact descriptor |
|---|---|---|---|---|
| Note: Predicated concentrations are shown to one decimal place | | | | |

$PM_{2.5}$

12.141 The predicted annual mean concentrations of $PM_{2.5}$ for the DM and DS scenarios at each receptor are presented in Table 12.16 The magnitude of impact with the scheme in operation has been assessed using the EPUK significance criteria. Predicted concentrations are below the annual mean air quality objective (40 µg/m³) at all of the sensitive receptor locations for each modelled scenario. The highest concentration was predicted at receptor R16 (an existing residential receptor) and was 9.4 µg/m³ in both the DM and DS scenario (to one decimal place). The change in concentration at this location is negligible.

12.142 The magnitude of change to annual mean $PM_{2.5}$ concentrations at all receptor locations is predicted to be negligible.

*Table 12.16: $PM_{2.5}$ annual mean results*

| Receptor ID | DM $PM_{10}$ (µg/m³) | DS $PM_{10}$ (µg/m³) | Change (DS - DM) | Impact descriptor |
|---|---|---|---|---|
| 1 | 8.1 | 8.1 | 0.0 | Negligible |
| 2 | 8.0 | 8.0 | 0.0 | Negligible |
| 3 | 8.0 | 8.0 | 0.0 | Negligible |
| 4 | 8.2 | 8.2 | 0.0 | Negligible |
| 5 | 8.6 | 8.6 | 0.0 | Negligible |
| 6 | 8.8 | 8.8 | 0.0 | Negligible |
| 7 | 8.6 | 8.6 | 0.0 | Negligible |
| 8 | 8.5 | 8.5 | 0.0 | Negligible |
| 9 | 8.3 | 8.3 | 0.0 | Negligible |
| 10 | 8.3 | 8.3 | 0.0 | Negligible |
| 11 | 8.0 | 8.0 | 0.0 | Negligible |
| 12 | 8.5 | 8.5 | 0.0 | Negligible |
| 13 | 8.4 | 8.5 | 0.0 | Negligible |
| 14 | 8.0 | 8.0 | 0.0 | Negligible |
| 15 | 8.4 | 8.4 | 0.0 | Negligible |
| 16 | 9.4 | 9.4 | 0.0 | Negligible |
| 17 | 8.4 | 8.4 | 0.0 | Negligible |
| 18 | 8.0 | 8.0 | 0.0 | Negligible |

| Receptor ID | DM $PM_{10}$ (µg/$m^3$) | DS $PM_{10}$ (µg/$m^3$) | Change (DS - DM) | Impact descriptor |
|---|---|---|---|---|
| 19 | 8.3 | 8.3 | 0.0 | Negligible |
| 20 | 8.1 | 8.1 | 0.0 | Negligible |
| 21 | 8.5 | 8.5 | 0.0 | Negligible |
| 23 | 8.5 | 8.5 | 0.0 | Negligible |
| 24 | 9.1 | 9.1 | 0.0 | Negligible |
| 25 | 8.6 | 8.6 | 0.0 | Negligible |
| 26 | 8.1 | 8.1 | 0.0 | Negligible |
| 27 | 8.6 | 8.6 | 0.0 | Negligible |
| 28 | 8.6 | 8.6 | 0.0 | Negligible |
| 29 | 8.5 | 8.5 | 0.0 | Negligible |
| 30 | 8.2 | 8.2 | 0.0 | Negligible |
| Note: Predicated concentrations are shown to one decimal place | | | | |

### Assessment Scenario 1b – Proposed Development plus impacts associated with Applications 1, 3 and 4

12.143 As noted construction traffic volumes for Applications 1, 3 and 4 was not available at the time of writing. It would be recommended each phase screens the potential traffic against the EPUK/IAQM thresholds to determine if further assessment is required.

### Assessment Scenario 1c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

12.144 As noted construction traffic volumes for Applications 1, 3, 4 and wider SRF was not available at the time of writing. It would be recommended each phase screens the potential traffic against the EPUK/IAQM thresholds to determine if further assessment is required.

## Operational Traffic Assessment

12.145 As noted at paragraph 12.73 above, the Proposed Development will not result in any built form and as such no 'operational' traffic emissions will be associated with scenario 2a. Traffic data has therefore been modelled for the scenario 2c (Applications 1, 3 and 4, and the wider SRF) which is when the maximum predicted movements would take place.

## Model Results

### $NO_2$

12.146 The predicted annual mean concentrations of $NO_2$ for the DM and DS scenarios at each receptor are presented in Table 12.17. The magnitude of impact with the scheme in operation has been assessed using the EPUK significance criteria. Predicted concentrations are below the annual mean air quality objective (40 µg/m$^3$) at all of the sensitive receptor locations for each modelled scenario. The highest concentration was predicted at receptor R16 and R24 (an existing residential receptor) and was 38.9 µg/m$^3$ in the DS scenario (to one decimal place). The largest change in $NO_2$ as a result of the scheme occurs at R14 on Angle Street with a 1.5µg/m$^3$ increase. This is a result of around 2600 AADT. The magnitude of change is moderate adverse following the IAQM descriptors. A slight adverse impact is also predicted at R24 on the one way system (with a 2000 AADT change), which is considered to be not significant.

12.147 R16 is within an existing street canyon, which elevates the road traffic emissions in this area. The concentrations with the scheme in place are below the air quality objectives. Due to the pessimistic assumptions taken in the assessment to model the full development as being operational in 2027 it is considered that the actual risk of a significant impact is low due to the expectation that by the time the full development is actually completed vehicle emissions will have reduced due to uptake of electric vehicles and emission improvements. It is recommended that the application for the full development includes further detail on the opening year, phasing of development and models impacts along Angel Street based on known operational dates. It is also recommended that where possible the future development aims to minimise traffic using the A664 one way system.

*Table 12.17: $NO_2$ annual mean results*

| Receptor ID | DM $NO_2$ (µg/m$^3$) | DS $NO_2$ (µg/m$^3$) | Change (DS - DM) | Impact descriptor |
|---|---|---|---|---|
| 1 | 20.0 | 21.4 | 1.4 | Negligible |
| 2 | 19.2 | 19.7 | 0.5 | Negligible |
| 3 | 16.9 | 17.6 | 0.6 | Negligible |
| 4 | 16.0 | 16.4 | 0.3 | Negligible |
| 5 | 21.8 | 22.2 | 0.4 | Negligible |
| 6 | 28.0 | 28.8 | 0.8 | Negligible |
| 7 | 22.2 | 22.6 | 0.4 | Negligible |
| 8 | 22.2 | 22.6 | 0.4 | Negligible |
| 9 | 17.2 | 17.8 | 0.6 | Negligible |
| 10 | 19.2 | 19.4 | 0.1 | Negligible |
| 11 | 19.2 | 19.4 | 0.3 | Negligible |
| 12 | 21.3 | 22.0 | 0.8 | Negligible |

| Receptor ID | DM $NO_2$ (µg/$m^3$) | DS $NO_2$ (µg/$m^3$) | Change (DS - DM) | Impact descriptor |
|---|---|---|---|---|
| 13 | 21.3 | 21.6 | 0.4 | Negligible |
| 14 | 18.9 | 19.0 | 0.1 | Negligible |
| 15 | 19.6 | 19.9 | 0.3 | Negligible |
| 16 | 37.4 | 38.9 | 1.5 | Moderate adverse |
| 17 | 25.8 | 26.1 | 0.4 | Negligible |
| 18 | 19.8 | 20.2 | 0.4 | Negligible |
| 19 | 17.8 | 18.2 | 0.4 | Negligible |
| 20 | 21.2 | 21.7 | 0.5 | Negligible |
| 21 | 28.1 | 28.6 | 0.5 | Negligible |
| 23 | 28.1 | 28.6 | 0.5 | Negligible |
| 24 | 37.0 | 37.7 | 0.7 | Slight adverse |
| 25 | 28.0 | 28.4 | 0.5 | Negligible |
| 26 | 21.1 | 21.6 | 0.5 | Negligible |
| 27 | 27.4 | 28.0 | 0.6 | Negligible |
| 28 | 21.9 | 22.3 | 0.4 | Negligible |
| 29 | 23.1 | 23.9 | 0.9 | Negligible |
| 30 | 22.9 | 23.1 | 0.1 | Negligible |
| Note: Predicated concentrations are shown to one decimal place | | | | |

$PM_{10}$

12.148 The predicted annual mean concentrations of $PM_{10}$ for the DM and DS scenarios at each receptor are presented in Table 12.18. The magnitude of impact with the scheme in operation has been assessed using the EPUK significance criteria. Predicted concentrations are below the annual mean air quality objective (40 µg/$m^3$) at all of the sensitive receptor locations for each modelled scenario. The highest concentration was predicted at receptor R16 (an existing residential receptor) and was 14.9 µg/$m^3$ in the DM scenario and 15.2 µg/$m^3$ DS scenario (to one decimal place).

12.149 The magnitude of change to annual mean $PM_{10}$ concentrations at all receptor locations is predicted to be negligible.

*Table 12.18: $PM_{10}$ annual mean results*

| Receptor ID | DM $NO_2$ (µg/$m^3$) | DS $NO_2$ (µg/$m^3$) | Change (DS - DM) | Impact descriptor |
|---|---|---|---|---|
| 1 | 12.1 | 12.3 | 0.2 | Negligible |
| 2 | 11.9 | 12.0 | 0.1 | Negligible |
| 3 | 11.9 | 12.0 | 0.1 | Negligible |

| Receptor ID | DM $NO_2$ (µg/$m^3$) | DS $NO_2$ (µg/$m^3$) | Change (DS - DM) | Impact descriptor |
|---|---|---|---|---|
| 4 | 12.2 | 12.2 | 0.0 | Negligible |
| 5 | 12.8 | 12.9 | 0.1 | Negligible |
| 6 | 13.6 | 13.7 | 0.1 | Negligible |
| 7 | 13.1 | 13.2 | 0.1 | Negligible |
| 8 | 12.7 | 12.7 | 0.1 | Negligible |
| 9 | 12.4 | 12.4 | 0.1 | Negligible |
| 10 | 12.4 | 12.4 | 0.0 | Negligible |
| 11 | 12.0 | 12.0 | 0.0 | Negligible |
| 12 | 12.9 | 13.0 | 0.1 | Negligible |
| 13 | 12.7 | 12.7 | 0.1 | Negligible |
| 14 | 11.9 | 12.0 | 0.0 | Negligible |
| 15 | 12.5 | 12.5 | 0.0 | Negligible |
| 16 | 14.9 | 15.2 | 0.3 | Negligible |
| 17 | 13.0 | 13.0 | 0.1 | Negligible |
| 18 | 12.1 | 12.1 | 0.1 | Negligible |
| 19 | 12.4 | 12.5 | 0.1 | Negligible |
| 20 | 12.2 | 12.3 | 0.1 | Negligible |
| 21 | 13.1 | 13.2 | 0.1 | Negligible |
| 23 | 13.2 | 13.3 | 0.1 | Negligible |
| 24 | 14.4 | 14.5 | 0.1 | Negligible |
| 25 | 13.2 | 13.3 | 0.1 | Negligible |
| 26 | 12.2 | 12.3 | 0.1 | Negligible |
| 27 | 13.3 | 13.3 | 0.1 | Negligible |
| 28 | 13.1 | 13.1 | 0.1 | Negligible |
| 29 | 13.0 | 13.1 | 0.1 | Negligible |
| 30 | 12.5 | 12.5 | 0.0 | Negligible |
| Note: Predicated concentrations are shown to one decimal place<br>Note: N/A indicates the Receptor description is commercial, therefore impactor descriptor is Not Applicable | | | | |

$PM_{2.5}$

12.150 The predicted annual mean concentrations of $PM_{2.5}$ for the DM and DS scenarios at each receptor are presented in Table 12.19. The magnitude of impact with the scheme in operation has been assessed using the EPUK significance criteria. Predicted concentrations are below the annual mean air quality objective (40 µg/$m^3$) at all of the sensitive receptor locations for each modelled scenario. The highest concentration was predicted at receptor

R16 (an existing residential receptor) and was 9.3 µg/m$^3$ in the DM scenario and 9.5 µg/m$^3$ in the DS scenario (to one decimal place).

12.151 The magnitude of change to annual mean $PM_{2.5}$ concentrations at all receptor locations is predicted to be negligible.

*Table 12.19: $PM_{2.5}$ annual mean results*

| Receptor ID | DM $PM_{10}$ (µg/m$^3$) | DS $PM_{10}$ (µg/m$^3$) | Change (DS - DM) | Impact descriptor |
|---|---|---|---|---|
| 1 | 7.9 | 8.0 | 0.1 | Negligible |
| 2 | 7.7 | 7.8 | 0.0 | Negligible |
| 3 | 7.8 | 7.9 | 0.0 | Negligible |
| 4 | 8.0 | 8.0 | 0.0 | Negligible |
| 5 | 8.4 | 8.4 | 0.0 | Negligible |
| 6 | 8.8 | 8.8 | 0.1 | Negligible |
| 7 | 8.5 | 8.5 | 0.0 | Negligible |
| 8 | 8.3 | 8.4 | 0.0 | Negligible |
| 9 | 8.1 | 8.1 | 0.1 | Negligible |
| 10 | 8.1 | 8.1 | 0.0 | Negligible |
| 11 | 7.8 | 7.8 | 0.0 | Negligible |
| 12 | 8.4 | 8.4 | 0.1 | Negligible |
| 13 | 8.3 | 8.3 | 0.0 | Negligible |
| 14 | 7.7 | 7.8 | 0.0 | Negligible |
| 15 | 8.2 | 8.2 | 0.0 | Negligible |
| 16 | 9.3 | 9.5 | 0.1 | Negligible |
| 17 | 8.3 | 8.4 | 0.0 | Negligible |
| 18 | 7.8 | 7.8 | 0.0 | Negligible |
| 19 | 8.1 | 8.1 | 0.0 | Negligible |
| 20 | 7.9 | 7.9 | 0.0 | Negligible |
| 21 | 8.4 | 8.5 | 0.0 | Negligible |
| 23 | 8.4 | 8.5 | 0.0 | Negligible |
| 24 | 9.1 | 9.1 | 0.0 | Negligible |

| Receptor ID | DM $PM_{10}$ (µg/m$^3$) | DS $PM_{10}$ (µg/m$^3$) | Change (DS - DM) | Impact descriptor |
|---|---|---|---|---|
| 25 | 8.4 | 8.5 | 0.0 | Negligible |
| 26 | 7.9 | 7.9 | 0.0 | Negligible |
| 27 | 8.4 | 8.5 | 0.0 | Negligible |
| 28 | 8.5 | 8.5 | 0.0 | Negligible |
| 29 | 8.4 | 8.5 | 0.1 | Negligible |
| 30 | 8.1 | 8.1 | 0.0 | Negligible |
| Note: Predicated concentrations are shown to one decimal place<br>Note: N/A indicates the Receptor description is commercial, therefore impactor descriptor is Not Applicable | | | | |

## Additional Mitigation / Enhancement Measures

12.152 This section describes the measures which are required to mitigate any significant environmental effects with regards to air quality. The assessment identified mitigation measures for high risk sites are required for the construction phase. These are detailed in the below sections. No mitigation measures are required for the operational phase beyond consideration of best practice design and encouraging modal shift and use of sustainable transport.

12.153 **Communications**

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the Site boundary. This may be the environment manager/engineer or the Site manager.
- Display the head or regional office contact information
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the Site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, realtime $PM_{10}$ continuous monitoring and/or visual inspections.

12.154 **Site management**

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.

- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
- Hold regular liaison meetings with other high-risk construction sites within 500 m of the Site boundary, 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.

12.155 **Monitoring**

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Agree dust deposition, dust flux, or real-time $PM_{10}$ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

12.156 **Preparing and maintaining site**

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the Site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the Site is actives 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 as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

12.157 **Operating vehicle/machinery and sustainable travel**

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable
- Ensure all vehicles 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.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (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)
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

12.158 **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.

12.159 **Waste management**

- Avoid bonfires and burning of waste materials

12.160 **Earthworks**

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable
- Only remove the cover in small areas during work and not all at once

12.161 **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 power materials ensure bags are sealed after use and stored appropriately to prevent dust.

12.162 **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 continuously in 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.
- Install hard surfaced haul routes, 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 10 m from receptors where possible.

## Likely Residual Effects of the Development and their Significance

12.163 The residual effect after mitigation has been summarised in Table 12.20: Residual effects summary

*Table 12.20: Residual effects summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| *Assessment Scenario 1a – proposed development only* | | | |
| Construction dust | Dust impacts at areas which would expect a high amenity value (homes, parks etc). High risk of impacts on above areas without appropriate mitigation implemented[18]. | Best practice mitigation measures to be included in a construction environmental management plan | **No significant effect** |
| Construction traffic | No significant impacts predicted. Negligible impacts at all receptors. | No mitigation required | **No significant effect** |
| *Assessment Scenario 1b – proposed development plus impacts associated with Applications 1, 3 and 4* | | | |
| Construction dust | Dust impacts at areas which would expect a high amenity value (homes, parks etc). High risk of impacts on above areas without appropriate mitigation implemented. | Best practice mitigation measures to be included in a construction environmental management plan | **No significant effect** |
| Construction traffic | Not assessed. | | |
| *Assessment Scenario 1c – proposed development plus Applications 2, 3 and 4 and wider SRF* | | | |
| Construction dust | Dust impacts at areas which would expect a high amenity value (homes, parks etc). High risk of impacts on above areas without appropriate mitigation implemented. | Best practice mitigation measures to be included in a construction environmental management plan | **No significant effect** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Construction traffic | Not assessed. | | |
| ***Completed development and operational phase*** | | | |
| *Assessment Scenario 2a - Assessment of the impacts relating to the Proposed Development only* | | | |
| Operational phase traffic emissions | No significant impacts predicted. | No mitigation required | **No significant effect** |
| *Assessment Scenario 2b - Assessment of the impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4* | | | |
| Operational phase traffic emissions | No significant impacts predicted. Negligible impacts at all receptors. | No mitigation required | **No significant effect** |
| *Assessment Scenario 2c – Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF* | | | |
| Operational phase traffic emissions | No significant impacts predicted. Negligible impacts at all receptors. | No mitigation required | **No significant effect** |

## Conclusions

12.164 An assessment of the potential impacts on local air quality impacts arising from operation of the Proposed Development has been undertaken.

12.165 A qualitative assessment of the potential impacts on local air quality from construction activities for the Proposed Development has been carried out using the IAQM methodology. This identified high risk for dust soiling and low risk for health impacts during the construction phase. However, with the appropriate best practice mitigation measures in place as defined in paragraph 12.47, the residual effect from the dust-generating activities on site is likely to be 'not significant'.

12.166 Following review of the current monitoring and Defra predicted background data, it is likely that the majority of the area within Proposed Development away from main roads would be in compliance with all relevant air quality objectives based on the most recent published data. Furthermore, with the future developments taking

place over a time frame of greater than 10 years, it is likely concentrations will have fallen further due to national trends.

12.167 The impact of constructional traffic as a result of the Proposed Development is predicted to be negligible at all human receptors. The effect of the Proposed Development on local air quality is therefore not significant.

12.168 The impact of operational traffic as a result of the Proposed Development is predicted to be negligible to moderate adverse at all human receptors. The effect of the Proposed Development on local air quality is considered to be not significant due to pessimistic assumptions taken for the operational phase modelling. It is recommended further assessment is carried out for the full development to determine opening year impacts based on phasing and quantum of development. It is also recommended future development aims to minimise traffic growth on the A664 one way system.

## Assessment of Cumulative Effects and their Significance

12.169 The Cumulative Impact Assessment (CIA) is presented as three scenarios. This is to ensure that the assessment is as robust as possible. The scenarios to be considered are as follows:

- Scenario 3a - Assessment of the cumulative air quality impacts relating to the Proposed Development plus air quality impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative air quality impacts relating to the Proposed Development, plus air quality associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
- Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 1 (Enabling works works), 3 (Flood alleviation works) and 4 (Red Bank built development), the wider SRF, and the agreed cumulative sites.

12.170 As noted in Chapter 2: Approach, a review of MCC and SCC planning portals has identified 20 sites in the surrounding area that have the potential for significant effects with the Proposed Development and wider Development Project. Table 12.22 provides a list of the developments which are to be included within the CIA.

*Table 12.22: Cumulative sites*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | 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 | 650 m north east | Approved Jun 2021 | Scoped out | This site is over 350 m within which cumulative dust impacts between sites could occur.<br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. |
| 2 | 127971/FO/2020 | 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 | 950 m east | Approved May 2021 | Scoped out | This site is over 350 m within which cumulative dust impacts between sites could occur.<br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. |
| 3 | 128248/FO/2020 | 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 | 150 m south | Approved June 2021 | Scoped in – due to works taking place within 350m and could | With best practice measures in place to mitigate dust impacts will be negligible. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | associated works following demolition of existing structures and buildings \| Land Bound By Gould Street, Williamson Street, Bromley Street And Bilbrook Street Manchester M4 4DD | | | therefore result in cumulative dust impacts. | Traffic impacts are inherently cumulative as the future year assessment includes future developments. Traffic impacts are inherently cumulative as the future year assessment includes future developments. |
| 4 | 116366/FO/2017 | 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 | 150 m south | Approved Aug 2017<br>Under construction | Scoped in – due to works taking place within 350m and could therefore result in cumulative dust impacts. | With best practice measures in place to mitigate dust impacts will be negligible.<br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. |
| 5 | 118120/FO/2017 | 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 | 450 m south | Approved May 2018 | Scoped in – due to works taking place within 350m | With best practice measures in place to mitigate dust impacts |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | Under construction | and could therefore result in cumulative dust impacts. | will be negligible.<br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. Traffic impacts are inherently cumulative as the future year assessment includes future developments. |
| 6 | 127537/FO/2020 | 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 | 400 m south | Approved Oct 2016 | Scoped in – due to works taking place within 350m and could therefore result in cumulative dust impacts. | With best practice measures in place to mitigate dust impacts will be negligible.<br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. Traffic impacts are inherently cumulative as the future year assessment includes future developments. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 7 | 124973/FO/2019 | 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 | 350 m south | Approved Feb 2016 | Scoped in – due to works taking place within 350m and could therefore result in cumulative dust impacts. | With best practice measures in place to mitigate dust impacts will be negligible.<br><br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. Traffic impacts are inherently cumulative as the future year assessment includes future developments. |
| 8 | 111777/FO/2016/C1 | 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 | 250 m south east | Approved Sep 2016<br><br>Under construction | Scoped in – due to works taking place within 350m and could therefore result in cumulative dust impacts. | With best practice measures in place to mitigate dust impacts will be negligible.<br><br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 9 | 121375/FO/2018 | 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. | 840 m south | Approved Oct 2020 | Scoped out | This site is over 350 m within which cumulative dust impacts between sites could occur.<br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850 m south west | Approved Oct 2018<br>Under construction | Scoped out | This site is over 350 m within which cumulative dust impacts between sites could occur.<br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. |
| 11 | 20/76134/FUL | 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 | 1000 m south west | Approved Feb 2020 | Scoped out | This site is over 350 m within which cumulative dust impacts between sites could occur.<br>Traffic impacts are |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | inherently cumulative as the future year assessment includes future developments. |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840 m south west | Approved Nov 2017<br>Under construction | Scoped out | This site is over 350 m within which cumulative impacts between sites could occur. |
| 13 | 19/74465/HYBEIA | 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 | 960 m south west | Validated Nov 2019 | Scoped out | This site is over 350 m within which cumulative dust impacts between sites could occur.<br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | Statement) \| Land Bound By Greengate, Collier Street, Queen And King Street And Gravel Lane M3 7BN | | | | |
| 14 | 126944/FO/2020 | 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 | 140 m south east | Approved Sep 2020<br><br>Under Construction | Scoped in – due to works taking place within 350m and could therefore result in cumulative dust impacts. | With best practice measures in place to mitigate dust impacts will be negligible.<br><br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following | 145 m south east | Approved October 2017 | Scoped in – due to works taking place within 350m and could therefore result in | With best practice measures in place to mitigate dust impacts will be negligible.<br><br>Traffic impacts are inherently cumulative |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | demolition of existing buildings | | | cumulative dust impacts. | as the future year assessment includes future developments. |
| 16 | 131708/FO/2021 | 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 | 450 m south | Validated September 2021 | Scoped in – due to works taking place within 350m and could therefore result in cumulative dust impacts. | With best practice measures in place to mitigate dust impacts will be negligible.<br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. Traffic impacts are inherently cumulative as the future year assessment includes future developments. |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | 635 m south west | Approved June 2018 | Scoped out | This site is over 350 m within which cumulative dust impacts between sites could occur.<br>Traffic impacts are inherently cumulative as the future year assessment includes |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | future developments. |
| 18 | 128997/FO/2020 | 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 | 730 m south | Approved September 2021 | Scoped out | This site is over 350 m within which cumulative dust impacts between sites could occur.<br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. |
| 19 | 124888/FO/2019 | 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 | 665 m south | Approved January 2020<br>Under Construction | Scoped out | This site is over 350 m within which cumulative dust impacts between sites could occur.<br>Traffic impacts are inherently cumulative as the future year assessment includes future developments. |
| 20 | 125678/FO/2019 | 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 | 640 m south | Approved December 2020 | Scoped out | This site is over 350 m within which cumulative dust impacts between sites could occur. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | light box; disabled car parking, highways, landscaping and other associated works | | | | Traffic impacts are inherently cumulative as the future year assessment includes future developments. |

### Assessment

12.171 A review of the Sites within 12.25 has been carried out to determine if they are located within 500 m to identify if there is a cumulative risk of dust impacts. Those outside of that distance would not result in any cumulative impacts. For sites within 500 m the recommendation within IAQM states that '*Hold regular liaison meetings with other high risk construction sites within 500 m of the Site boundary, to ensure plan are co-ordinated and dust and particulate matter emissions are minimised.'* This measure will be included in the Proposed Development construction environmental management plan. With best practice mitigation measures in place effects can be reduced to a negligible level.

12.172 No additional cumulative assessment is required for operational phase traffic emissions as the traffic data for the future year contains allowance for future traffic growth and is inherently cumulative. No further assessment is therefore required.

### Likely Residual Cumulative Effects and their Significance

#### Construction

12.173 Following the implementation of best practice mitigation measures during each scenario for the control of dust the effects would be **negligible** and **not significant**.

# 13. Noise and Vibration

## Introduction

13.1 This ES chapter assesses the Development Project, which is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in 4 planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – planning permission has been granted for the demolition of Creamline diary, tree and shrub clearance and construction of a temporary haul road.
- HIF Infrastructure Works (referred to hereafter as 'Application 2' or the 'Proposed Development') – the subject of this application. Creation of development platforms, demolition of sections of existing River Wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diversions and provision of green infrastructure including creation of green links and first phase of the new City River Park.
- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within flood zone 3.
- Land controlled by the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. (As noted in Chapter 2: Approach, the entire Red Bank Neighbourhood of the SRF, including third party land, will deliver up to 5,500 new dwellings).

13.2 Whilst the Applicant has the detail of the early applications, the later parts of the Development Project (and particularly Application 4) are still being designed and the details are not yet available. Therefore, the approach that has been taken in the ES is to break the Development Project into 3 elements, with each element being assessed in a level of detail commensurate with the detail that is available for the relevant part of the Development Project.

13.3 As such, a very full and detailed assessment is undertaken of Application 2, and then reasonable assumptions and judgements have informed and been made to assess Applications 1-4 together, and then Applications 1-4 and SRF.

13.4 This chapter assesses the likely significant effects of noise and vibration from the Proposed Development on the surrounding area. The chapter also considers potential noise and vibration effects associated with related applications 1, 3 and 4 as well as the wider Strategic Regeneration Framework (SRF).

13.5 The assessment will consider noise and vibration impacts associated with the following activities:

- Construction site noise
- Construction site vibration
- Construction traffic noise

13.6 Noise and vibration impacts associated with the completed development are scoped out of this assessment. This is because there are no significant built elements associated with the works in question that are capable of generating notable levels of noise and vibration on a long-term basis. Future related applications (such as Application 4 for the Red Bank Neighbourhood, and applications associated with the wider SRF) will need to consider in detail operational noise and vibration impacts associated with increased road traffic on the existing highway network, new transport infrastructure, and fixed plant. Potential noise impacts due to road traffic associated with the completed Application 4 and the wider SRF are assessed on a high-level basis in assessment scenarios 2b and 2c.

13.7 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 from noise and vibration, and the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. It has been written by Arup.

# Planning Policy Context

## National Planning Policy

### National Planning Policy Framework

13.8 Paragraphs 174 and 185 of the National Planning Policy Framework[1] (NPPF) contain key information regarding the assessment of environmental noise.

13.9 Paragraph 174 requires planning policies and decisions to *"contribute to and enhance the natural and local environment by … Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of … noise pollution"*.

13.10 Paragraph 185 of the NPPF states that *"… planning policies and decisions should 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. In doing so they should:*

- *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life."*

[1] Ministry of Housing, Communities & Local Government (2021) *National Planning Policy Framework*, HMSO, London

### Noise Policy Statement for England

13.11 The environmental noise planning objectives of the NPPF are addressed through the Noise Policy Statement for England[2] (NPSE).

13.12 The NPSE states the following aims: *"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

- *Avoid significant adverse health impacts on health and quality of life;*
- *Mitigate and minimise adverse impacts on health and quality of life; and*
- *Where possible, contribute to the improvement of health and quality of life."*

13.13 Within these aims, the NPSE uses the key phrases "significant adverse" and "adverse". In clarifying what these mean the policy notes that "*…there are two established concepts from toxicology that are currently being applied to noise effects, for example, by the WHO*". These concepts are:

- NOEL - no observed effect level, the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise; and
- LOAEL - lowest observed adverse effect level, the level above which adverse effects on health and quality of life can be detected.

13.14 The policy extends these concepts to include:

- SOAEL - significant observed adverse effect level, the level above which significant adverse effects on health and quality of life occur.

## Local Planning Policy

### Development Policies

13.15 Policy DM 1 of Manchester City Council's Manchester's Local Development Framework Core Strategy Development Plan Document 2012 requires that: "*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".*

[2] Department for Environment, Food & Rural Affairs (2010) *Noise Policy Statement for England*, HMSO, London

## Other Relevant Policy, Standards and Guidance

### The Control of Pollution Act, 1974

13.16 The Control of Pollution Act[3] provides local authorities with the power to control noise from construction sites. This may include specific controls to restrict certain activities identified as causing noise problems. Conditions regarding hours of operation will generally be specified and noise and vibration limits at certain locations may be applied in some cases.

13.17 Powers include prosecution for failure to comply with the requirements of a notice served under the Act, and a system of providing prior consents for works to be carried out in a specified manner so as to reduce the likelihood of causing disturbance (Section 61 consents). Noise-generating parties can use the defence that 'best practicable means', as defined in Section 72, have been employed to minimise noise emissions.

### Environmental Protection Act, 1990

13.18 The Environmental Protection Act[4] provides local authorities and individuals with powers to serve, or request a magistrate to serve, abatement notices against noise and/or vibration from premises that are considered to be a nuisance.

13.19 Noise-generating parties can use the defence that 'best practicable means' have been used to control noise emissions or, in relation to construction noise, that the alleged nuisance arose from activities that were compliant with an extant consent under Section 61 of the Control of Pollution Act (prior consent).

### Planning Practice Guidance – Noise (PPG-N)

13.20 Planning Practice Guidance - Noise[5] (PPG-N) draws on the principles of the NPSE, in particular the concepts of No Observed Effect Level (NOEL), Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL). PPG-N presents example outcomes to help characterise these effects (see Table 13.1).

13.21 The NPSE notes that it is not possible to have a single objective noise-based measure to define a SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL threshold is likely to vary depending on many factors, such as the types of noise sources, the sensitivity of receptors, and the time period(s) in question. It is for individual assessments to identify relevant SOAEL thresholds, taking account of the different sources of exposure and different receptors.

13.22 Where the overall noise exposure from a proposed scheme exceeds the relevant SOAEL threshold at a specific receptor, that receptor is identified as being subject to a significant adverse impact on health and quality of life under Government noise policy and is hence identified as a likely significant adverse effect.

[3] HM Government (1974) *Control of Pollution Act*, HMSO, London
[4] HM Government (1990) *Environmental Protection Act*, HMSO, London
[5] Ministry of Housing, Communities & Local Government (2019) *Planning Practice Guidance – Noise*, HMSO, London

13.23 Where the overall noise exposure from the proposed scheme falls between the LOAEL and SOAEL thresholds, the NPSE states "...all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur."

13.24 Other factors can result in impacts between the LOAEL and SOAEL thresholds being reported as likely significant effects in EIA terms. The EIA process requires that likely significant effects are identified along with the envisaged mitigation to avoid or reduce these significant effects.

*Table 13.1: Noise exposure hierarchy according to likely average response (based on PPG-N)*

| → Increasing noise level → | Perception | Examples of outcomes | Increasing effect level | Action |
|---|---|---|---|---|
| | Noticeable and disruptive | The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening, and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area. | Significant observed adverse effect | Avoid |
| | **SOAEL** | | | |
| | Noticeable and intrusive | Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life. | Observed adverse effect | Mitigate and reduce to a minimum |
| | **LOAEL** | | | |
| | Noticeable and not intrusive | Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life. | No observed adverse effect | No specific measures required |
| | **NOEL** | | | |
| | Not noticeable | No effect | No observed effect | No specific measures required |

### Design Manual for Roads and Bridges LA 111 – Noise and vibration (formerly HD213/11)

13.25 Design Manual for Roads and Bridges LA 111 – Noise and vibration (LA 111)[6] sets out the requirements for assessing and reporting the effect of operational highways noise. Whilst not directly applicable to the proposed Scheme, it provides a good practice basis for assessing the impact of changes in traffic flows during the construction works and those caused by operation of the proposed Scheme (see Table 13.2 reproduced from Table 3.54a/3.54b in LA 111).

13.26 This guidance is used for the assessment of demolition and construction traffic noise, and for the in-combination assessment of operational traffic noise.

*Table 13.2: Magnitude of road traffic noise change from LA 111*

| Magnitude of change | Short term noise change (dB LA10,18h or Lnight) | Long term noise change (dB $L_{A10,18h}$ or $L_{night}$) |
|---|---|---|
| Major | Greater than or equal to 5.0 | Greater than or equal to 10.0 |
| Moderate | 3.0 to 4.9 | 5.0 to 9.9 |
| Minor | 1.0 to 2.9 | 3.0 to 4.9 |
| Negligible | Less than 1.0 | Less than 3.0 |

### Calculation of Road Traffic Noise (CRTN)

13.27 The Calculation of Road Traffic Noise (CRTN)[7] guidance document presents a procedure for the prediction of road traffic noise. The relevant parts of this procedure have been used to predict, for a given road at a reference distance, the change in noise level resulting from the change in road traffic between the baseline and the assessment case for both demolition/construction and in-combination operational road traffic.

### Other relevant standards and guidance

13.28 The assessment approach also takes account of the following standards and guidance:

- British Standard BS4142: 2014+A1: 2019[8]
- British Standard BS5228: 2009+A1: 2014[9]

[6] Highways England (2020); *Design Manual for Roads and Bridges LA111 Noise and vibration*
[7] Department of Transport Welsh Office (1988) *Calculation of Road Traffic Noise*
[8] British Standards Institute (2019) BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*
[9] British Standards Institute (2014) BS 5228:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites. Part 1 – Noise and Part 2 – Vibration*

- British Standard BS7385-2:1993[10]
- British Standard BS8233: 2014[11]
- WHO Guidelines for Community Noise[12]
- WHO Night Noise Guidelines for Europe[13]
- WHO Environmental Noise Guidelines for the European Region[14]

# Assessment Methodology and Significance Criteria

## Assessment Overview

13.29 The following section describes the assessment methods applied, including the means by which noise and vibration levels have been predicted. The assessment approach takes account of the key policies, guidance and legislation listed in Planning Policy Context. Potential significant effects occuring due to the predicted impacts have been assessed by reference to criteria developed for each type of impact summarised below.

13.30 The assessment considers the impact of noise and vibration arising from demolition and construction site works, along with noise from construction traffic, on sensitive receptors. The assessment does not consider operational noise and vibration associated wit hthe Proposed Development itself, as there are no built elements associated with the Proposed Development that are capable of generating notable levels of noise and vibration on a long-term basis. However, operational noise is considered within the in-combination assessment.

13.31 The health impact concepts from the Noise Policy Statement for England and the magnitudes of noise change are used in this assessment.

13.32 Where the overall noise exposure from the Proposed Development exceeds the relevant SOAEL threshold at a specific receptor, that receptor is identified as being subject to a significant adverse impact on health and quality of life under Government noise policy and is hence identified as a likely significant adverse effect.

13.33 Other factors, such as the magnitude of noise change, can result in impacts between the LOAEL and SOAEL thresholds being reported as likely significant effects in EIA terms. The EIA process requires that likely significant effects are identified along with the envisaged mitigation to avoid or reduce these significant effects.

13.34 The assessment scenarios for the Proposed Development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:

[10] British Standards Institute (1993) BS7385-2:1993 *Evaluation and measurement for vibration in buildings - Guide to damage levels from groundborne vibration*
[11] British Standards Institute (2014) BS8233: 2014 *Guidance on sound insulation and noise reduction for buildings*
[12] World Health Organization (1999) *Guidelines for Community Noise*
[13] World Health Organization (2009) *Night Noise Guidelines for Europe*
[14] World Health Organization (2018) *Environmental Noise Guidelines for the European Region*

- Scenario 1a - Assessment of the noise and vibration impacts relating to the Proposed Development only.
- Scenario 1b - Assessment of the noise and vibration impacts relating to the Proposed Development, plus noise and vibration impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
- Scenario 1c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider Strategic Regeneration Framework (SRF).

- Assessment Stage 2 – Completed Development Phase:
  - Scenario 2a - Assessment of the noise and vibration impacts relating to the Proposed Development only (scoped out of assessment)
  - Scenario 2b – Assessment of the noise and vibration impacts relating to the Proposed Development, plus noise and vibration impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
  - Scenario 2c – Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.

13.35 Note that assessment scenario 2a is scoped out of this assessment as there are no operational noise sources associated with the application. Scenarios 2b and 2c are assessed on a high-level qualitative basis with the available road traffic flow information for the Red Bank built development and the wider SRF.

13.36 For the purposes of the construction noise assessment, demolition and construction working hours have been taken to be consistent with BS5228 methodology and criteria i.e. that they will take place during the hours of 0700-1900 on weekdays and 0700-1300 on Saturdays. To comply with MCC requirements, the actual working hours will be slightly different to the hours that have been used to assess impacts and effects.

13.37 The assessment will also include a summary of available noise and vibration mitigation measures and details of how compliance with 'best practicable means' (BPM), stated construction working hours and derived construction noise limits could be ensured through the use of appropriately worded planning conditions.

### Demolition and Construction Site Noise

13.38 Potential adverse effect thresholds in Government policy terms have been established based upon the ABC Method described in BS 5228-1. These thresholds, shown in Table 13.3, have been used to establish assessment criteria for average construction noise levels.

*Table 13.3: Thresholds of potential effects in policy terms of construction noise at sensitive receptors*

| Effect threshold | Threshold value, 1 m in front of the relevant facade |
|---|---|
| LOAEL | Day: 65 $dBL_{Aeq,daytime}$ |
| SOAEL | Day: 75 $dBL_{Aeq,daytime}$ |
| Note: Day is 07:00 to 19:00 | |

13.39 Where the average construction noise level at the receptor is between the lowest and the significant observed adverse effect levels, the threshold of a potential adverse effect in EIA terms is evaluated in accordance with Table 13.4.

*Table 13.4: Threshold of potential significant effects in EIA terms due to construction noise at dwellings, according to ABC method in BS 5228–1:2009+A1:2014*

| Assessment category and threshold value period | Threshold value, $dBL_{Aeq,T}$ | | |
|---|---|---|---|
| | Category A | Category B | Category C |
| Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00) | 65 | 70 | 75 |
| Category A: threshold value to use when ambient noise levels (rounded to the nearest 5 dB) are less than these values<br>Category B: threshold value to use when ambient noise levels (rounded to the nearest 5 dB) are the same as Category A values<br>Category C: threshold value to use when ambient noise levels (rounded to the nearest 5 dB) are higher than Category A values. | | | |

13.40 The adverse impact threshold is determined at a dwelling using the existing ambient noise level rounded to the nearest 5dB. This is then used to determine the assessment category: A, B or C, which defines the adverse noise impact threshold. The predicted construction noise level is then compared to the appropriate noise impact threshold level. If the $L_{Aeq}$ construction noise level exceeds the appropriate noise impact threshold level shown in Table 13.4 then an adverse impact with the potential to cause a significant effect is identified.

13.41 Having established if there is a potentially significant effect using the ABC method, the final assessment of significance is made by considering various other factors, such as the expected duration of the activity.

13.42 For non-residential receptors, significant effects are evaluated on a receptor-by-receptor basis using established noise impact criteria for the type of receptor and consideration of other factors, such as the expected duration of the activity.

### Demolition and Construction Site Vibration

13.43 Demolition and construction vibration levels have been predicted at nearby existing sensitive receptors using guidance in BS 5228–2:2009+A1:2014, which provides guideline thresholds for human response to vibration. These are reproduced in Table 13.5, with the corresponding magnitude of impact defined in Table 13.10.

13.44 A LOAEL is peak particle velocity (PPV) of 0.3mm $s^{-1}$. SOAEL is defined as PPV of 1 mm $s^{-1}$.

*Table 13.5: Guidance on human response to vibration, BS 5228-2*

| **Vibration level, PPV** a), b), c) | **Response** |
|---|---|
| > 0.14 mm $s^{-1}$ | Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration. |
| > 0.3 mm $s^{-1}$ | Vibration might be just perceptible in residential environments. |
| >1 mm $s^{-1}$ | It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents. |
| >10 mm $s^{-1}$ | Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments. |
| a) The magnitudes of the values presented apply to a measurement position that is representative of the point of entry into the recipient.<br>b) A transfer function (which relates an external level to an internal level) needs to be applied if only external measurements are available.<br>c) Single or infrequent occurrences of these levels do not necessarily correspond to the stated effect in every case. The values are provided to give an initial indication of potential effects, and where these values are routinely measured or expected then an assessment in accordance with BS 6472-1 or -2, and/or other available guidance, might be appropriate to determine whether the time varying exposure is likely to give rise to any degree of adverse comment. | |

13.45 Whether a significant effect occurs is determined by considering not only the criteria above, but also other factors such as the duration of exposure and the particular characteristics of the source.

13.46 Additionally, the table below from BS 7358-2:1993 provides guidance on the potential for building damage from vibration.

*Table 13.6: Vibration damage thresholds for buildings (conservative criteria below which there is no risk of cosmetic damage)*

| Category of building | Peak particle velocity ($mms^{-1}$) [a] | |
|---|---|---|
| | Transient vibration [b] | Continuous vibration [c] |
| Potentially vulnerable building | 6 | 3 |
| Structurally sound buildings | 12 | 6 |

Notes:
a) At the building foundation
b) Transient relative to building response e.g. from percussive piling
c) Continuous relative to building response e.g. from vibratory piling, vibrating rollers

### Demolition and Construction Traffic Noise

13.47 Changes in noise as a result of the traffic associated with the demolition and construction works have been predicted using the CRTN methodology and assessed based on the approach for noise impacts set out in DMRB LA 111. The impact is determined from the month with the peak number of additional demolition and construction vehicle movements on the local network, with the magnitude being assessed using the impact criteria in Table 13.2.

13.48 In terms of government policy, the significance thresholds for construction road traffic noise for this assessment are given in Table 13.7. These are consistent with construction noise criteria and higher than effect levels would be for operational road traffic, since they relate to a temporary situation and will only occur for part of the construction programme.

*Table 13.7: Thresholds of potential effects from construction road traffic noise in policy terms*

| Time period | Effect level (façade level), $dBL_{Aeq,T}$ | |
|---|---|---|
| | LOAEL | SOAEL |
| Day (07:00 – 23:00) | 65 | 75 |

13.49 Where an assessment has been based on the comparison of noise levels, it is carried out at a standard reference distance of 10m for the purpose of determining the magnitude of impact.

### Operational Road Traffic Noise

13.50 A high-level assessment has been undertaken to establish the likely changes in noise level on the surrounding road network resulting from changes in road traffic movements associated with:

- Application 4 – Red Bank Built Development (assessment scenario 2b); and
- The wider SRF (assessment scenario 2c).

13.51 Road traffic noise has been predicted using the Calculation of Road Traffic Noise (CRTN) methodology.

13.52 Traffic data have been provided by the project's transport consultant and relate to the following scenarios:

- 2021 Do-Minimum (current baseline scenario without the Proposed Development)
- 2022 Do -Minimum (short-term future baseline without Application 4 or wider SRF)
- 2027 Do-Minimum (long-term future baseline without Application 4 or wider SRF)
- 2027 Do-Something 1 (long-term scenario with Application 4 [Red Bank Built Development] completed)
- 2027 Do-Something 2 (long-term scenario with Application 4 [Red Bank Built Development] and wider SRF completed)

13.53 The traffic data for these scenarios are provided in **Appendix 13.4**.

13.54 For this assessment, an absolute noise level due to road traffic of 68dB$L_{A10,18hr}$ at a receptor is considered to constitute a SOAEL.

### Identifying Sensitive Receptors

13.55 The IEMA Guidelines for Environmental Noise Impact Assessment identifies noise-sensitive receptors and includes dwellings, schools, hospitals and commercial premises. For the purposes of this assessment, buildings used for permanent living (*i.e.* dwellings) are assigned the highest noise sensitivity.

13.56 Table 13.8 provides the proposed general hierarchy used to determine receptor noise sensitivity in this assessment.

*Table 13.8: General ranking of noise sensitivity of receptors*

| Relative noise sensitivity | Receptor type |
|---|---|
| High | Residential, schools, hospitals |
| Low | Commercial office buildings, light industrial buildings |

## Magnitude of Impact

### Demolition and Construction Site Noise

13.57 For receptors where the construction noise thresholds determined using Table 13.4 are exceeded, the magnitude of impact is determined by comparison to a LOAEL and then a SOAEL. This can be related to the standard impact classifications, as shown by Table 13.9.

*Table 13.9: Construction noise impact classification*

| Noise level threshold, $dBL_{Aeq,12hr}$ | Magnitude of impact |
|---|---|
| < 65.0 | Negligible |
| 65.0 – 74.9 | Minor |
| 75.0 – 79.0 | Moderate |
| ≥ 80.0 | Major |

### Demolition and Construction Site Vibration

13.58 The magnitude of impact for construction vibration is determined by reference to the classifications in Table 13.10.

*Table 13.10: Construction vibration impact classification*

| PPV, mm $s^{-1}$ | Magnitude of impact |
|---|---|
| >10 | Major |
| >1.0 | Moderate |
| > 0.3 | Minor |
| > 0.14 | Negligible |

### Demolition and Construction Traffic Noise

13.59 The magnitude of impact for demolition and construction traffic noise is determined using the short-term impact criteria outlined in DMRB LA 111 and reproduced in Table 13.2.

### Operational Road Traffic Noise

13.60 The magnitude of impact for development-generated traffic noise is determined using the long-term impact criteria outlined in DMRB LA 111 and reproduced in Table 13.2.

### Characterisation of Effect

13.61 The presence of a potential significant effect is determined using a combination of the sensitivity of the receptor and the magnitude of impact.

13.62 The final assessment of whether an effect is significant is based upon the indicated potential for a significant effect in tandem with consideration of additional factors, primarily the:

- Policy effect level
- Duration of event; and
- Frequency of occurrence.

### Assumptions/Limitations

13.63 The predicted level of noise from construction activities depends on the particular items of plant and methods used. At this stage in the project, a detailed schedule of construction equipment is not available. Therefore, it has been necessary to assume a typical schedule based on plant assumptions used for a similar programme of works. This is considered to be a reasonable scenario to represent the possible construction noise and vibration effects for the purpose of this assessment. Construction and demolition assumptions are summarised in **Appendix 13.2**.

13.64 Where assessments of Applications 1, 3, and 4 and the wider SRF have been undertaken for the in-combination assessment, detailed information is currently not available (with the exception of traffic flows, which have been incorporated into the assessment). Instead, assessments are undertaken on a high-level qualitative basis only with reasonable assumptions made where appropriate.

### Consultation

13.65 The following comments were received from a MCC Environmental Health representative regarding the scope of the noise and vibration assessment.

*Table 13.11: Comments received during scoping consultation exercise*

| Consultee | Date and Time | Comments | Actions |
|---|---|---|---|
| **MCC Environmental Health** | 7 Jan 2022 | Scope of assessment is broadly acceptable, including approach to construction noise limits.<br><br>Construction vibration limits are required for both commercial and residential receptors.<br><br>Construction hours: 0730-1800 Monday to Friday, 0830-1400 Saturday, no work on Sundays or bank holidays.<br><br>Consider noise from generators or plant/equipment used to provide power to site compound in a manner consistent with BS 4142: 2014. | Incorporate vibration limits for commercial and residential receptors.<br><br>Amend assumed construction hours of working as noted.<br><br>Include generators or similar in assessment of construction noise. |

## Baseline Conditions

13.66 A review of existing noise survey information and noise mapping has indicated that ambient noise levels in the vicinity of the Site during periods where construction is permitted are generally below 65dB$L_{Aeq,T}$, which is the threshold value for application of the lowest construction noise limits (Category A) as detailed in Table E.1 of BS 5228-1:2009+A1:2014.

13.67 Details of baseline noise survey measurements, and noise mapping used to inform the assessment, are provided in **Appendix 13.3**. Noise and vibration surveys were undertaken during two separate visits:

- Noise survey in November 2017 to inform the original Victoria North masterplanning exercise; and
- Noise survey in July 2018 to inform the Environmental Impact Assessment for the Victoria Riverside development.

13.68 These surveys captured noise levels from road traffic on Red Bank, Collyhurst Road and Dantzic Street. A 3D baseline environmental noise model covering the Red Bank area was produced as part of the 2017 masterplanning study.

The lowest construction noise threshold (65dB$L_{Aeq,T}$ - Category A) has been applied to all noise-sensitive receptors as a worst-case, cautious assumption. This is the threshold which is applied if daytime ambient noise levels are at or below 65dB$L_{Aeq}$,. It has therefore not been necessary to undertake any further baseline noise survey work, as the threshold would not be reduced if lower ambient noise levels were measured.

### Identification of Receptors

13.69 Receptor locations have been defined for the assessment as set out in Table 13.12 and shown on **Figure 13.1**. Where appropriate, one location is used to represent several noise-sensitive receptors that are located close together.

*Table 13.12: Noise-sensitive receptor locations*

| Ref. | Name | Description | Receptor sensitivity | Distance / Direction from Site |
|---|---|---|---|---|
| **A** | Vallea Court | Residential block of flats on Red Bank | High | 150m SW |
| **B** | Masson Place | Residential block of flats on Red Bank | High | 50m SW |
| **C** | Melia House | Residential block of flats on Red Bank | High | 25m W |
| **D** | Lincoln Gate | Residential block of flats on Red Bank | High | 25m W |
| **E** | Redbank House | Commercial office building on Red Bank | Low | 25m W |
| **F** | Honey St and Collingham St | Various small office buildings and light industrial units on Honey Street and Collingham Street | Low | 25m NW |
| **G** | Fairholme Caravan Site | Caravan site, Collingham Street | High | 35m NW |
| **H** | Eden Girls and Boys Leadership Academy | Secondary school, Rayburn Way | High | 150m N |
| **I** | Christabel Tower | Residential blocks of flats, Dalton Street | High | 190m E |
| **J** | Sylvia Tower | Residential blocks of flats, Dalton Street | High | 175m E |
| **K** | 19-35 Dalton St | Residential houses on Dalton Street | High | 110m SE |

| Ref. | Name | Description | Receptor sensitivity | Distance / Direction from Site |
|---|---|---|---|---|
| **L** | Emmeline Tower | Residential block of flats, Dalton Street | High | 70m SE |
| **M** | Victoria Riverside development | Residential development on Dantzic Street (planning ref. 126944/FO/2020)<br>Under construction | High | 20m SW |
| **N** | Angel Meadows Plot 4 | Residential development on Dantzic Street (planning ref. 116366/FO/2017)<br>Under construction | High | 75m S |
| **O** | King of Kings School | School located on Dantzic Street / Aspin Lane | High | 85m S |

13.70 The following nearby residential developments are considered in the cumulative assessment and are not included in the table above, as they are not yet approved and/or not under construction and will not be completed by the time the Proposed Development is complete.

- North View development
- The Gasworks development

## Embedded Mitigation

13.71 'Best practicable means' (BPM) of working would be employed, as required by the Control of Pollution Act (CoPA), to control noise and vibration. Such measures may include:

- Hours of working to be planned, taking into account the nature of land use in the areas concerned and duration of the work;
- Working hours limited to Monday to Friday: 07:30 – 18:00; Saturday: 08:30 – 14:00; and no works on Sunday and bank holidays.
- Where practicable, quiet working methods should be employed, including the use of the most suitable plant, and suitably sized plant;
- Haulage vehicles should not access the site outside of day time periods;
- Equipment should be switched off when not required;

- Internal haul routes should be well maintained and avoid steep gradients;
- The drop height of materials should be minimised;
- Plant and vehicles should be started up sequentially rather than simultaneously;
- Broadband (i.e. white noise) reversing alarms should be used rather than tonal alarms;
- The siting of plant should be considered to avoid noise being directed towards dwellings; and
- Noise barriers in the form of temporary hoarding, or stacks of materials such as bricks, timber, or top soil should be used to provide screening to nearby sensitive receptors.

# Assessment of Likely Significant Effects

### Demolition and Construction

Assessment Scenario 1a – Proposed Development Only

*Construction site noise*

13.72 Noise generated on the Site itself from demolition, site preparation and construction activities associated with the infrastructure works have been predicted at each receptor identified in Table 13.12. The study is split into the following activities:

- Site remediation and earthworks – consisting of site clearance, breaking of existing in-ground structures, excavation and earthworks, and levelling and compaction.
- Demolition of sections of existing river wall.
- Provision of utilities and services connections to development plots.
- Construction of main access road including associated drainage systems.
- Construction of new retaining wall section near to Red Bank junction of access road.

13.73 For each activity, assumptions are made regarding types and quantities of individual plant items that will be operating, as well as the duration (or % on-time) for which they will be operational during the activity. A full set of assumptions regarding construction noise and vibration is provided in **Appendix 13.2**.

13.74 In line with MCC's permitted hours for construction sites, construction works are assumed to take place between 0730-1800 Monday to Friday, and 0830-1400 Saturday, with no works on Sundays or bank holidays.

13.75 The construction programme for the main infrastructure works is understood to run from September 2022 until March 2024.

13.76 The locations of construction works on the Site have been chosen to reflect the likely spatial extent of each activity and present a reasonable worst-case assessment. Where works are to take place over a large area (for example

earthworks and utilities provision), the construction activities are assumed to take place in the centre of the plot closest to each receptor. This represents an 'average position' of works; and although some activities may take place closer to receptors than predicted, the converse will also be true and the duration of the works in close proximity to any receptor will be short in comparison to the overall construction programme.

13.77 For works focused on smaller areas (for example river wall demolition and retaining wall construction), construction activities are assumed to take place in the centre of each area as indicated in the relevant drawings.

13.78 For linear works (for example the access road construction), noise levels are predicted from a number of discrete points along the proposed route of the works. The highest predicted noise level at each receptor is then chosen as the basis for assessment.

13.79 Appropriate values for acoustic screening, consistent with BS 5228-1, have been included in the calculations to account for obstacles such as terrain or railway viaducts.

13.80 Noise levels are generally predicted at first floor level, except for single storey buildings where noise levels are predicted at 1.5m above ground level.

13.81 As outlined in the section, it is proposed to apply the lower 65dB$L_{Aeq,T}$ (Category A) construction noise threshold to all receptors to cover all likely ambient noise levels and provide a reasonable worst-case assessment approach. A judgement on whether an effect is significant will then be made on the basis of Government policy, magnitude of impact and receptor sensitivity as well as other factors related to the works themselves such as duration and frequency of activities.

13.82 The results of this study are presented in full in **Appendix 13.2**.

13.83 Predicted noise levels at receptors A to D (residential flats on Red Bank – see **Figure 13.1**) are below the adopted threshold value for a potential significant effect from all construction activities. Noise levels are also below the LOAEL. Therefore, impacts are **negligible** and effects are assessed as **not significant**.

13.84 Predicted noise levels at receptor E (Redbank House) exceed the threshold during site clearance and excavation works, indicating an adverse impact with the potential for a significant effect. Noise levels are between the LOAEL and SOAEL, resulting in a **minor adverse** impact. Being a commercial receptor and of low sensitivity, effects are assessed as **not significant**.

13.85 Predicted noise levels at receptor F (Honey Street and Collingham Street) exceed the threshold during site excavation works, levelling and access road construction, indicating an adverse impact with the potential for a significant effect. In all cases noise levels are between the LOAEL and SOAEL, resulting in a **minor adverse** impact. Being a commercial receptor, noise effects are assessed as **not significant**.

13.86 Predicted noise levels at receptor M (Victoria Riverside) exceed the threshold during river wall demolition works, indicating an adverse impact with the potential for a significant effect. The predicted noise level from this activity is above the LOAEL threshold but does not exceed the SOAEL. Furthermore, the activity in question is expected to be of short duration compared to the overall length of programme. Therefore, noise effects in this case are assessed as **not significant**.

13.87 Noise levels at all other receptors are below the threshold for a potential significant effect during all activities, indicating no other significant noise effects due to construction works.

*Construction site vibration*

13.88 Notable levels of vibration could potentially be generated through certain earthworks activities occurring during the works; for example, excavation and levelling/compaction. Specific plant items that may cause the vibration are impact breakers (e.g. excavator-mounted or handheld pneumatic breakers) and vibratory rollers or plates.

13.89 Whether an adverse impact sufficient to cause a significant effect is likely to occur would depend upon the detail of ground conditions and the proximity of the construction activity to the neighbouring premises.

13.90 The most common sources of appreciable vibration during typical construction works is from vibratory compaction and from piling, which is not anticipated to take place during the works covered in this assessment. Potential vibration impacts due to future piling associated with Application 4 and the wider development are discussed in Assessments 1b, 2b and 2c.

13.91 Annex E of BS 5228-2 provides empirical formulae for estimating PPV vibration levels, and the likelihood that these levels will be exceeded, associated with various construction activities, including vibratory compaction. Predictions consider the dimensions of the machinery, the vibration amplitude of the compactor and the distance to the receptor.

13.92 Using reasonable worst-case input values, maximum vibration levels associated with vibratory compaction at a distance of 20m (the approximate closest distance from receptor to construction works, in this case Receptor D – Lincoln Gate) are estimated to be between 4.0-4.5mm/s PPV. Taking into account the building response, which could amplify these values by a factor of x2 to x4, this could result in a **moderate** to **major adverse** impact. Therefore, effects of perceptible vibration on nearby receptors are considered to constitute a **significant effect**.

13.93 The compaction will only occur at these shortest distances for a small proportion of the overall construction activity, and an even smaller proportion of the construction programme as a whole. From a building damage risk perspective, these vibration levels are within the range for which no cosmetic damage is expected, and therefore effects of vibration on building damage are **not significant**.

13.94 Beyond 120m from the Site boundary, highest levels of vibration due to vibratory compaction are predicted to fall below 1.0mm/s PPV, indicating that although vibration may still be occasionally perceptible, complaints are not

likely at this distance regardless of duration. Beyond 260m from the Site, vibration may just be perceptible at a very low level in some locations.

*Construction traffic*

13.95 Primary access to the Site for construction vehicles (encompassing materials and plant delivery/extraction, as well as site staff) will be via Red Bank / North Street and Cheetham Hill Road. Alternative access will be via Collyhurst Road and Queens Road (A6010), which will be closed off as works proceed.

13.96 The number of construction and site staff vehicles will vary throughout the construction programme depending on the phase of work. Estimated monthly vehicles accessing the Site range between 1,030 and 1,786, with the peak occurring in May 2023. A full breakdown of estimated monthly construction traffic movements is provided in **Appendix 13.2**.

13.97 If each vehicle is assumed to make a trip to and from site, this results in a maximum of 3,572 monthly vehicle movements associated with the Site, and an average of approximately 120 per day.

13.98 Noise impacts due to construction traffic are assessed by comparing number of vehicle movements against baseline traffic figures for the relevant roads, which are obtained from the project transport consultant. These are also presented in **Appendix 13.2**. The basic noise level (BNL) value is calculated with and without construction vehicles present.

*Table 13.13: Predicted noise increases and impacts due to construction site traffic movements*

| Road name | Traffic noise level, $dBL_{A10,18hr}$ | | Change, dB | Effect level | Magnitude of impact |
|---|---|---|---|---|---|
| | 2022 baseline | 2022 baseline + peak month construction traffic | | | |
| Red Bank / North Street | 61.2 | 62.8 | +1.6 | Below LOAEL | Minor |
| Cheetham Hill Road | 68.8 | 69.1 | +0.3 | Exceeds LOAEL | Negligible |
| Collyhurst Road | 62.3 | 63.5 | +1.2 | Below LOAEL | Minor |

| Road name | Traffic noise level, $dBL_{A10,18hr}$ | | Change, dB | Effect level | Magnitude of impact |
|---|---|---|---|---|---|
| | 2022 baseline | 2022 baseline + peak month construction traffic | | | |
| Queens Road (A6010) | 68.8 | 69.2 | +0.4 | Exceeds LOAEL | Negligible |

13.99 For all roads assessed, the baseline traffic noise level is below the SOAEL. Increases of between +0.3 and +1.6dB are predicted, remaining below the +3dB threshold and resulting in either a **minor adverse** or **negligible** impact.

13.100 Noise effects on properties on all roads due to construction site traffic are therefore assessed as **not significant**.

### Assessment Scenario 1b – Proposed Development Plus Impacts Associated with Applications 1, 3 and 4

13.101 The scoping exercise for Application 1 (Enabling Works) excluded assessment of demolition/construction noise and vibration from the EIA. Therefore, it is concluded that no significant effects would occur and therefore that there can be no in-combination effects associated with Application 1. Notwithstanding this, it is noted that this application includes the demolition of the existing Creamlines Dairy, which will generate some levels of noise and vibration that will be controlled according to BPM.

13.102 Any potential significant noise and/or vibration effects associated with construction works for Applications 3 (River Works) and 4 (Red Bank Neighbourhood) will be identified through the EIA process for these phases once more detailed information is available.

13.103 A high-level summary of potential noise and vibration impacts that may arise from demolition and construction work associated with Applications 1, 3 and 4 is given below.

*Table 13.14: Summary of noise and vibration impacts, Scenario 1b*

| Application | Commentary on main demolition/construction noise and vibration-generating activities |
|---|---|
| **1** | Demolition of existing structures likely to give rise to some short-term, localised noise and vibration impacts (potentially affecting receptors A-F). The removal of materials from site may result in small increase in construction traffic on surrounding network. |

| Application | Commentary on main demolition/construction noise and vibration-generating activities |
|---|---|
| 3 | Construction of new bridge and flood defence structures is likely to require piling, which may generate levels of noise and vibration sufficient to cause likely significant effects at some receptors (particularly those situated closest to the river e.g. to south and south-east of the Site on Dantzic St, Collyhurst St and Dalton St). |
| 4 | Construction of residential dwellings, including some towers requiring piled foundations. Piling works on individual construction plots may result in short-term noise and vibration impacts, particularly on receptors located closest to plots to the north of the Site. |

13.104 Most construction works associated with Applications 3 and 4 are considered unlikely to give rise to effects beyond those identified in this assessment. The possible exception to the above is any piling works to be undertaken for structures or individual development plots associated with Applications 3 and 4, which may generate higher levels of noise and vibration than identified in this assessment, leading to potential significant effects at some nearby receptors. It is not possible to determine whether these effects will be significant until the exact nature of the development and anticipated construction programmes and methods are known.

13.105 In general, construction activities that occur on multiple plots simultaneously and/or over a long duration are more likely to give rise to significant noise effects. This may occur during the Red Bank built development phase. Cumulative assessments undertaken for each development plot will be important in identifying and minimising potential significant effects due to simultaneous construction work.

13.106 In conclusion, no additional significant effects associated with the Proposed Development plus Applications 1, 3 and 4 can be identified at this point, although some potential noise and vibration impacts have been highlighted.

### Assessment Scenario 1c – Proposed Development Plus Impacts Associated with Applications 1, 3 and 4 and wider SRF

13.107 The nature of any potential significant noise and vibration effects due to construction of the wider SRF are considered similar to those associated with Application 4. However, the longer duration and larger scale of construction work, even when set against the increased geographic spread (and therefore distances to receptors), means the magnitude of impacts and thus the likelihood of significant effects occurring is considered to be greater.

13.108 As with Applications 3 and 4, piling works associated with new residential dwellings (particularly any high-rise towers) are considered the most likely to give rise to impacts at all receptors. These impacts may be increased if development occurs simultaneously across multiple plots.

13.109 Again, it is not possible to determine whether any effects will be significant until the exact nature of the development and anticipated construction programmes and methods are known. Cumulative assessments undertaken for each development phase will be required to identify and minimise potential significant effects due to simultaneous construction work.

13.110 In conclusion, no additional significant effects associated with the Proposed Development plus Applications 1, 3 and 4, and the wider SRF can be identified at this time, although some potential noise and vibration impacts have been highlighted.

### Completed Development

#### Assessment Scenario 2a – Proposed Development Only

13.111 Assessment of operational noise and vibration for the Proposed Development has been scoped out of this EIA due to there being no noise or vibration-generating built element as part of the main infrastructure works package. Therefore, there are no additional likely significant effects associated with the completed development.

#### Assessment Scenario 2b – Proposed Development Plus Impacts Associated with Applications 1, 3 and 4

13.112 The scoping exercise for Application 1 (Enabling Works) excluded assessment of operational noise and vibration from the EIA, so no impacts are considered here. Similarly, it is envisaged that Application 3 will not assess operational noise and vibration.

13.113 The presence of operational noise and vibration effects associated with Application 4 will depend on the nature of the built development. Increased road traffic on the surrounding network may give rise to noise impacts and will need to be managed through an appropriate transport strategy. Noise emissions from fixed plant will need to be controlled through planning conditions to avoid giving rise to potentially significant effects.

13.114 A high-level assessment of operational road traffic noise associated with Application 4 has been undertaken with the data available and is presented in full in **Appendix 13.4**. In summary, all long-term changes in road traffic noise levels on the surrounding road network are predicted to be below 3dB, resulting in a negligible impact. Therefore, effects are **not significant**. This conclusion should be verified once final traffic data are available for the development plots.

13.115 Operational vibration impacts due to completed development associated with Applications 1, 3 and 4 are considered unlikely to give rise to any significant effects.

13.116 In conclusion, no additional significant effects associated with the Proposed Development plus Applications 1, 3 and 4 can be identified.

### Assessment Scenario 2c – Proposed Development Plus Impacts Associated with Applications 1, 3 and 4 and wider SRF

13.117 The nature of operational noise and vibration effects associated with the wider SRF will be similar to those associated with Application 4 and will depend on the exact nature of the built development and infrastructure. Increased road traffic on the surrounding network may give rise to noise impacts and will need to be managed through an appropriate transport strategy. Noise emissions from fixed plant will need to be controlled through planning conditions to avoid giving rise to potentially significant effects.

13.118 A high-level assessment of operational road traffic noise associated with the full SRF has been undertaken with the data available, and is presented in full in **Appendix 13.4**. In summary, all long-term changes in road traffic noise levels on the surrounding road network are predicted to be below 3dB, resulting in a negligible impact. Therefore, effects are **not significant**. This conclusion should be verified once final traffic data are available.

13.119 Operational vibration impacts due to the completed development associated with the wider SRF are considered unlikely to give rise to any significant effects.

13.120 In conclusion, no additional significant effects associated with the Proposed Development plus Applications 1, 3 and 4, and the wider SRF can be identified.

## Additional Mitigation / Enhancement Measures

13.121 The use of large vibratory rollers in some locations could lead to a significant effect due to perceptible vibration in the closest residences. Should this occur, compaction can be achieved without the vibratory mechanism operating that would effectively mitigate this impact although the time taken for the compaction would be increased. Vibration monitoring can be used to identify the need for this mitigation.

13.122 No other significant noise and vibration effects have been identified for the Proposed Development. Therefore, additional measures to mitigate environmental effects beyond those outlined in Embedded Mitigation are not considered necessary.

13.123 In addition, no additional in-combination significant effects requiring mitigation were identified.

## Likely Residual Effects of the Development and their Significance

13.124 Table 13.15 presents residual effects associated with the Proposed Development, and for the in-combination assessments, for each assessment topic after mitigation has been applied.

*Table 13.15: Residual effects summary*

| Description of Effect | Potential effect | Mitigation | Residual Effect |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| *Assessment Scenario 1a – proposed development only* | | | |
| Construction site noise | Not significant | No additional mitigation proposed beyond use of BPM, including public liaison where appropriate | Not significant |
| Construction traffic noise | Not significant | | Not significant |
| Construction site vibration | Significant during some compaction works | In addition to the above, monitor vibration and if necessary avoid vibratory compaction in closest proximity to dwellings | Not significant |
| *Assessment Scenario 1b – proposed development plus impacts associated with Applications 1, 3 and 4* | | | |
| No additional effects can be identified | | | |
| *Assessment Scenario 1c – proposed development plus Applications 2, 3 and 4 and wider SRF* | | | |
| No additional effects can be identified | | | |
| ***Completed Development*** | | | |
| *Assessment Scenario 2a – proposed development only* | | | |
| Scoped out of EIA | | | |
| *Assessment Scenario 2b – proposed development plus impacts associated with Applications 1, 3 and 4* | | | |
| Operational traffic noise | Not significant | None required | Not significant |
| *Assessment Scenario 2c – proposed development plus Applications 2, 3 and 4 and wider SRF* | | | |
| Operational traffic noise | Not significant | None required | Not significant |

## Conclusions

13.125 The assessment of noise and vibration from demolition, site preparation and construction works associated with the Proposed Development has identified no residual significant effects once the proposed mitigation measures have been employed.

## Assessment of Cumulative Effects and their Significance

13.126 It is possible that additional noise and/or vibration impacts from construction works occurring on cumulative sites may give rise to significant effects during the construction phase of the Proposed Development. This will depend on a number of factors, not all of which can be determined; for example, the location of cumulative sites relative to the Proposed Development and its identified receptors; the timing and duration of construction works for cumulative sites; the nature of construction activities on cumulative sites; and the presence of receptors close to cumulative sites which may dictate allowable noise levels (therefore reducing impact at the receptors considered in this assessment).

13.127 Due to there being no built element and therefore no assessment of operational noise and vibration for the Proposed Development, effects due to operational noise on cumulative sites is not considered.

13.128 The cumulative impact assessment (CIA) is presented as three scenarios:

- Scenario 3a - Assessment of the cumulative noise and vibration impacts relating to the Proposed Development plus noise and vibration impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative noise and vibration impacts relating to the Proposed Development, plus noise and vibration associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
- Scenario 3c - Assessment of the cumulative impacts relating to the Proposed Development, plus impacts associated with Application 1 (Enabling works works), 3 (Flood alleviation works) and 4 (Red Bank built development), the wider SRF, and the agreed cumulative sites.

13.129 In Scenario 3a the cumulative sites include those approved projects within 1km of the Site considered as having potential for cumulative noise and vibration impacts with the Proposed Development. This is the typical approach to CIA undertaken for an EIA. The proposed sites have been identified by Avison Young from MCC's and SCC's planning portal, as applicable, and are presented in Table 13.16.

13.130 Cumulative sites in this list that are more than 225m from the Site are scoped out of the cumulative noise and vibration assessment. This is the distance at which a reasonable worst-case set of construction activities would be at least 10dB below a SOAEL threshold at the identified receptors. At this distance, vibration impacts are also not expected to be present.

*Table 13.16: Cumulative sites*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | 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 | Approved Jun 2021 | Out | Distance from proposed development |
| 2 | 127971/FO/2020 | 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 | Out | Distance from proposed development |
| 3 | 128248/FO/2020 | 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 | 150m south | Approved June 2021 | In | Within 225m of the Site |
| 4 | 116366/FO/2017 | 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 | 150m south | Approved Aug 2017 | In | Within 225m of the Site |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | Under construction | | |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<br><br>Under construction | Out | Distance from proposed development |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 | Out | Distance from proposed development |
| 7 | 124973/FO/2019 | 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 | 350m south | Approved Feb 2016 | Out | Distance from proposed development |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | between Angel Street and Miller Street. \| Land Bounded By Co-op Headquarters Miller Street And Angel Street Manchester | | | | |
| 8 | 111777/FO/2016/C1 | 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 | 250m south east | Approved Sep 2016<br><br>Under construction | Out | Distance from proposed development |
| 9 | 121375/FO/2018 | 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. | 840m south | Approved Oct 2020 | Out | Distance from proposed development |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | Approved Oct 2018<br><br>Under construction | Out | Distance from proposed development |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 11 | 20/76134/FUL | 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 | 1000m south west | Approved Feb 2020 | Out | Distance from proposed development |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br><br>Under construction | Out | Distance from proposed development |
| 13 | 19/74465/HYBEIA | 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 7BN | 960m south west | Validated Nov 2019 | Out | Distance from proposed development |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 14 | 126944/FO/2020 | 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 | 140m south east | Approved Sep 2020<br><br>Under Construction | In | Within 225m of the Site |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | 145m south east | Approved October 2017 | In | Within 225m of the Site |
| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 | Out | Distance from proposed development |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use | 635m south west | Approved June 2018 | Out | Distance from proposed development |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | | | | |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | Out | Distance from proposed development |
| 19 | 124888/FO/2019 | 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 | Out | Distance from proposed development |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | Out | Distance from proposed development |

### Approach

13.131 Four cumulative sites have been scoped into the assessment as they fall within the 225m radius threshold. These are sites 3, 4, 14 and 15. All cumulative sites lie to the south of the Proposed Development, and so it is considered reasonable to consider only receptors that are located in this area. Any noise/vibration impact from these sites on receptors to the north of the Proposed Development will be negligible.

#### Assessment Scenario 3a - Cumulative impacts relating to the Proposed Development

*Construction site noise*

13.132 Construction site noise from Cumulative Site 3 has the potential to impact upon receptor M (also cumulative Site 14), which is also predicted to experience construction noise from the Proposed Development at a level just below the SOAEL threshold. Assuming that significant noise effects can be avoided, a worst-case scenario consisting of the noisiest construction works occurring at the same time and at the closest points of both the Proposed Development and cumulative site 3 would result in an increase in noise at receptor M of no more than 3dB. This worst case would marginally exceed a SOAEL threshold and indicate a potential significant effect.

13.133 In practice this combination of events is very unlikely to be realised, as elevations of the buildings that make up receptor M will experience noise from both sites in different quantities. For example, north-facing elevations of receptor M will experience mainly noise from the Proposed Development whilst being shielded from noise from the cumulative site, and vice versa for south-facing elevations. Therefore, cumulative noise effects from this site are assessed as **not significant** under all reasonably foreseeable situations.

13.134 Similarly to the above, construction noise from cumulative site 15 has the potential to impact upon receptor M. Again, assuming that significant noise effects can be avoided, a worst-case scenario consisting of the noisiest construction works occurring at the closest points of both the Proposed Development and cumulative site 15 would result in an increase in noise at receptor M of no more than 3dB. In addition, Receptor M is currently under construction – and therefore unoccupied – and is likely to remain so for the majority of the period of the Proposed Development construction works (end March 2024). Any cumulative impacts from both the Proposed Development and cumulative site 15 are therefore likely to be relatively short-term in nature.

13.135 Construction noise from cumulative sites 4, 14 and 15 has the potential to impact upon Receptor N (also part of site 4) and Receptor O (King of Kings School). As the impacts from construction noise associated with the Proposed Development at these receptors were very low in magnitude and well below the threshold for a potential significant effect, the combined impact is not considered likely to give rise to a significant effect where there was not one before.

*Construction site vibration*

13.136 No notable vibration impacts from the Proposed Development were identified at receptors to the south of the Site as all lie at a significant distance away and benefit from the river providing additional attenuation of vibration. Therefore, no cumulative effects due to vibration are identified.

*Construction traffic noise*

13.137 Details regarding construction vehicle numbers and access routes for cumulative sites are not available. Assuming an absolute worst-case scenario where a cumulative site requires the same number of construction vehicles as the Proposed Development (120 movements per day) and uses the same access route or routes, the maximum change in noise level compared to baseline conditions is predicted to be +2.5dB, which is below the 3dB threshold and therefore indicating no new significant effects. In reality, the scale of cumulative sites is much smaller than the Proposed Development, thus requiring fewer construction vehicles to service them, and will likely use different access routes (e.g. Rochdale Road) and so these predicted changes are unlikely to occur.

Scenario 3b - Cumulative Impacts Relating to the Proposed Development, Plus Application 1, 3 and 4

13.138 For the reasons provided during assessment scenario 1b, no additional cumulative effects associated with the Proposed Development plus Applications 1, 3 and 4 can be identified. Any activities with the potential to cause significant noise and/or vibration effects associated with construction works for Applications 3 (River Works) and 4 (Red Bank Neighbourhood) will be identified through the EIA process for these phases once more detailed information is available. The potential for cumulative effects associated with relevant committed developments will then be reassessed once this information is available.

Scenario 3c - Cumulative Impacts Relating to the Proposed Development, Plus Application 1, 3 and 4, and the Wider SRF

13.139 For the reasons provided during assessment scenario 1c, no additional cumulative effects associated with the Proposed Development plus Applications 1, 3 and 4, and the wider SRF can be identified. Again, it is not possible to determine whether any effects will be significant until the exact nature of the development and anticipated construction programmes and methods are known. Cumulative assessments undertaken for each development phase will be important in identifying and minimising potential significant effects due to simultaneous construction work.

**Likely Residual Cumulative Effects and their Significance**

13.140 No significant cumulative effects relating to noise and vibration have been identified.

# 14. Waste

## Introduction

14.1 This chapter of the ES provides an assessment of the likely significant environmental effects associated with the generation and management of solid waste with respect to the construction and operational phases of the Proposed Development. The assessment includes the types and quantities of solid waste that would be generated, the quantity of residual waste requiring disposal to landfill and the available capacity of waste management infrastructure to manage the residual waste fraction.

14.2 The chapter describes the methods used to assess the effects, the baseline conditions currently existing at the Site and surroundings, the potential direct and indirect effects of the development arising from waste, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects. This waste chapter has been written by Arup.

14.3 As noted in Chapter 2: Approach, this ES assesses the Development Project, which is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in 4 planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – planning permission has been granted for the demolition of Creamline Dairy, tree and shrub clearance and construction of a temporary haul road.
- HIF Infrastructure Works (referred to hereafter as 'Application 2') – the subject of this application. Creation of development platforms, demolition of sections of existing River Wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diversions and provision of green infrastructure including creation of green links and first phase of the new City River Park.
- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within flood zone 3.
- Land under control of the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. As noted in Chapter 2: Approach, the entire Red Bank Neighbourhood within the SRF, including third party land, will deliver up to 5,500 new dwellings.

14.4 Whilst the Applicant has the detail of the early applications, the later parts of the Development Project (and particularly Application 4) are still being designed and the details are not yet available. Therefore, the approach that has been taken in the ES is to break the Development Project into 3 elements, with each element being

assessed in a level of detail commensurate with the detail that is available for the relevant part of the Development Project.

14.5 As such, a full and detailed assessment is undertaken of Application 2, and then reasonable assumptions and judgements have informed and been made to assess Applications 1-4 together, and then Applications 1-4 and SRF

# Planning Policy Context

## National Planning Policy

### National Planning Policy Framework

14.6 National Planning Policy for Waste 2014 (Department for Communities and Local Government)[1] - The National Planning Policy for Waste is the formal replacement for Planning Policy Statement 10 (PPS10). It sets out how waste planning authorities should discharge their responsibilities with respect to facilitating sufficient waste management capacity within their area, and still follows the principles set out in PPS10, which states that waste should be managed in line with the principles of the waste hierarchy. The Department for Environment Food and Rural Affairs (Defra), set out in the Waste Management Plan for England (2021)[2], that the National Planning Policy for Waste is scheduled to be updated to align with changes to the National Planning Policy Framework[3] and the Resources and Waste Strategy for England[4].

### Any Other Relevant National Planning or Development Strategies

14.7 Our Waste, Our Resources: a Strategy for England (2018)[4] - The Resources and Waste Strategy for England 2018 focuses on the importance of driving waste management up the waste hierarchy and states the importance of considering the Government's ambition of promoting resource efficiency and moving towards a circular economy. There is a focus on producer responsibility, minimising plastic wastes and improving recycling rates, though the collection of a consistent set of dry recyclable materials from all households and businesses, weekly separate food waste collection for every household and appropriate businesses and eliminating the disposal of food waste to landfill by 2030. New recycling targets will be adopted in line with the EU Circular Economy Package which include: 55% by 2025; 60% by 2030; and 65% by 2035. In addition, there is an ambition for reviewing and consulting on extended producer responsibility for some construction materials. The Green

[1] Department for Communities and Local Government (2014). *National Planning Policy for Waste*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/364759/141015_National_Planning_Policy_for_Waste.pdf
[2] Department for Environment Food and Rural Affairs (2021), *Waste Management Plan for England*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/955897/waste-managementplan-for-england-2021.pdf
[3] Ministry of Housing, Communities and Local Government (2021), *National Planning Policy Framework*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf
[4] Department for Environment, Food and Rural Affairs (2018) *Our waste, our resource,* Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765914/resources-wastestrategy-dec-2018.pdf

Construction Board has begun developing guidance for increasing resource efficiency and reducing waste in the construction sector through the adoption of circular economy principles and establishing a definition for net zero avoidable waste.

14.8 The Waste Management Plan for England (2021)[2] fulfils the requirements of the Waste (England and Wales) Regulations 2011 for waste management plans to be reviewed every six years. While the Resources and Waste Strategy sets out a vision and associated policies to move to a more circular economy, the Waste Management Plan for England focuses on waste arisings and their management. It provides a high-level analysis of the current waste management situation in England and evaluates how implementation of the objectives of the Waste (England and Wales) Regulations 2011 will be supported.

14.9 Waste Planning Practice Guidance 2015 (Department for Communities and Local Government)[5]- The Planning Practice Guidance 2015 details how to adhere to the National Planning Policy for Waste 2014. The guidance should be followed to satisfy the local planning authority that impacts introduced by a Proposed Development on the existing waste management facilities are acceptable and do not prejudice the implementation of the waste hierarchy.

### Local Planning Policy

14.10 Greater Manchester Joint Waste Development Plan[6] - The Joint Waste Development Plan sets out the strategic spatial planning policy for the provision of waste management infrastructure across the unitary authorities of Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford and Wigan (which administers its own waste disposal options). This also includes the authorities' aspirations for all levels of waste management until 2027: prevention; reuse; recycling; recovery; and disposal.

14.11 The Manchester City Council Local Development Framework Core Strategy outlines the Council's vision for Manchester in 2027 along with the planning policies used to support it. Policy EN 19 of the strategy sets out the planning measures that the council will employ to enable waste management in the area to meet their ambitions for development. Of relevance to the Proposed Development is the requirement for all developers to submit a waste management plan that demonstrates how construction and demolition waste will be minimised and recycled on site wherever possible and how the sustainable waste management needs of the end user will be met. Furthermore, the policy requires that all developers, demonstrate that their proposals are consistent with the principles of the waste hierarchy.

[5] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2015) *Waste Planning Practice Guidance 2015*. Available online at: https://www.gov.uk/guidance/waste

[6] Association of Greater Manchester Authorities (AGMA) (2012) *Greater Manchester Joint Waste Development Plan*. Available online at: https://secure.manchester.gov.uk/downloads/download/4804/greater_manchester_joint_waste_development_plan_documents

Development Policies

14.12 Northern Gateway Strategic Regeneration Framework (2019)[7] presents a vision and objectives, to guide the future regeneration in the 155 hectare Northern Gateway development area, in which the proposed HIF infrastructure works are located. The final version of the SRF was approved by Manchester City Council's (MCC) executive on 13 February 2019. The Northern Gateway will be an exemplar regeneration project providing truly sustainable neighbourhoods located at the heart of the regional centre promoting innovation with particular mention of waste management as part of its place making ambition. Whilst it is not part of the development plan, the Manchester Residential Quality Guidance (2016) comprises a material consideration, and accordingly, all large developments in the Northern Gateway will seek to develop innovative solutions to maximise recycling and reduce waste and its impact on their design and the wider sustainable character.

### Other Relevant Policy, Standards and Guidance

14.13 IEMA Guide To: Materials and Waste in Environmental Impact Assessment[8]. This document offers guidance and recommendations for EIA practitioners and stakeholders concerned with the impacts and effects of materials and waste on the environment. The guidance provides considerations for screening, scoping, consultation, assessment, and subsequent reporting and monitoring. The aim of this document is to provide initial guidance on the key terms, concepts, and considerations for assessing the environmental impacts and effects of materials and waste, as part of the EIA process. This includes providing practitioners with a process and checklist applicable to each stage of the EIA process.

## Assessment Methodology and Significance Criteria

14.14 This assessment aligns with the approach and methodology defined in the IEMA Guide to Materials and Waste in Environmental Impact Assessment[8]. This waste assessment is based on the quantification of solid waste forecast to be generated as a result of the Proposed Development. Likely environmental effects have been identified based on the fraction of waste generated that would require off-site disposal to landfill, which is considered to be a finite resource and the least preferred waste management option. This assessment considers:

- The types and quantities of waste that will be generated
- The quantity of waste that will require off-site disposal to landfill
- The availability of off-site landfill disposal capacity.

14.15 Waste transfer, treatment, recycling and recovery infrastructure, that is employed to recover value from waste, and thus divert arisings from landfill, is not considered to comprise of a sensitive receptor for the purposes of this waste chapter. Such infrastructure has the ability to reduce adverse impacts and is considered to be

[7] Manchester City Council (2019) *Strategic Regeneration Framework: Manchester Northern Gateway*. Available online at: http://northerngatewaymanchester.co.uk/framework/

[8] Institute of Environmental Management & Assessment (2020), IEMA guide to: Materials and Waste in Environmental Impact Assessment - Guidance for a proportionate approach.

beneficiary of any waste generated. Furthermore, the capacity of such infrastructure is defined by its annual throughput and does not comprise of a finite resource as is the case for landfill void space. Any waste managed at waste recovery infrastructure, does not generate a permanent residual impact on the future capacity of the facility.

14.16 As detailed in Chapter 2: Approach, the assessment scenarios in respect of the EIA for the Proposed Development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
  - Scenario 1a - Assessment of the impacts of waste relating to the Proposed Development only.
  - Scenario 1b - Assessment of the impacts of waste relating to the Proposed Development, plus waste impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
  - Scenario 1c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.
- Assessment Stage 2 - Completed Development and Operational Phase:
  - Scenario 2a - Assessment of the impacts of waste relating to the Proposed Development only.
  - Scenario 2b Assessment of the impacts of waste relating to the Proposed Development, plus waste impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
  - Assessment 2c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.

### Scope of Assessment

14.17 The scope of this assessment includes waste generated during construction and operation of the Proposed Development. Whilst a decision to scope materials out of the EIA was made in the EIA Scoping Report[9], and supported by Manchester City Council's Scoping Opinion, consideration of material resources is included in this assessment with regard to the beneficial reuse of materials arising from the demolition and construction phase of the Proposed Development (e.g. excavated material). It does not include material inputs to construction, or mineral resources within the Site, which have previously been scoped out of the assessment in accordance with the IEMA Guidance[8].

14.18 Construction, demolition and excavation waste (CDEW) would be generated by the proposed HIF infrastructure works for a finite period of time. Based on the available design information, the construction and demolition

[9] Avison Young (2021), EIA Scoping Report - Proposed Red Bank Neighbourhood Infrastructure Works - Red Bank Neighbourhood, Manchester

period is expected to be between 2022 and 2024; this comprises the period during which the environmental effects related to the generation of this CDEW has been assessed.

14.19 Minor quantities of operational waste are expected to be generated on a permanent basis throughout the lifetime of the Proposed Development, primarily from maintenance and public use of landscaped areas created as part of the proposed HIF infrastructure works. The first complete year of operation of the Proposed Development is expected to be 2025.

### Landfill Capacity

14.20 The baseline with respect to assessing waste related environmental effects from the Proposed Development, primarily comprises the availability (types and capacity) of landfill void space within the region likely to manage waste arising from the Proposed Development.

14.21 Baseline conditions are presented based on latest available published data, and then as predicted future baseline conditions for the construction period and first full year of operation.

14.22 There are two study areas proposed for the waste assessment:

1. The development study area comprises the Site.

2. The expansive study area extends to the capacity of waste management infrastructure and remaining landfill void, within a defined region.

14.23 The baseline conditions of landfill capacity have been defined using 2020 waste data integrator data[10], published by the Environment Agency (EA). Whilst waste management is a regulated industry, waste producers are free to choose where their waste is managed, and the movement of waste from source to final destination is often across waste planning authority boundaries, depending upon the type of waste and the availability of the waste management facilities required. The expansive study area in which waste generated in Greater Manchester is managed, has been assessed, and is considered to comprise primarily of the North West region (See Paragraph 14.36).

14.24 Historical landfill void space, and landfill input data has been collated for inert, non-hazardous and hazardous landfill types. Historical data analysis provides insight as to the likely future trends of these facilities, during the planned construction and operational phases of a development.

[10] Environment Agency. (2021) *2020 Waste Data Interrogator*. Available from: https://data.gov.uk/dataset/bb40d091-a346-4b75-aa54-df7d347bed93/2020-waste-data-interrogator

### Waste Generation Forecast

14.25 The quantity of waste expected to be generated during construction and operation have been forecast using available design information and applicable industry benchmarks, including:

- The Demolition Bill of Quantities Estimator in the WRAP Net Waste Tool (no longer available online)
- SmartWaste data (an excel based tool), produced by WRAP in 2012

### Sensitivity

14.26 For waste, the sensitive receptor is considered to be landfill capacity. Through the ongoing disposal of waste, there is a continued need to expand capacity, requiring the depletion of natural resources; this in turn, generates permanent adverse environmental impacts. The sensitivity of waste relates to availability of landfill void capacity in the absence of the Proposed Development. The sensitivity of landfill void capacity is assessed by applying the following two-step process:

- Forecast the volume of waste for disposal that is expected to be generated within the defined study area in the absence of a Proposed Development:
- The volume of forecast waste for disposal is then compared to the remaining landfill void capacity (taking into account any committed increases in future capacity), to identify expected losses over the construction and operational phases of a Proposed Development.

14.27 Table 14.1 sets out the thresholds for assessing sensitivity in inert, non-hazardous and hazardous landfill, defined in the IEMA Guide to Materials and Waste in Environmental Impact Assessment[8]. The sensitivity is defined by assessing how the future baseline of regional inert and non-hazardous landfill void capacity is expected to change over the construction and operational phases.

*Table 14.1 Sensitivity thresholds for inert and non-hazardous and hazardous landfill*

| Waste Types | Negligible | Low | Medium | High | Very High |
|---|---|---|---|---|---|
| Inert and non-hazardous | Remain unchanged, or is expected to increase through a committed change in capacity. | Reduce minimally: by <1% as a result of wastes forecast. | Reduce noticeably: by 1-5% as a result of wastes forecast | Reduce considerably: by 6-10% as a result of wastes forecast. | Reduce very considerably (by >10%); reach capacity during construction or operation; is already known to be unavailable; or, would require new capacity or infrastructure to be put in place to meet forecast demand. |
| Hazardous | Remain unchanged, or is expected to increase through a committed change in capacity. | Reduce minimally: by <0.1% as a result of wastes forecast. | Reduce noticeably: by 0.1-0.5% as a result of wastes forecast. | Reduce considerably: by 0.5-1% as a result of wastes forecast. | Reduce very considerably (by >1%); reach capacity during construction or operation; is already known to be unavailable; or, would require new capacity or infrastructure to be put in place to meet forecast demand. |

### Characterisation of Impact

14.28 Using future baseline and waste forecast data, the magnitude of impact from waste is assessed by determining the percentage of the remaining landfill void capacity that will be depleted by waste produced during the construction and operational phases of the development, see Table 14.2.

*Table 14.2: Magnitude of impacts thresholds*

| Waste type | No change | Negligible | Minor | Moderate | Major |
|---|---|---|---|---|---|
| Inert and non-hazardous | Zero waste generation and disposal from the development | Waste generated by the development will reduce regional landfill void capacity baseline by <1% | Waste generated by the development will reduce regional landfill void capacity baseline by 1-5% | Waste generated by the development will reduce regional landfill void capacity baseline by 6-10% | Waste generated by the development will reduce regional landfill void capacity baseline by >10% |
| Hazardous | Zero waste generation and disposal from the development | Waste generated by the development will reduce national landfill void capacity baseline by <0.1% | Waste generated by the development will reduce national landfill void capacity baseline by 0.1-0.5% | Waste generated by the development will reduce national landfill void capacity baseline by 0.5-1% | Waste generated by the development will reduce national landfill void capacity baseline by >1% |

### Significance Criteria

14.29 Finally, an assessment of the Proposed Development's environmental effects (the magnitude of change on sensitive receptors) can be undertaken to allow the significance of effects to be identified and evaluated. The potential for significant environmental effects is determined by considering the scale and nature of impacts within the context of the sensitivity of receptors affected.

14.30 Table 14.3 defines the thresholds used in this EIA to determine the scale of likely effects. Effects of moderate, large or very large, are considered to be significant in EIA terms.

*Table 14.3: Significance criteria*

| | Magnitude of impact | | | | | |
|---|---|---|---|---|---|---|
| **Sensitivity of receptor** | | **No change** | **Negligible** | **Minor** | **Moderate** | **Major** |
| | **Very High** | Neutral | Slight | Moderate or large | Large or very large | Very large |
| | **High** | Neutral | Slight | Slight or moderate | Moderate or large | Large or very large |
| | **Medium** | Neutral | Neutral or slight | Slight | Moderate | Moderate or large |
| | **Low** | Neutral | Neutral or slight | Neutral or slight | Sight | Slight or moderate |
| | **Negligible** | Neutral | Neutral | Neutral or slight | Neutral or slight | Slight |

### Assumptions/Limitations

14.31 Beneficial opportunities will be sought for the off-site reuse of all waste materials generated. However, it is difficult to make firm commitments for reuse of material in third party schemes due to the uncertainties of those schemes and in the scope and programme of the construction activities of the Proposed Development. For this assessment, it has been assumed as a worst-case scenario that all waste materials, not required in the construction of the proposed scheme, and not segregated for recycling or recovery, will be disposed off-site to landfill.

### Consultation

14.32 Consultation has been undertaken with Manchester City Council through submittal of the EIA scoping report[9]. Manchester City Council confirmed acceptance of the proposed approach with respect to the consideration of waste in the ES.

## Baseline Conditions

14.33 This section describes the baseline conditions at the Site, and the wider expansive study area which extends to all areas in which waste generated by the Proposed Development could be reasonably expected to be managed.

14.34 The Proposed Development site is situated within the Manchester City Metropolitan District Council area, who comprise of the Waste Collection Authority for the Site. The designated Waste Disposal Authority for the Site is the Greater Manchester Combined Authority (GMCA), which is England's largest Waste Disposal Authority, responsible for the management and disposal of municipal waste from the Greater Manchester area. The GMCA manages 1.1 million tonnes of waste each year, from the metropolitan districts of Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside and Trafford. Though Wigan is also part of Greater Manchester, it administers its own waste disposal operations.

### Current Waste Generation

14.35 The Site predominantly comprises areas of post-industrial land, including significant operational and redundant infrastructure, hard-standing, and trees and vegetation. The majority of structures remaining on the Site will be removed as part of the associated Enabling Works (Application 1) which was consented on 23rd December 2021 (planning ref. 132252/VO/2021), and it is assumed that the Site will be vacant prior to commencement of the proposed HIF infrastructure works. There are expected to be no waste generating activities being undertaken on the Site that would give rise to waste arisings. For the purposes of setting the baseline with respect to existing waste generation on the Site, it can be assumed as a reasonable worst case, that no waste is generated on an annual basis.

### Landfill Capacity

14.36 The Proposed Development site is situated within the Manchester City Council area, who comprise one of the nine districts whose waste is managed by the GMCA waste disposal authority. Whilst the GMCA have an obligation to facilitate the development of sufficient waste infrastructure to manage waste generated in their area, 2020 Waste Data Interrogator[10] data, published by the Environment Agency, shows that waste generated in the Greater Manchester area is primarily exported throughout the North West of England region for management. It is therefore proposed that this region serves as the baseline area with respect to inert and non-hazardous waste from the Site.

14.37 Due to the high cost of disposal and the relatively low availability of capacity, hazardous waste is typically transported greater distances for treatment and disposal. 2020 Waste Data Interrogator[10] data indicates that hazardous waste generated in Greater Manchester is transported primarily within the North West, and to the Yorkshire and the Humber region, with approximately 98% being managed in these two regions. Therefore, it is proposed that the baseline area with respect to hazardous waste generated by the Proposed Development comprises of the North West and Yorkshire and the Humber regions.

14.38 Based on data published by the Environment Agency[11], 2020 landfill capacity for the baseline area is as follows:

- Inert waste – 5.2 million $m^3$
- Non-hazardous waste – 28.0 million $m^3$
- Hazardous waste – 8.7 million $m^3$

### Future Baseline

14.39 Given the relatively short assessment period (2022 – 2025) with regard to the assessment of impacts relating to the Proposed Development, it is considered appropriate to follow the primary (subtractive) methodology prescribed in the IEMA guidance for developing the future baseline and assessing the sensitivity of landfill capacity in the defined study area. The volume of waste forecast to be disposed of in the study area has been evaluated against the remaining landfill void capacity, to ascertain the forecast capacity throughout the period of construction (2022 to 2024), and the first full year of operation (2025).

14.40 A review of historic landfill input data shows that across the baseline area, annual inputs to landfill are relatively stable. It is therefore considered appropriate to assume that waste inputs received at landfills in 2020 are representative of the quantities likely to be received in future years until 2025.

Landfill capacity through the proposed construction period has been projected forward by cumulatively removing 2020 inputs (converted from tonnes to $m^3$ using appropriate density conversion factors) from 2020

[11] Environment Agency. (2021). 2020 *Waste Summary Tables for England – Version 2*. Available from: https://environment.data.gov.uk/portalstg/home/item.html?id=9066d9c8675b4d6e8dfe60e4cc988563

capacities throughout the assessment period. Table 14.4 shows the projected future baseline landfill capacity throughout the assessment period.

*Table 14.4: Projected future baseline landfill capacity*

| Year | North West inert landfill capacity ($m^3$) | North West non-hazardous landfill capacity ($m^3$) | North West and Yorkshire and the Humber hazardous landfill capacity ($m^3$) |
|---|---|---|---|
| 2020 | 5,204,000 | 27,987,000 | 8,659,000 |
| 2021 | 4,755,333 | 24,765,313 | 8,487,667 |
| 2022 | 4,306,667 | 21,543,627 | 8,316,333 |
| 2023 | 3,858,000 | 18,321,940 | 8,145,000 |
| 2024 | 3,409,333 | 15,100,253 | 7,973,667 |
| 2025 | 2,960,667 | 11,878,566 | 7,802,333 |

14.41 No consented landfill sites have been identified for development in the study area, prior to the end of the assessment period; Table 14.4 shows a steady decline in all categories of landfill capacity as annual inputs reduce the remaining void space, without compensation from additional capacity. Whilst it is acknowledged that there a general trend in reducing landfill capacity, Waste planning authorities have a responsibility under the National Planning Policy for Waste[1], to make provision for sufficient waste infrastructure capacity. Trends in waste generation, the way in which waste is managed, and the timeline of landfill waste diversion policies, show that there is likely to be a continued demand for landfill capacity beyond the study period.

14.42 The Greater Manchester Joint Waste Development Plan[12] sets out waste planning strategies to 2027 which will enable the adequate provision of waste management facilities for various waste types. It is, therefore, likely that waste planning authorities in Greater Manchester, the North West, and Yorkshire and the Humber, will continue to plan for new landfill sites, both to ensure continued capacity as available landfill void space is exhausted, but also to restore former mineral workings. Subject to receipt of planning permission and other criteria stipulated by waste planning authorities, new permitted landfill capacity is likely to be provided to meet any future gaps in inert, non-hazardous and hazardous waste landfill capacity.

### Sensitivity of Receptors

14.43 As defined in the IEMA Guide to Materials and Waste in Environmental Impact Assessment[8], the sensitivity of landfill capacity as a receptor is defined by the projected proportional decline in capacity within the assessment

[12] Manchester City Council. (2012). *Greater Manchester Joint Waste Development Plan*. Available from: https://secure.manchester.gov.uk/downloads/download/4804/greater_manchester_joint_waste_development_plan_documents

period, without the Proposed Development. It is forecast that by first full year of operation of the Proposed Development (2025) landfill capacity would have declined by the following rates:

- Inert waste – 43% utilisation of 2020 landfill capacity in the North West
- Non-hazardous waste – 58% utilisation of 2020 landfill capacity in the North West
- Hazardous waste – 10% utilisation of 2020 landfill capacity in the North West and Yorkshire and the Humber

14.44 Based on the above, the sensitivity of the identified receptors, as defined in Table 14.2, is considered to be:

- Inert waste landfill capacity – Very High
- Non-hazardous waste landfill capacity – Very High
- Hazardous waste landfill capacity – Very High

# Embedded Mitigation

14.45 This section describes measures which have been embedded into the design of the Proposed Development, which mitigate the potential environmental impacts with respect to waste.

### Demolition and Construction

14.46 The proposed design of the HIF infrastructure works, has been developed in a way that seeks to reuse excavated material to satisfy the engineering earthworks requirements as far as is practicable. This has reduced surplus excavated material and has therefore assisted in minimising off-site disposal to landfill. Most of the excavated material (principally from the regrading and reduced level dig proposed for Plots RB02 and RB03) is expected to be suitable for use as general earthworks fill. Some sorting and possibly some treatment of excavated material is expected to be required to allow material to be re-used in the design. The assessment of contamination associated with the existing made ground at the Site has provided no indication that excavated material will pose a risk as general fill.

14.47 The river Irk flows approximately east to west across the Site, along which are several existing retaining structures on the north bank. The current design assumes that all existing retaining walls will remain, where the scheme is not worsening the loading or ground conditions. This will reduce the need for demolition works, and subsequent reinstatement, both of which would generate additional quantities of waste.

The public realm and landscape materials palette has been developed with a focus on low carbon solutions; this includes opportunities to reuse site won material where possible, such as bark paths, timber edgings and log piles using timber generated by tree clearance works.

### Completed Development

14.48 The completed HIF infrastructure works are not expected to generate significant quantities of waste during operation. No embedded mitigation measures have been included within the design to further reduce impacts.

# Assessment of Likely Significant Effects

## Demolition and Construction

### Assessment Scenario 1a – Proposed Development Only

14.49 Waste is expected to be generated throughout the construction period 2022 to 2024, by the HIF infrastructure works. Waste forecasts have been undertaken based on preliminary design information and typical industry benchmarks.

*Demolition*

14.50 Demolition works are primarily undertaken during Enabling Works (Application 1), and very little demolition is proposed as part of the HIF infrastructure works; demolition is limited to three lengths of retaining wall on the northern bank of the River Irk. In total it is estimated that 264m of retaining wall will require demolition, leading to the generation of approximately 742 $m^3$ of demolition waste.

14.51 Most recent data available, in The UK Statistics on Waste[13], shows that in 2018, approximately 94% of all construction and demolition waste generated in England was diverted from landfill. On this basis, it has been assumed that of the 742 $m^3$ of demolition waste forecast to be generated by the Proposed Development, approximately 46 $m^3$ would require offsite disposal to landfill. It is expected that the remainder would undergo reprocessing for recovery either on-site or off-site, primarily through production of recycled aggregates.

14.52 The Overview of Demolition Waste in the UK[14] used waste data provided by the National Federation of Demolition Contractors to determine that in 2008, approximately 91% of demolition waste generated in the UK was reused and recycled. This was primarily accounted for by the inert fraction of the waste. The report states that of the remaining 9% of demolition waste produced in the UK, approximately 3% is hazardous and 6% is sent to non-hazardous waste landfill. For this assessment, it has been assumed that 67% of the quantity of demolition waste requiring off-site disposal to landfill will be non-hazardous waste and 33% will be hazardous waste. On this basis, it is forecast that of the 46 $m^3$ of demolition waste expected to require offsite disposal to landfill, 31 $m^3$ would require offsite disposal to non-hazardous waste landfill, and 15 $m^3$ would require disposal at hazardous waste landfill.

[13] Department for Environment, Food and Rural Affairs (2021) UK Statistics on Waste. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1002246/UK_stats_on_waste_statistical_notice_July2021_accessible_FINAL.pdf

[14] Waste and Resources Action Programme (2009), Overview of Demolition Waste in the UK.

*Site Clearance*

14.53 The proposed HIF infrastructure works, include an area of approximately 20,560m$^2$, which will be cleared of trees and vegetation. Insufficient information is currently available to enable forecasts of the quantity of waste likely to be generated by tree and vegetation clearance. However, it is anticipated that majority of this material will be composted and mulched on-site and be retained on-site for use in landscaping works. The remainder of the waste generated by site clearance works, that is unsuitable for on-site reuse, is likely to be suitable for diversion from landfill through composting, anaerobic digestion, or thermal treatment. It is not anticipated that site clearance works will generate meaningful quantities of waste requiring off-site disposal to landfill.

*Excavation*

14.54 The majority of the waste generated by the proposed HIF infrastructure works, is expected to be generated by earthworks activities. Earthworks primarily comprise of remediation, regrading, and structural foundation works. It is currently estimated that the Proposed Development will generate approximately 22,800m$^3$ of excavated material, of which 640m$^3$ is required for on-site fill applications. The estimated quantity of surplus excavated material that will not be reused within the construction of the Proposed Development will be approximately 22,160 m$^3$, based on the current level of design, all of which is anticipated to comprise of Made Ground.

14.55 Limited ground investigation (GI) data is currently available on which to estimate the proportion of surplus excavated material likely to fall in each waste classification. The available data indicates the material will primarily be classified as inert and non-hazardous for disposal using Waste Acceptance Criteria (WAC) assessment, with isolated areas of hazardous material identified. Given the extensive industrial use of the Site dating back to the 1840's, and the wide distribution of contamination across the Site, it is considered reasonable to assume that all surplus excavated material leaving the Site, will exceed WAC for disposal to inert landfill. On the basis of the available GI data, it is assumed as a reasonable worst case, that of the 22,160 m$^3$ of excavated material expected to require disposal to landfill, 19,944 m$^3$ (90%) would require disposal at non-hazardous landfill, and the remaining 2,216 m$^3$ (10%) would require disposal at hazardous landfill.

14.56 The geotechnical design is evolving as the design progresses, and it is anticipated that further progress will be made in the future in balancing the cut and fill. It is therefore likely that the quantity of surplus excavated material will reduce as the design progresses.

*Construction*

14.57 The design of construction works associated with the HIF infrastructure works is relatively immature, and there is insufficient information available to undertake a detailed waste forecast based on a bill of material quantities. Waste generation benchmarking data has been applied to the current cost plan, applying a variety of civil engineering specific waste generation rates to the respective elements of the proposed works. It has been forecast that the proposed work will generate approximately 4,395 m$^3$ of waste from the following construction works:

- Demolition of sections of retaining wall.
- Remediation and earthworks across site.
- Construction of internal access roads and junctions.
- Creation of SuDS.
- Utility and services connections and diversions.
- Provision of green infrastructure including (among others):
    a. Creation of green links.
    b. Creation of new City River Park.
- Contractor preliminaries.

14.58 Most recent data available, in The UK Statistics on Waste[13], shows that in 2018, approximately 94% of all construction and demolition waste generated in the England was diverted from landfill. On this basis, it has been assumed that of the 4,395 $m^3$ of construction waste forecast to be generated by the Proposed Development, approximately 273 $m^3$ would require offsite disposal to landfill.

14.59 Data published by SmartWaste and WRAP, indicates that construction waste generated by civil engineering projects comprises primarily of inert and non-hazardous waste; less than 1% of the waste comprises of hazardous waste. Whilst data shows that 40% of construction waste generated by civil engineering projects comprises of inert material, this fraction is traditionally the easiest and most cost effective to recover, and it is considered a reasonable assumption that this material is within the proportion diverted from landfill. It is considered as a reasonable worst case, that all of the construction waste generated by the HIF infrastructure works requiring off-site to disposal to landfill, will comprise of non-hazardous waste.

*Likely significant environmental effects*

14.60 The construction of the proposed HIF infrastructure works is not expected to generate a significant quantity of inert waste requiring off-site disposal to landfill during the period 2022 to 2024. Waste generated by the proposed works is expected to reduce inert waste landfill void capacity in the North West by less than 1%. On the basis of the impact thresholds identified in Table 14.2, this is considered to comprise of a Negligible impact. As previously identified in the assessment of receptor sensitivity, the sensitivity of inert waste landfill capacity in the North West is considered to be Very High. According to the significance criteria identified in Table 14.3, a Negligible impact on a receptor whose sensitivity is considered to be Very High, is considered to comprise of a **Slight adverse** environmental effect at a regional level. The impact of the proposed HIF infrastructure works on inert waste landfill capacity, is not considered to comprise a significant environmental impact.

14.61 The construction of the proposed HIF infrastructure works are expected to generate approximately 20,247 $m^3$ of non-hazardous waste requiring off-site disposal to landfill during the period 2022 to 2024. Waste generated by the proposed works is expected to reduce non-hazardous waste landfill void capacity in the North West by

approximately 0.13% at the end of the construction period (2024). On the basis of the impact thresholds identified in Table 14.2, this is considered to comprise of a Negligible impact. As previously identified in the assessment of receptor sensitivity, the sensitivity of non-hazardous waste landfill capacity in the North West is considered to be Very High. According to the significance criteria identified in Table 14.3, a Negligible impact on a receptor whose sensitivity is considered to be Very High, is considered to comprise of a **Slight adverse** environmental effect at a regional level. The impact of the proposed HIF infrastructure works on non-hazardous waste landfill capacity, is not considered to comprise a significant environmental impact.

14.62 The construction of the proposed HIF infrastructure works are expected to generate approximately 2,231m$^3$ of hazardous waste requiring off-site disposal to landfill during the period 2022 to 2024. Waste generated by the proposed works is expected to reduce hazardous waste landfill void capacity in North West and Yorkshire and the Humber by approximately 0.03% at the end of the construction period (2024). On the basis of the impact thresholds identified in Table 14.2, this is considered to comprise of a Negligible impact. As previously identified in the assessment of receptor sensitivity, the sensitivity of hazardous waste landfill capacity in the North West and Yorkshire and the Humber regions is considered to be Very High. According to the significance criteria identified in Table 14.3, a Negligible impact on a receptor whose sensitivity is considered to be Very High, is considered to comprise of a **Slight adverse** environmental effect at a supra-regional level. The impact of the proposed HIF infrastructure works on hazardous waste landfill capacity, is not considered to comprise a significant environmental impact.

### Assessment Scenario 1b – Proposed Development plus impacts associated with Applications 1, 3 and 4

14.63 The types and quantities of waste likely to be generated during the construction phase of the Application 1 are well understood, based on the design information available, and the quantum presented in the Site Waste Management Plan (SWMP) submitted with the planning application. The Application 1 SWMP forecasts that the works will generate approximately 4,473 tonnes of waste; this has been estimated to equate to 3,095 m$^3$, based on the application of material specific density conversion factors. The proposed programme indicates that the Application 1 works are due to be completed prior to commencement of Application 2; therefore, any waste generated as a result of the Application 1 construction works, will directly impact the available landfill capacity prior to commencement of Application 2 works.

14.64 The types and quantities of waste likely to be generated during the construction phases of the Applications 3 and 4 developments are significantly harder to estimate with certainty, given the limited design information currently available. In particular, insufficient information is available regarding the proposed Application 3 works to forecast waste quantities; however, given the description of the proposed works, it is anticipated the waste generation will be substantially less than that generated by the Proposed Development and Applications 1 and 4. The works proposed for Application 3, are limited to an area directly adjacent to the River Irk, on a site already cleared and prepared during Enabling Works, and HIF infrastructure works.

14.65 Given the nature of the proposed Application 4 development, it is considered to be likely that construction works will not commence until after completion of the Proposed Development (Application 2); the construction of the proposed Application 4 development is reliant on the completion of the remediation and land reprofiling undertaken as part of the HIF infrastructure works. Whilst it anticipated that substantial quantities of waste will be generated by the Application 4 works (estimated at approximately 69,000 $m^3$), it is reasonable to assume that waste generated as a result of Application 4 works, will arise after completion of Application 2 works, and will have no impact on the availability of landfill capacity at the end of construction of the Proposed Development (Application 2) in 2024.

14.66 Environmental impacts related to waste as a result of the construction of the Application 4 development, will occur outside of the assessment period for construction; however the waste generated will impact on landfill capacity during the operational phase of the Proposed Development, and the impacts have therefore been considered further in the Completed Development assessment.

14.67 Given the above, the assessment of Scenario 1b, considers only the waste arising through the construction of the Application 1 and 2 works.

*Demolition*

14.68 Demolition works proposed in association with the proposed Scenario 1b development, are anticipated to generate approximately 2,019 $m^3$ of waste prior to the end of construction (2024), of which approximately 52 $m^3$ would require offsite disposal to landfill.

*Excavation*

14.69 Excavation works proposed in association with the proposed Scenario 1b development, are anticipated to generate approximately 24,436 $m^3$ of excavated material prior to the end of construction (2024), of which approximately 22,433 $m^3$ may require offsite disposal to landfill.

*Construction*

14.70 Construction works proposed in association with the proposed Scenario 1b development, are anticipated to generate approximately 4,576 $m^3$ of waste prior to the end of construction (2024), of which approximately 284 $m^3$ would require offsite disposal to landfill.

*Likely Significant Environmental Effects*

14.71 The construction of the proposed Scenario 1b works are not expected to generate a significant quantity of inert waste requiring off-site disposal to landfill. The indicated distribution of contamination across the Site is likely to mean that the majority of surplus excavated material exceeds WAC for inert waste landfill sites. Furthermore, the inert fraction of waste arising from demolition works is either proposed for reuse within the Site, or is likely to be recovered off-site for use as secondary aggregates. Waste generated by the proposed works is expected to reduce inert waste landfill void capacity in the North West by less than 1%. On the basis of the impact thresholds

identified in Table 14.2, this is considered to comprise of a Negligible impact. As previously identified in the assessment of receptor sensitivity, the sensitivity of inert waste landfill capacity in the North West is considered to be Very High. According to the significance criteria identified in Table 14.3, a Negligible impact on a receptor whose sensitivity is considered to be Very High, is considered to comprise of a **Slight adverse** environmental effect at a regional level. The impact of the proposed Scenario 1b works on inert waste landfill capacity, is not considered to comprise a significant environmental impact.

14.72 The construction of the proposed Scenario 1b works are expected to generate approximately 20,535 $m^3$ of non-hazardous waste requiring off-site disposal to landfill during the period 2022 to 2024. Waste generated by the proposed works is expected to reduce non-hazardous waste landfill void capacity in the North West by approximately 0.14% at the end of the construction period (2024). On the basis of the impact thresholds identified in Table 14.2, this is considered to comprise of a Negligible impact. As previously identified in the assessment of receptor sensitivity, the sensitivity of non-hazardous waste landfill capacity in the North West is considered to be Very High. According to the significance criteria identified in Table 14.3, a Negligible impact on a receptor whose sensitivity is considered to be Very High, is considered to comprise of a **Slight adverse** environmental effect at a regional level. The impact of the proposed Scenario 1b works on non-hazardous waste landfill capacity, is not considered to comprise a significant environmental impact.

14.73 The construction of the proposed Scenario 1b works are expected to generate approximately 2,233 $m^3$ of hazardous waste requiring off-site disposal to landfill during the period 2022 to 2024. Waste generated by the proposed works is expected to reduce hazardous waste landfill void capacity in North West and Yorkshire and the Humber by approximately 0.03% at the end of the construction period (2024). On the basis of the impact thresholds identified in Table 14.2, this is considered to comprise of a Negligible impact. As previously identified in the assessment of receptor sensitivity, the sensitivity of hazardous waste landfill capacity in the North West and Yorkshire and the Humber regions is considered to be Very High. According to the significance criteria identified in Table 14.3, a Negligible impact on a receptor whose sensitivity is considered to be Very High, is considered to comprise of a **Slight adverse** environmental effect at a supra-regional level. The impact of the proposed Scenario 1b works on hazardous waste landfill capacity, is not considered to comprise a significant environmental impact.

### Assessment Scenario 1c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

14.74 For the purposes if this waste assessment, the assessment period for the construction phase is considered to be 2022 to 2024. Whilst the construction of the wider SRF development is considered likely to generate substantial quantities of waste (estimated at approximately 561,600 $m^3$), with inevitable impacts on available landfill capacity, a significant proportion of the development works will occur after 2024. Any works taking place after 2024, will have no impact on available landfill capacity at the end of construction of the Application 2 works, and will not affect the conclusions drawn with respect to environmental impacts.

14.75 Environmental impacts related to waste as a result of the construction of the SRF development, which occur outside of the assessment period for construction, will impact on landfill capacity during the operational phase of the Proposed Development, and the impacts have therefore been considered further in the Completed Development assessment.

14.76 Section 7 of The Northern Gateway Strategic Regeneration Framework[15] (SRF), sets out the Proposed Development sequencing during the 15 to 20 years that the Northern Gateway development is scheduled to take place. Whilst no firm commitments are made with regards to the programme for development, the SRF identifies the Collyhurst, Red Bank (the Site) and New Town areas as likely to be in the initial phases of development. Based on this it is considered likely that only the Collyhurst and New Town developments have the potential to generate additional impacts on the identified receptors (landfill void space) prior to or during the assessment period, and thus have the capability of affecting the conclusions previously drawn in Scenario 1a and Scenario 1b.

14.77 Insufficient information is available regarding the Proposed Development at these sites, to forecast the quantities of waste likely to be generated. Nevertheless, it is possible to appraise whether the in-combination impacts of the Proposed Development (Application 2), Applications 1, 3 and 4 and wider SRF works, have the potential to change the significance of effects previously identified.

14.78 As previously identified in the assessment of receptor sensitivity, the sensitivity of all categories of landfill under assessment is considered to be Very High. According to the significance criteria identified in Table 14.3, only a Negligible impact on a receptor whose sensitivity is considered to be Very High, is considered to comprise of a non-significant environmental effect (as reported in Scenario 1a and Scenario 1b for all categories of landfill). Any impact of minor magnitude or greater, on a receptor whose sensitivity is considered to be Very High, is considered to comprise of a significant environmental effect. The waste generation thresholds at which the impact on available landfill capacity would exceed a negligible magnitude (and thus the environmental effect changes from non-significant, to significant) are presented below:

- Waste disposed to inert landfill ≥ 34,093 $m^3$
- Waste disposed to non-hazardous landfill ≥ 151,003 $m^3$
- Waste disposed to hazardous landfill ≥ 7,974 $m^3$

14.79 These quantities exceed those forecast to be generated by the Proposed Development and Applications 1, 3 and 4 by a factor of six for non-hazardous waste, and two for hazardous waste. The area of the Collyhurst and New Town developments are approximately four times greater than the Red Bank neighbourhood, it is therefore not considered unfeasible for these developments to generate sufficient quantities of waste during construction to exceed the threshold for a negligible impact. No firm conclusions can be drawn regarding the likely magnitude of environmental effects as a result of the proposed Scenario 1c development. However, it is considered feasible

[15] Manchester City Council (2019), The Northern Gateway Strategic Regeneration Framework. Available online at: http://northerngatewaymanchester.co.uk/wp-content/uploads/2018/07/NG-SRF.pdf

that the proposed works will generate a minor impact on available landfill capacity, which when combined with the Very High sensitivity of these receptors, would lead to a significant Environmental effect. In-combination effects of the wider SRF development areas, should be reappraised in the respective planning applications, as more information is available regarding the Proposed Developments, and the quantities of waste likely to be generated can be forecast.

### Completed Development

#### Assessment Scenario 2a – Proposed Development Only

14.80 The HIF infrastructure works include no permanently occupied structures, and the Proposed Development is not considered likely to generate substantial quantities of waste on an ongoing basis following completion of construction works.

14.81 Extensive landscaped areas are proposed as part of the City River Park, which will primarily generate green waste through landscape maintenance, and municipal waste through public waste disposal in litter bins. It is typical for green waste generated from such activities to be composted on-site, and it is not expected that this source of waste will impact on available landfill capacity. No design information is currently available regarding the provision of public realm litter bins within the landscaped component of the Proposed Development. However, it is considered likely that small quantities of non-hazardous waste will be generated by users of the landscaping areas depositing litter in bins provided within the development. Assuming that the City River Park will be adopted by Manchester City Council, any waste generated by emptying of public bins and parks maintenance would be considered to be Household Waste[16], and would be the responsibility of the GMCA waste disposal authority.

14.82 Whilst available design information does not permit a forecast of the likely quantities of waste requiring off-site disposal to landfill in 2025 and subsequent years as a result of the Proposed Development, it is considered to be improbable that the quantity of non-hazardous waste generated on an annual basis, requiring off-site disposal to landfill, would exceed the impact threshold for a Negligible impact, and therefore generate a significant environmental impact. The impact threshold for a Negligible impact is considered to be 118,786 $m^3$/annum.

14.83 For the Proposed Development to generate a minor impact on regional non-hazardous landfill capacity, and thus generate a significant adverse environmental impact, it would require that approximately 3,000 litter bins on the Site were filled and emptied on a daily basis throughout the year, and that 100% of the waste collected was disposed of to landfill. Less than 3% of waste managed by the GMCA in 2020/21 was landfilled, and it is considered likely that any residual operational waste generated on the Site would be managed similarly, primarily through energy recovery. It is considered highly unlikely, that non-hazardous operational waste generated by the Proposed development would exceed 118,242 $m^3$/annum, and it can be confidently concluded

[16] Department for Environment, Food and Rural Affairs (2021), *Statistics on waste managed by local authorities in England in 2020/21*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1040756/Statistics_on_waste_managed_by_local_authorities_in_England_in_2020_v2rev_accessible.pdf

that operational waste generated by the Proposed Development in 2025, would not introduce a significant adverse environmental impact.

### Assessment Scenario 2b – Proposed Development plus impacts associated with Applications 1, 3 and 4

14.84 Of the development proposed under Applications 1, 3 and 4, only that proposed in the Red Bank Neighbourhood application (Application 4), is considered likely to generate substantial quantities of operational waste following completion of construction.

14.85 The proposed Application 4 development will primarily comprise of up to 4,000 new residential dwellings. On the basis of the average quantity of waste generated per household in the GMCA area in 2020/21[17], and the proportion of household waste disposed of to landfill by the GMCA waste disposal authority in 2020/21, it is estimated that the proposed Scenario 2b development would generate approximately 3,861 tonnes of non-hazardous waste per year following completion of construction, of which 73 tonnes would be disposed of to landfill[18]. Waste generated by residents of the Red Bank neighbourhood would be considered to be Waste from Households[16], and would be the responsibility of the GMCA waste disposal authority.

14.86 Construction of the Scenario 2b development is anticipated to be completed in 2032; the first full year of operation is therefore likely to comprise 2033. The subtractive methodology described in the Future Baseline section, does not account for the future development of additional landfill capacity as existing void space is exhausted, and does not comprise a reasonable future baseline for landfill capacity beyond 2025. Historic landfill capacity data, shows that between 2005 and 2019, non-hazardous landfill capacity in the North West has decreased at an average of 6.01% per annum. On this basis, and accounting for the potential loss of non-hazardous landfill capacity arising from construction waste generated by the Proposed Development and Applications 1, 3 and 4, it is projected that the North West region will have approximately 12.4 million $m^3$ of non-hazardous landfill void space in 2033, down from approximately 28 million $m^3$ in 2020. In accordance with the sensitivity criteria established in Table 14.1, the sensitivity of non-hazardous landfill in the North West would be Very High.

14.87 Waste generated by the Scenario 2b development is expected to reduce non-hazardous waste landfill void space in the North West by less than 0.01%. On the basis of the impact thresholds identified in Table 14.2, this is considered to comprise of a Negligible impact. According to the significance criteria identified in Table 14.3, a Negligible impact on a receptor whose sensitivity is considered to be Very High, is considered to comprise of a **Slight adverse** environmental effect at a regional level. The impact of the proposed operational Scenario 2c development on non-hazardous waste landfill capacity, is not considered to comprise a significant environmental impact.

[17] Department for Environment, Food and Rural Affairs (2021), Local Authority Collected Waste Statistics - Local Authority data. Available online at: https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables
[18] Forecasts provided in weight rather than volume, to reflect the units of the Defra data on which they are based.

14.88 The forecast quantity of waste would comprise approximately 0.4% of the total household waste managed by the GMCA in 2020/21 and is considered unlikely to impact on their obligation as a waste disposal authority to manage their waste and as a waste planning authority to facilitate sufficient waste infrastructure capacity in the future.

### Assessment Scenario 2c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

14.89 Whilst the Northern Gateway SRF describes a mixed-use development, land-uses are primarily residential, comprising of approximately 15,000 homes delivered over 15 – 20 years. On the basis of the average quantity of waste generated per household in the GMCA area in 2020/21[17], and the proportion of household waste disposed of to landfill by the GMCA waste disposal authority in 2020/21, it is estimated that the proposed Scenario 2c development would generate approximately 14,479 tonnes of non-hazardous waste per year following completion of construction, of which 275 tonnes would be disposed of to landfill.

14.90 On the basis of a 20-year development period following publication of the SRF in 2019 (considered to comprise of the reasonable worst case), it is necessary to forecast the available landfill capacity in 2039 to be able to assess the impact of the proposed Scenario 2c development. The subtractive methodology described in the Future Baseline section, does not account for the future development of additional landfill capacity as existing void space is exhausted, and does not comprise a reasonable future baseline for landfill capacity beyond 2025. Historic landfill capacity data, shows that between 2005 and 2019, non-hazardous landfill capacity in the North West has decreased at an average of 6.01% per annum. On this basis, and accounting for the potential loss of non-hazardous landfill capacity arising from construction waste generated by the Proposed Development, Applications 1, 3 and 4 and the wider SRF, it is projected that the North West region will have approximately 8.3 million $m^3$ of non-hazardous landfill void space in 2039, down from approximately 28 million $m^3$ in 2020. In accordance with the sensitivity criteria established in Table 14.1, the sensitivity of non hazardous landfill in the North West would be Very High.

14.91 Using typical industry benchmarks for municipal waste density in non-hazardous landfills, the operation of the proposed Scenario 2c development is expected to generate approximately 331 $m^3$ per annum of non-hazardous waste requiring off-site disposal to landfill in the first full year of operation (2039). Waste generated by the Proposed Development is expected to reduce non-hazardous waste landfill void space in the North West by less than 0.01%. On the basis of the impact thresholds identified in Table 14.2, this is considered to comprise of a Negligible impact. According to the significance criteria identified in Table 14.3, a Negligible impact on a receptor whose sensitivity is considered to be Very High, is considered to comprise of a **Slight adverse** environmental effect at a regional level. The impact of the proposed operational Scenario 2c development on non-hazardous waste landfill capacity, is not considered to comprise a significant environmental impact.

# Additional Mitigation / Enhancement Measures

### Demolition and Construction

14.92 No significant environmental impacts with respect to waste have been identified as a result of the construction of the proposed HIF infrastructure works, and no further mitigation measures are considered necessary.

14.93 Policy EN 19 of the Manchester City Council Core Strategy[19] requires all developers to submit a Waste Management Plan to demonstrate how construction and demolition waste will be minimised and recycled on site wherever possible. A Site Waste Management Plan (SWMP) will be produced identifying specific design and construction measures to reduce waste generation and proposing a strategy to minimise the quantity of residual waste requiring disposal to landfill. The SWMP will help to ensure that landfill diversion of waste generated during construction is able to meet or exceed the England average of 94%, used as the basis for the construction phase assessment. Measures in the SWMP that will support the diversion of waste from landfill may include:

- Development of a pre-demolition audit
- Construction logistics opportunities such as packaging take-back schemes
- Segregation of waste on-site in clearly labelled and colour-coded containers
- Continuous training of contractor and sub-contractor staff
- Regular recording and monitoring of waste management performance

14.94 Use of SWMPs across all development areas within the NG SRF, may enable waste generation and landfill diversion rates to be reduced sufficiently to prevent exceedance of the Negligible impact thresholds on remaining landfill capacity, and reduce environmental effects from Minor (significant) to Slight (non-significant).

### Completed Development

14.95 No significant environmental impacts with respect to waste have been identified as a result of the operation of the proposed HIF infrastructure works, and no further mitigation measures are considered necessary.

# Likely Residual Effects of the Development and their Significance

14.96 Table 14.5 summarises the significance of the anticipated residual environmental effects with respect to waste, which are those that remain after all proposed mitigation measures have been implemented.

[19] Manchester City Council (2012), *Core Strategy - Development Plan Document*. Available online at: https://secure.manchester.gov.uk/download/downloads/id/21363/core_strategy.pdf

*Table 14.5: Residual Effects Summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| *Assessment Scenario 1a – Proposed Development only* | | | |
| Occupation of remaining inert landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | ***Development of a SWMP*** | Slight adverse environmental effect at a regional level. Non-significant. |
| Occupation of remaining non-hazardous landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | ***Development of a SWMP***<br><br>***Excavated material reuse*** | Slight adverse environmental effect at a regional level. Non-significant. |
| Occupation of remaining hazardous landfill void space | Slight adverse environmental effect at a supra-regional level. Non-significant. | ***Development of a SWMP*** | Slight adverse environmental effect at a supra-regional level. Non-significant. |
| *Assessment Scenario 1b – Proposed Development plus Applications 2, 3 and 4* | | | |
| Occupation of remaining inert landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | ***Development of SWMPs***<br><br>***Demolition material reuse*** | Slight adverse environmental effect at a regional level. Non-significant. |
| Occupation of remaining non-hazardous landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | ***Development of SWMPs***<br><br>***Excavated material reuse*** | Slight adverse environmental effect at a regional level. Non-significant. |
| Occupation of remaining hazardous landfill void space | Slight adverse environmental effect at a supra-regional level. Non-significant. | ***Development of SWMPs*** | Slight adverse environmental effect at a supra-regional level. Non-significant. |
| *Assessment Scenario 1c – Proposed Development plus Applications 2, 3 and 4 and wider SRF* | | | |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Occupation of remaining inert landfill void space | Potential for moderate adverse environmental effect at a regional level. Significant. | ***Development of SWMPs*** | Slight adverse environmental effect at a regional level. Non-significant. |
| Occupation of remaining non-hazardous landfill void space | Potential for moderate adverse environmental effect at a regional level. Significant. | ***Development of SWMPs*** | Slight adverse environmental effect at a regional level. Non-significant. |
| Occupation of remaining hazardous landfill void space | Potential for moderate adverse environmental effect at a supra-regional level. Significant. | ***Development of SWMPs*** | Slight adverse environmental effect at a supra-regional level. Non-significant. |
| ***Completed Development*** | | | |
| *Assessment Scenario 2a – Proposed Development only* | | | |
| Occupation of remaining inert landfill void space | Neutral environmental effect. Non-significant. | None required | Neutral environmental effect. Non-significant |
| Occupation of remaining non-hazardous landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | None required | Slight adverse environmental effect at a regional level. Non-significant. |
| Occupation of remaining hazardous landfill void space | Neutral environmental effect. Non-significant | None required | Neutral environmental effect. Non-significant |
| *Assessment Scenario 2b – Proposed Development plus Applications 2, 3 and 4* | | | |
| Occupation of remaining inert landfill void space | Neutral environmental effect. Non-significant. | None required | Neutral environmental effect. Non-significant |
| Occupation of remaining non-hazardous landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | None required | Slight adverse environmental effect at a regional level. Non-significant. |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Occupation of remaining hazardous landfill void space | Neutral environmental effect. Non-significant | None required | Neutral environmental effect. Non-significant |
| *Assessment Scenario 2c – Proposed Development plus Applications 2, 3 and 4 and wider SRF* | | | |
| Occupation of remaining inert landfill void space | Neutral environmental effect. Non-significant. | None required | Neutral environmental effect. Non-significant |
| Occupation of remaining non-hazardous landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | None required | Slight adverse environmental effect at a regional level. Non-significant. |
| Occupation of remaining hazardous landfill void space | Neutral environmental effect. Non-significant | None required | Neutral environmental effect. Non-significant |

## Conclusions

14.97 This assessment quantitively assesses the impact of waste generated by the Proposed Development in isolation, and in combination with related schemes (Applications 1, 3, and 4, and the NG SRF), on the remaining landfill capacity likely to be affected. Landfill capacities considered likely to be impacted include inert and non-hazardous landfill in the North West region, and hazardous landfill in the North West and Yorkshire and the Humber regions. The assessment follows the approach and methodology described in the IEMA guidance[8].

14.98 It can be confidently concluded that environmental effects on all categories of landfill during construction and operation, will be slight or neutral for the proposed scheme in isolation, and when considered in association with Applications 1, 3 and 4. This conclusion is premised on the development achieving industry standard landfill diversion rates, and that future ground investigation data does not identify extensive contamination not previously detected.

14.99 Limited design data with regard to the NG SRF, makes it significantly harder to draw conclusions regarding potential environmental effects for scenarios including the wider development area. Whilst it has been concluded that the Proposed Development plus Applications 1, 3 and 4 and the wider NG SRF will not generate a significant environmental effect during operation, the same cannot be inferred during construction. It cannot be confidently concluded that the Proposed Development plus Applications 1, 3 and 4 and the wider NG SRF will not

exceed Negligible impact thresholds on available landfill capacity during construction, and so it has been identified that the combined development has the capability of generating a minor effect on all categories of landfill which would comprise of a significant environmental effect. It is likely that this effect can be mitigated through careful design, and development of SWMPs throughout.

## Assessment of Cumulative Effects and their Significance

14.100 The Cumulative Impact Assessment (CIA) is presented as three scenarios. This is to ensure that the assessment is as robust as possible. The scenarios to be considered are as follows:

- Scenario 3a - Assessment of the cumulative impacts relating to the Proposed Development plus impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative impacts relating to the Proposed Development, plus impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development), and the agreed cumulative sites.
- Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 1 (Enabling works works), 3 (Flood alleviation works) and 4 (Red Bank built development), the wider SRF, and the agreed cumulative sites.

14.101 Table 14.6 provides a list of the developments which are included within the cumulative sites assessment.

*Table 14.6: Cumulative Sites*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | 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 | Approved Jun 2021 | Scoped Out | Considered to be included within the future baseline |
| 2 | 127971/FO/2020 | 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 | Scoped Out | Considered to be included within the future baseline |
| 3 | 128248/FO/2020 | 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 | 150m south | Approved June 2021 | Scoped Out | Considered to be included within the future baseline |
| 4 | 116366/FO/2017 | 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, | 150m south | Approved Aug 2017<br><br>Under | Scoped Out | Considered to be included within the future baseline |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 | | construction | | |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<br><br>Under construction | Scoped Out | Considered to be included within the future baseline |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 | Scoped Out | Considered to be included within the future baseline |
| 7 | 124973/FO/2019 | 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 | 350m south | Approved Feb 2016 | Scoped Out | Considered to be included within the future baseline |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | Manchester | | | | |
| 8 | 111777/FO/2016/C1 | 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 | 250m south east | Approved Sep 2016<br><br>Under construction | Scoped Out | Considered to be included within the future baseline |
| 9 | 121375/FO/2018 | 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. | 840m south | Approved Oct 2020 | Scoped Out | Considered to be included within the future baseline |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | Approved Oct 2018<br><br>Under construction | Scoped Out | Considered to be included within the future baseline |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 11 | 20/76134/FUL | 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 | 1000m south west | Approved Feb 2020 | Scoped Out | Considered to be included within the future baseline |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br><br>Under construction | Scoped Out | Considered to be included within the future baseline |
| 13 | 19/74465/HYBEIA | 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 7BN | 960m south west | Validated Nov 2019 | Scoped Out | Considered to be included within the future baseline |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 14 | 126944/FO/2020 | 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 | 140m south east | Approved Sep 2020<br><br>Under Construction | Scoped Out | Considered to be included within the future baseline |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | 145m south east | Approved October 2017 | Scoped Out | Considered to be included within the future baseline |
| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 | Scoped Out | Considered to be included within the future baseline |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated | 635m south west | Approved June 2018 | Scoped Out | Considered to be included within the future baseline |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | landscaping, access and other associated works | | | | |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | Scoped Out | Considered to be included within the future baseline |
| 19 | 124888/FO/2019 | 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 | Considered to be included within the future baseline |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | Scoped Out | Considered to be included within the future baseline |

### Approach

14.102 A review of historic landfill input data shows that across the baseline area, annual inputs to landfill are either stable or declining, despite continuous ongoing development in the area, including substantial new house-building projects. None of the committed developments identified are of sufficient scale to disrupt the long-term pattern of development in the area, and there is therefore no reason to expect that the committed developments would affect the trend towards stable and declining inputs to landfill. The committed developments identified are therefore considered to comprise part of the future baseline against which the Proposed Development has been assessed.

14.103 The list of the developments which are included within the cumulative sites assessment extends to an area of approximately 1km distance from the Proposed Development site. This area is significantly smaller than the expansive study area whose landfill capacity is considered likely to be impacted by the Proposed Development and is not considered to be large enough to robustly ascertain whether there are committed development likely to change the significance of effects report. In this case the expansive study area primarily comprises of the North West; it is considered to represent a reasonable worst case that any waste generated by committed developments within this region could be disposed of in the region. It is therefore considered to be necessary to extend the search area for the cumulative assessment to the whole region.

14.104 Whilst it is assumed that any committed development located within the North West will impact upon the same landfill capacity as the Proposed Development, it is considered that only those developments large enough in scale to disrupt long-term trends in development in the area, would fall outside the future baseline against which the Proposed Development has already been assessed.

### Likely Residual Cumulative Effects and their Significance

#### Demolition and Construction

*Scenario 3a - Assessment of the cumulative impacts relating to the Proposed Development plus impacts associated with agreed cumulative sites.*

14.105 A wider appraisal of committed developments with the potential to disrupt trends in landfill capacity and generate significant cumulative impacts, identified Phase 2a of the High Speed Two (HS2) project. The construction of Phase 2a of HS2 overlaps with the proposed HIF infrastructure works, both in the region in which waste is likely to be disposed of, and in the years in which construction is underway.

14.106 The ES published for Phase 2a of HS2[20], identifies that the regions through which the route passes are assumed to comprise the areas within which the various waste streams generated are likely to be managed. In this assessment, it is considered that the area of overlap comprises the North West, within which the waste

[20] High Speed Two (2019), *Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement - Volume 3 - Route-wide effects*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/775957/J20_Volume_3_Route-wide_effects_web.pdf

infrastructure capacity is likely to be affected by both schemes. The following quantities of waste have been forecast to be generated by the Phase 2a construction works in the North West region, according to engineering design information used in development of the Phase 2a Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement[20]:

- No inert waste;
- 9,936 tonnes of non-hazardous waste (1,419 tonnes per annum between 2020 and 2026); and
- 1,570 tonnes of hazardous waste (224 tonnes per annum between 2020 and 2026).

14.107 Based on these quantities, it is predicted that the cumulative impacts on inert, non-hazardous and hazardous landfill capacity are no greater than those forecast from the Proposed Development in isolation.

*Scenario 3b - Assessment of the cumulative impacts relating to the Proposed Development, plus impacts associated with Applications 1, 3 and 4, and the agreed cumulative sites.*

14.108 Based on the quantities of waste predicted from HS2 Phase 2a, it is predicted that the cumulative impacts on inert, non-hazardous and hazardous landfill capacity are no greater than those forecast for the Proposed Development, and Applications 1, 3 and 4 in combination.

*Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Applications 1, 3 and 4, the wider SRF, and the agreed cumulative sites.*

14.109 Based on the quantities of waste predicted from HS2 Phase 2a, it is predicted that the cumulative impacts on inert, non-hazardous and hazardous landfill capacity are no greater than those forecast for the Proposed Development, Applications 1, 3 and 4, and the NG SRF in combination.

### The Completed and Operational Development

*Scenario 3a - Assessment of the cumulative impacts relating to the Proposed Development plus impacts associated with agreed cumulative sites.*

14.110 No committed developments have been identified of sufficient scale to disrupt long-term trends in landfill capacity as a result of waste likely to be generated during operation. Whilst waste generated during construction of Phase 2a of HS2 is expected to reduce the availability of landfill capacity during operation of the Proposed Development, it is predicted that the cumulative impacts on inert, non-hazardous and hazardous landfill capacity are no greater than those forecast from the Proposed Development in isolation.

*Scenario 3b - Assessment of the cumulative impacts relating to the Proposed Development, plus impacts associated with Applications 1, 3 and 4, and the agreed cumulative sites.*

14.111 No committed developments have been identified of sufficient scale to disrupt long-term trends in landfill capacity as a result of waste likely to be generated during operation. Whilst waste generated during construction of Phase 2a of HS2 is expected to reduce the availability of landfill capacity during operation of the Proposed

Development and Applications 1, 3 and 4, it is predicted that the cumulative impacts on inert, non-hazardous and hazardous landfill capacity are no greater than those forecast from the Proposed Development and Applications 1, 3 and 4 in combination.

*Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Applications 1, 3 and 4, the wider SRF, and the agreed cumulative sites.*

No committed developments have been identified of sufficient scale to disrupt long-term trends in landfill capacity as a result of waste likely to be generated during operation. Whilst waste generated during construction of Phase 2a of HS2 is expected to reduce the availability of landfill capacity during operation of the Proposed Development, Applications 1, 3 and 4, and the wider SRF, it is predicted that the cumulative impacts on inert, non-hazardous and hazardous landfill capacity are no greater than those forecast from the Proposed Development, Applications 1, 3 and 4, and the NG SRF in combination.

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# 15. Socioeconomics

## Introduction

15.1 As noted in Chapter 2: Approach, this ES assesses the Development Project, which is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in 4 planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – planning permission has been granted for the demolition of Creamline diary, tree and shrub clearance and construction of a temporary haul road.
- HIF Infrastructure Works (referred to hereafter as 'Application 2') – the subject of this application. Creation of development platforms, demolition of sections of existing River Wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diversions and provision of green infrastructure including creation of green links and first phase of the new City River Park.
- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within flood zone 3.
- Land controlled by the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. (As noted in Chapter 2: Approach, the entire Red Bank Neighbourhood of the SRF, including third party land, will deliver up to 5,500 new dwellings).

15.2 Whilst the Applicant has the detail of the early applications, the later parts of the Development Project (and particularly Application 4) are still being designed and the details are not yet available. Therefore, the approach that has been taken in the ES is to break the Development Project into 3 elements, with each element being assessed in a level of detail commensurate with the detail that is available for the relevant part of the Development Project.

15.3 As such, a very full and detailed assessment is undertaken of Application 2, and then reasonable assumptions and judgements have informed and been made to assess Applications 1-4 together, and then Applications 1-4 and SRF.

15.4 This chapter therefore assesses the significance of the socio-economic effects of Application 2, as well as the wider Development Project (Applications 1, 3 and 4) and the wider SRF on the identified study area. The assessment is based on three scenarios:

- Scenario a - Assessment of the socio-economic impacts relating to Application 2 (HIF Infrastructure Works) only (referred to hereafter as the 'Proposed Development').

- Scenario b - Assessment of the socio-economic impacts relating to Application 2 (HIF Infrastructure Works), plus socio-economic impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
- Scenario c - Assessment of the socio-economic impacts relating to Applications 1, 2, 3 and 4, plus socio-economic impacts associated with the wider SRF.

15.5 The assessment will provide both a quantitative assessment where information is available, and a qualitative assessment proportionate to the level of scheme detail available. The socio-economic assessment has been carried out by Arup.

15.6 The Proposed Development includes elements that have potential to result in significant impacts on environmental sensitivities on the Site and in the vicinity of the Site, namely demolition of existing structures, clearance of trees, construction of access road and junction, site-wide earthworks and the delivery of the first phase of the City River Park.

15.7 In the context of the Proposed Development (see Chapter 5: Proposed Development), the socio-economic assessment considers: demolition and construction impacts (e.g., relating to remediation, utilities and access road provision), job creation, labour supply and provision of green infrastructure. In assessing the effects of the other schemes related to the Development Project (Applications 1, 3 and 4), as well as the wider SRF, the scope of assessment will be broadened to consider implications of the demand for public services, and the effects of the provision of housing and employment uses in respect of adopted policy.

15.8 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. Where appropriate, mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects will be considered.

# Planning Policy Context

## National Legislation

15.9 There is no legislation directly relevant to the assessment of effects on socio-economic conditions.

## National Planning Policy

### National Planning Policy Framework (MHCLG, 2021)

15.10 A revised National Planning Policy Framework (NPPF) (MHCLG, 2021) was published in July 2021. Those policies of relevance have been considered and reviewed in light of the Development Project. A summary of relevant policies within the NPPF is provided in Table 15-1 below:

*Table 15-1: Summary of relevant policies in the NPPF*

| National Planning Practice Framework July 2021 | |
|---|---|
| **Policy** | **Relevance to the Proposed Development** |
| Chapter 2: Achieving Sustainable Development | The purpose of the planning system is to contribute to sustainable development, with three overarching objectives: economic, social, and environmental. |
| Chapter 5: Delivering a sufficient supply of homes | Sufficient amount and variety of land must come forward where it is needed to support Government objectives of boosting the supply of homes. |
| Chapter 6: Building a strong, competitive economy | Planning decisions should create conditions for businesses to invest, expand and adapt. |
| Chapter 8: Promoting healthy and safe communities | Planning decisions should achieve healthy, inclusive and safe places which promote social interaction, are safe an accessible and support healthy lifestyles. |
| Chapter 9: Promoting sustainable transport | Transport issues should be considered in order to address impacts of development on transport networks, identify opportunities to promote walking, cycling and public transport and assess environmental impacts of traffic and transport infrastructure. |
| Chapter 11: Making effective use of land | Planning decisions should promote the effective use of land by meeting the need for homes and other uses whilst safeguarding and improving the environment. |
| Chapter 12: Achieving well designed places | Plans should set out clear design visions, as high quality design is fundamental to the planning and development process. Emphasis is also placed on the importance of trees and sustainability. |
| Chapter 14: Meeting the challenge of climate change, flooding and coastal change | The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. |
| Chapter 15: Conserving and enhancing the natural environment | Planning Decisions should enhance the natural and local environment by protecting valued landscapes, recognising the beauty of the countryside, minimising impacts on and providing net gains for biodiversity and preventing new and existing development from contributing to unacceptable levels of pollution. |
| Para 124 NPPF Achieving appropriate densities | The creation of high quality buildings and places is fundamental to what the planning and development |

| National Planning Practice Framework July 2021 | |
|---|---|
| **Policy** | **Relevance to the Proposed 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. |
| Para 127 NPPF Achieving well-designed places. | Sets out a number of principles of good design. |

### Any Other Relevant National Planning or Development Strategies

15.11 The following planning and development strategies are also relevant to the assessment:

- Planning for the Future White Paper (MHCLG, 2020).
- A Green Future: Our 25 Year Plan to Improve the Environment (HM Government, 2018), see Chapter 3: Connecting People with the environment to improve health and wellbeing.

## Strategic Planning Policy

### Places for Everyone (GMCA, 2021)

15.12 Places for Everyone (GMCA, 2021) is a long-term joint development plan published by the Greater Manchester Combined Authority (GMCA) on behalf of nine Greater Manchester districts (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan) which will determine the kind of development that takes place in their boroughs, covering jobs, new homes and sustainable growth. The plan is still at draft stage with consultation on the Publication Draft version having taken place from August to October 2021. The next stage involves submitting the plan to the Secretary of State for independent examination. If the plan is found to be sound, it will then be adopted. At present the plan therefore carries very little weight however this weight will increase as it proceeds through the adoption process.

*Table 15-2: Summary of relevant policies in Places for Everyone*

| **Places for Everyone – Joint Development Plan Document – Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan, Publication Draft (August 2021)** | |
|---|---|
| **Policy** | **Relevant to the Proposed Development** |
| Policy JP – Strat 1 – Core Growth Area | Sustainable development is supported to encourage major growth in jobs, increases in number and range of homes, in areas with good connections to employment, training and education facilities. |
| Policy JP- Strat 6: Northern Areas | There will be a strong focus on prioritising the re-use of brownfield land through urban regeneration. Development in this location should be of good quality and design, supported by infrastructure and amenities including improved access to green space. |
| Policy JP-Strat 14: A sustainable and integrated transport network | New development will have a significant role in delivering a future sustainable and integrated transport network to reduce car dependency and encourage walking, cycling and use of public transport. |
| Policy JP-S 1 – Sustainable Development | Development should maximise its economic, social and environmental benefits simultaneously. Preference will be given to using previously developed land and vacant buildings to meet development needs. |
| Policy JP-S 2: Carbon and Energy | Development should aim to deliver a carbon neutral Greater Manchester by reducing greenhouse gas emissions. |
| JP-J 1: Supporting Long-Term Economic Growth | Emphasis is placed on maintaining economic diversity, making the most of assets in the sub-region, grasping economic opportunities from the global transition to a low carbon economy and supporting local job growth by seeking arrangements with employers and developers (including housebuilders). |
| JP-J 2: Employment Sites and Premises | A range of employment sites and accessible premises are to be made available across the plan area to offer opportunities for a diverse range of businesses. |
| Policy JP-H 1: Scale, Distribution and Phasing of New Housing Development | Min. of 164,880 net additional units are to be delivered over the period 2021-37 (annual average of c.10,305. New homes must be adaptable and of good quality and design. |
| Policy JP-H 3: Type, size and design of new housing | Development across the plan area should aim to deliver a range of unit types and sizes, including self-build and community led projects to meet local needs and deliver more inclusive neighbourhoods. |
| Policy JP-G 2: Green Infrastructure Network | A strategic approach will be taken to the protection, management and enhancement of Green Infrastructure in order to protect and enhance ecosystem services including flood management, climate change mitigation and adaptation. |
| Policy JP-G 6: Urban Green Space | Development should be designed to support the positive use of nearby green spaces. |

| Places for Everyone – Joint Development Plan Document – Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan, Publication Draft (August 2021) | |
|---|---|
| **Policy** | **Relevant to the Proposed Development** |
| Policy JP-G 9: A Net Enhancement of Biodiversity and Geodiversity | The enhancement of biodiversity resources will be sought. Habitat enhancement and creation should be local to the Site, and regard should be had for supporting biodiversity priorities and initiatives. |
| Policy JP-P 1: Sustainable Places | Development should respond to the natural environment, be socially inclusive, visually stimulating, safe, resilient to environmental and economic events and well served by local services and amenities. |
| Policy JP-C 4: Streets for All | Streets must be well designed and managed to make positive contributions to the quality of place and support walking, cycling and use of public transport. |
| Policy JP-C 5: Walking and Cycling | A range of measures are in place to support a higher proportion of journeys to be made by walking and cycling such as the creation of safe, attractive, and integrated walking and cycling infrastructure and ensuring new developments are planned and constructed with walking and cycling as the primary means of local access. |
| Policy JP-C 7: Transport Requirements of New Development | Planning applications will be accompanied by a Transport Assessment/ Transport Statement and Travel Plan where appropriate. New development should be located and designed to enable and encourage walking, cycling and public transport use. |

### Local Planning Policy

#### Manchester City Council Core Strategy Development Plan Document (MCC, 2012)

15.13 Manchester City Council's Local Development Framework consists of the Development Plan Documents and Supplementary Planning Documents. The key Development Plan Document is the Core Strategy (MCC, 2012) which was adopted on 11 July 2012. The Core Strategy forms part of the Council's Statutory Development Plan and covers a period of 15 years from 2012 to 2027. It outlines the Council's vision for Manchester along with the planning policies which will be used to deliver that vision.

Within the Core Strategy (MCC, 2012), the Site is identified as an 'Inner Area'. Relevant Policies are identified in

15.14 Table 15-3 below:

*Table 15-3: Summary of relevant policies in MCC Core Strategy*

| Manchester City Council Core Strategy 2012 – 2027 | |
|---|---|
| **Policy** | **Relevance to the Proposed Development** |
| Policy SP1: Spatial Principles (guiding the strategic development of Manchester to 2027) | Emphasis is placed on the creation of neighbourhoods of choice and creating high quality and diverse housing around district centres which meet local needs. |
| Policy EC1 – Employment and Economic Growth in Manchester | A minimum of 200 ha of employment land will be developed between 2010 and 2027 for offices (B1), research and development (B1b), light industrial (B1c), general industry (B2) and distribution and warehousing (B8). The policy sets out key locations for major employment growth and priorities for ensuring continued economic growth, including Manchester City Centre (33 ha) and City Centre Fringe (25ha).<br><br>In addition, the Council will support other significant contributions to economic growth and productivity including health, education, retailing, cultural and tourism facilities.<br><br>Emphasises that development proposals should have regard to the minimisation of CO2 emissions and efficient use of space and enhancement of the sense of place of the wider area. |
| Policy CC1: Primary Economic Development Focus: City Centre and Fringe | The City Centre is expected to accommodate 33ha and the city centre fringe 25ha of office or similar employment development. The priority for employment growth will be B1a high density offices. |
| Policy CC3 - Housing | City Centre will see the most intensive development of housing, a key location being the Northern Quarter. Approximately 11,840 will be delivered in North Manchester. |
| Policy CC5 - Transport | Transport must be managed so that it supports projected city centre growth. Proposals which improve pedestrian safety, improve air quality and increase the scope for accessible public realm improvements will be supported. |
| Policy T 1 – Sustainable Transport | The Council will support proposal that improve choice by developing alternatives to the car, improve access to transport services and facilities, improve pedestrian routes and the pedestrian environment, and improve and develop further Manchester's pedestrian environment. |
| Policy CC7 – Mixed use development | Mixed use development is promoted as a means of using land as efficiently as possible. |
| Policy EC4 – North Manchester | North Manchester is expected to provide 14ha of employment land. |

| Manchester City Council Core Strategy 2012 – 2027 | |
|---|---|
| **Policy** | **Relevance to the Proposed Development** |
| Policy EN1 – 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<br><br>the overall image of the City should be fully realised, particularly on major radial and orbital road and rail routes.<br><br>In the Northern Character Area, developers should respond to the underlying topography and varied townscape. |
| Policy EN 2 Tall Buildings | Proposals for tall buildings will be support where it can be demonstrated that they are of excellent design; are appropriately located; contribute positively to sustainability; contribute positively to place making; and bring significant regeneration benefits. |
| Policy EN 4 Reducing CO2 Emissions by Enabling Low and Zero Carbon Development | Specific policies aimed at increasing local decentralised energy and reducing carbon emissions and the impacts of climate change. |
| Policy EN 5 Strategic Areas for low and zero carbon decentralised energy infrastructure | District Centres and major development sites will have a major role to play in achieving an increase in the level of decentralised, low and zero carbon energy supplies available. |
| Policy EN 6 Target Framework for CO2 reductions from low or zero carbon energy supplies | Applications for residential development of 10 or more units and all other development over<br><br>1,000 sq m will be expected as a minimum to meet the targets shown in the Core Strategy, unless this can be shown not to be viable. This should be demonstrated through an energy statement, submitted as part of the Design and Access Statement. Such a statement will be expected to set out the projected regulated energy demand and associated CO2emissions for all phases of the development. |
| Policy EN 8 Adaptation to Climate Change | All new development will be expected to be adaptable to climate change in terms of the<br><br>design, layout, siting and function of both buildings and associated external spaces. |
| Policy EN9 - Green Infrastructure | New Development will be expected to maintain existing green infrastructure in terms of its<br><br>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 |

| Manchester City Council Core Strategy 2012 – 2027 | |
|---|---|
| **Policy** | **Relevance to the Proposed Development** |
| | 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 termsof quantity, quality, function and future management. |
| Policy EN10 – Safeguarding Open Space, Sport and Recreation Facilities | Proposals which improve the quality and quantity of outdoor space, provide innovative solutions to improving the network of existing open space, increase accessibility to green corridors and enhance biodiversity whilst improving access to open space for people with disabilities will be supported. |
| Policy EN11 – Quantity of Open Space, Sport and Recreation Facilities | New open space, sport and recreation facilities will be delivered across Manchester – these should be interconnected to allow better links for people with disabilities, pedestrians and cyclists. |
| Policy EN12 – Area priorities for Open Space, Sport and Recreation | North Area: ensure that new development delivers improvements to the quality of existing provision. |
| Policy EN 14 Flood Risk | 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). All new development should minimise surface water run-off, including through Sustainable Drainage Systems (SUDS) and the appropriate use of Green Infrastructure. |
| Policy EN 15 Biodiversity and Geological Conservation | Manchester as a City recognises the importance placed on biodiversity and its role in delivering urban renaissance. Manchester seeks to protect, enhance and manage existing identified biodiversity resources.<br><br>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. |
| Policy EN 16 Air Quality | 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. |
| Policy EN 17 Water Quality | With reference to the Manchester-Salford-Trafford SFRA and other relevant documents: |

| Manchester City Council Core Strategy 2012 – 2027 | |
|---|---|
| **Policy** | **Relevance to the Proposed Development** |
| | 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;<br><br>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;<br><br>Development close to a watercourse should also ensure that waste or litter cannot enter the watercourse from the Site;<br><br>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. |
| Policy H1 – Overall Housing Provision | 60,000 new dwellings to be provided before 2027, or 3,333 units per year.<br><br>This is support Manchester's population growth, and include properties which will attract economically active families and contribute to the long term economic growth of the City. The Council also wishes to diversify the housing offer in Manchester. New housing will be predominantly in the North, East, City Centre and Central Manchester, these areas falling within the Regional Centre and Inner Areas of Manchester.<br><br>Higher density developments (over 75 units per hectare) are appropriate in both the City Centre and parts of the Regional Centre given the accessible location. Within the City Centre there will be a presumption towards high density housing development, within mixed use schemes which contribute to regeneration initiatives or niche housing markets by providing sustainable, well designed accommodation which meets the needs of workers moving to Manchester.<br><br>The Council is committed to the development of new housing which meets and where possible exceeds the current Code for Sustainable Homes requirements; providing a range of house types and tenures to meet the needs of a diverse and growing population in locations which promote the efficient use of resources and use of sustainable transport modes, support regeneration and local services and encourage economic growth. |
| Policy H2: Strategic Housing Location | Key locations for new housing include areas north of Manchester city centre. Land assembly will be supported in this area to encourage the creation of large development sites providing the potential for significant regeneration benefits.<br><br>Developers should take advantage of this opportunity by: diversifying the housing offer by providing medium density family housing and affordable housing; including environmental improvements in |

| Manchester City Council Core Strategy 2012 – 2027 | |
|---|---|
| **Policy** | **Relevance to the Proposed Development** |
| | proposals; creating sustainable neighbourhoods and; condifer the scope to include a residential element as part of employment-led development. Proposals should also contribute to decentralized low and zero carbon energy infrastructure.<br><br>New housing provision in Manchester should reflect the housing market, and with this in mind there should be some flexibility to support developments providing they contribute to the regeneration of the City. |
| Policy H3 – North Manchester | North Manchester is due to accommodate 20% of new residential development.<br><br>High density housing will be permitted within or adjacent to the parts of North Manchester that fall within the Regional Centre (Strangeways and Collyhurst area) and within Cheetham Hill and Harpurhey district centres as part of mixed-use schemes as well as along high frequency public transport routes. |
| Policy H8: Affordable Housing | New development should contribute to the city-wide target for 20% affordable housing. Proportion of affordable units should reflect the type and size of the development as a whole and should be inclusively designed to reflect the character of development of the Site. |
| Policy H10: Housing for people with additional support needs | Proposals for accommodation for people with additional support needs will be supported where it will contribute to the vitality and viability of the neighbourhood; where there is not a high concentration of similar uses in the area already and where there would not be a disproportionate stress on local infrastructure such as health facilities. |
| Policy H11: Houses in Multiple Occupation | In cases where the concentration of HMO properties is significant but less high, the council will examine property type and resident mix in more detail when considering an application for change of use. In areas of high concentration, extensions to HMO's would not be permitted where this could reasonably be expected to lead to an increase in the level of occupation. |
| Policy H12: Purpose Built Student Accommodation | Priority will be given to schemes which are part of the universities redevelopment plans or which are being progressed in partnership with the universities. |
| Policy C3: North Manchester District Centres – Cheetham Hill and Harpurhey | Broad frameworks have been developed for Manchester's District Centres up to 2027, including for North Manchester District Centres – Cheetham Hill and Harpurhey. Cheetham Hill and Harpurhey centres mainly serve residents in the north of the city and those of Salford. Both the North Manchester Strategic Regeneration Framework (SRF) and the retail studies highlight issues around improving the shopping environment in both centres. There is capacity for approximately 1,000 |

| Manchester City Council Core Strategy 2012 – 2027 | |
|---|---|
| **Policy** | **Relevance to the Proposed Development** |
| | square metres convenience and 4,000 square metres comparison retail growth in North Manchester up to 2027. |
| Policy PA 1 Developer Contributions | Where needs arise as a result of development, the Council will seek to secure planning obligations in line with Circular 5/2005, CIL Regulations or successor regulations/guidance. |
| Policy DM 1 Developer Management | All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document. |

### Northern Gateway Strategic Regeneration Framework (SRF) (MCC, 2019b)

15.15 The Northern Gateway SRF (MCC, 2019b) was prepared by MCC to guide the future development of one of the largest regeneration projects in the UK. The SRF study area covers approximately 155ha 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.

15.16 The Northern Gateway SRF (MCC, 2019b) was approved by MCC's Executive on 13th February 2019. It does not form part of the statutory development plan however it is a material consideration in the determination of all planning applications relevant to the SRF study area. The Proposed Development comprises the entirety of the Red Bank neighbourhood of the SRF study area and a small section of the adjacent New Town neighbourhood.

*Table 15-4: Summary of relevant topics in the Northern Gateway SRF*

| Northern Gateway Strategic Regeneration Framework (SRF) (2019) | |
|---|---|
| **Topic** | **Relevance to the Proposed Development** |
| SRF-wide Design and Development Principles | In relation to the Red Bank neighbourhood and the New Town neighbourhood of the SRF study area, the document provides relevant information on the existing character of the areas 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.<br><br>It outlines the opportunities for Red Bank to be a residential-led neighbourhood with a river setting, which is suitable for high-density development. There are |

| Northern Gateway Strategic Regeneration Framework (SRF) (2019) | |
|---|---|
| **Topic** | **Relevance to the Proposed Development** |
| | opportunities for a varied mix of uses including social infrastructure, and housing which includes a mix of topographies and tenures. The SRF outlines the restoration of the River Irk and a new City River Park at the heart of the Northern Gateway.<br><br>The SRF goes onto outline in detail the neighbourhood design and development principles around:<br><br>• Transport, accessibility and permeability<br><br>• Land Use<br><br>• Scale, Density and Form<br><br>• Public Realm and Public Spaces |

### Greater Manchester Economic Vision (GM LEP, 2020)

15.17 The Greater Manchester Economic Vision document (GM LEP, 2020) was published by the Greater Manchester LEP in 2020 and sets out Greater Manchester's plans for a fairer, greener, growing economy. It does not form part of the statutory development plan however represents a material consideration in the determination of planning applications.

*Table 15-5: Summary of relevant topics in the Greater Manchester Economic Vision*

| Greater Manchester Economic Vision (2020) | |
|---|---|
| **Topic** | **Relevance to the Proposed Development** |
| Attract R&D investment | This will be based on Greater Manchester's areas of strength and excellence and translating this to drive economic growth nationally as well ensuring it supports economic growth in parts of Greater Manchester. |
| Creating a culture of business innovation | Recapitalise on Greater Manchester's business; start up investment models that break social barriers and borders; support businesses to |

| Greater Manchester Economic Vision (2020) | |
|---|---|
| **Topic** | **Relevance to the Proposed Development** |
| | drive productivity, particularly digital and net-zero; leadership and management training to drive innovation and creation of innovation funds such as low carbon and life science 2. |
| Driving good employment | This will require a focus on real living wage employment, recognition of the importance of the foundational economy to the services which we all rely on, mental health support to help employees and employers tackle issues that Covid-19 has raised and the achievement of diversity and inclusivity in company leadership. |
| Stimulating investment to create desirable places where people thrive | Build the absorptive capacity of places for innovation; create vibrant, culturally rich places where people want to live; deliver low carbon infrastructure to support growth and implement local investment frameworks. |

### Greater Manchester Local Industrial Strategy (HM Government, 2019)

15.18 The Greater Manchester Local Industrial Strategy (HM Government, 2019) was jointly published by the GMCA, the GM LEP and the UK Government in June 2019. It outlines a set of long-term policy priorities to help guide industrial development and provides a plan for good jobs and growth in Greater Manchester. It does not form part of the statutory development plan however it represents a material consideration in the determination of planning applications.

*Table 15-6: Summary of relevant topics in the Greater Manchester Local Industrial Strategy*

| Greater Manchester Local Industrial Strategy (June 2019) | |
|---|---|
| **Topics** | **Relevance to the Proposed Development** |
| The Clean Growth Grand Challenge: driving rapid decarbonisation | Manchester will aim to achieve carbon neutral living within GM economy by 2038. |

| Greater Manchester Local Industrial Strategy (June 2019) | |
|---|---|
| **Topics** | **Relevance to the Proposed Development** |
| Infrastructure: Upgraded, integrated and future-proofed | Greater Manchester will put in place integrated 21st century infrastructure needed for digitally connected, clean and inclusive growth and to facilitate international trade and investment. |
| Places: Cultivating prosperous cities, town and communities across the city region | Specific priorities include: ensuring a thriving and productive economy by maximising assets, city and town centres, strategic employment locations and neighbourhoods; reducing inequalities and promoting diversity; building on city, growth and devolution deals and continue reforming public services to ensure local public services are focussed on improving outcomes and reducing inequalities. |

### Greater Manchester Resilience Strategy (Greater Manchester Resilience Unit, 2021)

15.19 The Greater Manchester Resilience Strategy (Greater Manchester Resilience Unit, 2020) was published in April 2021 by the Greater Manchester Resilience Unit which forms part of the GMCA. The Strategy is the first of its kind for Greater Manchester. It builds on nearly two decades of multi-agency working to plan and to respond to civil risks and emergencies within the context of the Civil Contingencies Act 2004. The Strategy does not form part of the statutory development plan however it represents a material consideration in the determination of planning applications.

*Table 15-7: Summary of relevant topics in the Greater Manchester Resilience Strategy*

| Greater Manchester Resilience Strategy 2020-2030 | |
|---|---|
| **Topics** | **Relevance to the Proposed Development** |
| Priority 1: Communities – building cohesive, healthy and resilient communities. | Resilient communities are characterised by minimal exposure to disaster risk, together with fewer urban stresses, and therefore a lower vulnerability and greater coping capacity when shocks occur. |
| Priority 2: Discovery – Enhancing resilience understanding | This includes resilience to climate risk, urban challenges and social challenges. |
| Priority 4: Place – being ready for future challenges | Resilience means Manchester must be prepared for the consequences of an evolving economy, population growth and the need for new housing changing demands on infrastructure and the impact of climate change on the natural environment. Population growth and changing economic and societal needs means the delivery of new homes and |

| Greater Manchester Resilience Strategy 2020-2030 | |
|---|---|
| **Topics** | **Relevance to the Proposed Development** |
| | infrastructure is a priority. At the same time, its important to ensure existing homes, businesses and infrastructure are resilient to shocks and stresses. |

Providing for Housing Choice Supplementary Planning Document and Planning Guidance (MCC, 2008)

15.20 Manchester City Council adopted the Supplementary Planning Document and Planning Guidance, Providing for Housing Choice (MCC, 2008) in September 2008. The document provides planning guidance about the mix of new housing provision required in Manchester to meet the requirements of the City's planning policies and government guidance about planning policies for housing provision. As a Supplementary Planning Document, this does not form part of the statutory development plan however it represents a material consideration in the determination of planning applications.

*Table 15-8: Summary of relevant topics in the Providing for Housing Choice document*

| Providing for Housing Choice Supplementary Planning Document and Planning Guidance (2008) | |
|---|---|
| **Topics** | **Relevance to the Proposed Development** |
| Affordable Housing | The document sets out requirements for affordable housing in Manchester, applying to all residential developments on sites of 0.3 ha and above or where 15 or more units are proposed. |

15.21 Implications of the policy framework to the socio-economic assessment of the Proposed Development:

- National policy sets out the presumption in favour of sustainable development. This includes identifying sufficient amount and variety of land to boost the supply of homes, and to create opportunities to build a strong, competitive economy. To deliver this, proposals should seek to achieve well designed places which promote healthy and safe communities, promote sustainable transport, and meet the challenges of climate change.
- A joint development plan document (Places for Everyone) (GMCA, 2021) for nine of the ten Greater Manchester local authorities is being prepared. The Plan seeks to deliver sustainable, inclusive growth. Of relevance to the Proposed Development is the focus on delivering significant growth in jobs and housing in the core growth area, which encompasses the application site. Together with the Inner Area Regeneration area, 50% of overall housing supply will be delivered here. The Plan also seeks to boost the competitiveness of the northern districts, with significant new employment opportunities and supporting infrastructure.

- Local Policy – Manchester City Council's Core Strategy (MCC, 2012) – embeds many of these spatial elements. In particular, the Core Strategy outlines the need for 200 ha of employment land and 60,000 new homes – of which 16,500 will be delivered in North Manchester. Alongside sustainable transport options and associated infrastructure, the Core Strategy focusses on delivery high quality designed places, maximising green spaces, and providing sufficient social infrastructure.
- The Northern Gateway Strategic Regeneration Framework (MCC, 2019b) identified the entirety of the Red Bank neighbourhood and application site as an opportunity for a major residential-led neighbourhood, with a river setting and suitability for high-density development. The SRF identified the opportunities to restore the River Irk and deliver the new City River Park.
- The Greater Manchester Economic Vision document (GM LEP, 2020) and the Greater Manchester Local Industrial Strategy (HM Government 2019) emphasise the need to drive economic growth in Greater Manchester with a focus on stimulating investment to create desirable places where people want to live, improving outcomes and reducing inequalities.
- The Greater Manchester Resilience Strategy (Greater Manchester Resilience Unit, 2021) seeks to ensure resilience to climate risk, urban challenges and social challenges.

### Other Relevant Policy, Standards and Guidance

15.22 Other relevant policy, standards and guidance include the following:

- Our People Our Place (The Greater Manchester Strategy) (GMCA 2017) -Key priorities include: Priority 3: Good jobs, with opportunities for people to progress and develop; Priority 6: Safe, decent and affordable housing; Priority 7: A green city region and a high quality culture and leisure offer for all.
- Developing a More Inclusive Economy - Our Manchester Industrial Strategy (MCC, 2019a) – this document is complementary to the Greater Manchester Local Industrial Strategy.
- Greater Manchester Work and Skills Strategy and Priorities 2016-2019 (GMCA, 2016).

## Assessment Methodology and Significance Criteria

### Overview

15.23 The assessment has been undertaken with due consideration of the relevant general EIA guidance, professional experience, and best practice. The assessment includes the following steps:

- Identifying the study area.
- Review of baseline conditions for the relevant geographical areas.
- Assessment of likely scale, scope, permanence and significant of the construction effects due to the development scenarios on socio-economic receptors.

- Assessment of likely scale, scope, permanence and significant of the operational effects due to the development scenarios on socio-economic receptors.
- Summary of significance of effects.
- Mitigations.
- Summary of residual significant effects.
- Assessment of cumulative effects with identified committed developments in the surrounding area.

### Assessment Scenarios

15.24 The assessment scenarios in respect of the EIA for the Proposed Development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
    - Scenario 1a - Assessment of the socioeconomic impacts relating to the Proposed Development only (HIF works).
    - Scenario 1b - Assessment of the socioeconomic impacts relating to the Proposed Development, plus socioeconomic impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
    - Scenario 1c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.
- Assessment Stage 2 - Completed Development and Operational Phase:
    - Scenario 2a - Assessment of the socio-economic impacts relating to the Proposed Development only.
    - Scenario 2b Assessment of the socio-economic impacts relating to the Proposed Development, plus socio-economic impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
    - Assessment 2c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.

15.25 It should be noted that the design of the wider development project and of the wider SRF are subject to further revision and refinement. Consideration of in-combination effects will be a qualitative assessment based on publicly available information. It should therefore be read in that light. The subsequent Applications 3 and 4 will be accompanied by more detailed environmental assessments as the detail of those later elements become known.

## Methodology for scenarios 1a and 2a (Proposed Development Only)

### Construction Impacts (quantitative appraisal)

15.26 The assessment estimates the Full Time Equivalent (FTE) direct jobs created onsite during the construction phase. It also considers indirect jobs created through supply chain linkages in firms that will provide supporting services during construction.

15.27 An estimate of gross direct FTE workers has been derived from capital expenditure estimates. The construction employment stimulated by capital expenditure (CAPEX) has been estimated by employing the labour coefficients in the HCA Calculating Cost Per Job Best Practice Note (HCA, 2015). The guidance note provides labour coefficients for different categories of CAPEX, which indicate the number of construction workers required over one year to deliver £1m of construction investment (at 2011 prices) for that particular category of works[1].

15.28 This gross figure has then been used to calculate an estimated net employment generation figure by accounting for additionality factors.

15.29 Defining an appropriate reference case is important in ensuring a robust assessment of potential impacts arising from the Proposed Development. For the purposes of this assessment the reference case is that the Site remains in its current (undeveloped) state (see Chapter 3: Site Description).

15.30 The potential Gross Value Added (GVA) impact associated with construction employment has also been estimated using GVA per construction worker within Greater Manchester. This was derived using Total GVA within the construction industry in Greater Manchester and total construction employment in Greater Manchester (ONS data[2])

15.31 Details on the assumptions applied regarding capital expenditure and construction timelines can be found in the 'assumptions' section of this chapter.

### Operational Impacts (qualitative appraisal)

15.32 Operational impacts arising from the Proposed Development consider:

- Changes in provision of open spaces.
- The assessment will provide a qualitative assessment of the wider socio-economic impacts of the new open space delivered as part of the Proposed Scheme, considering the potential benefits for existing residents in terms of new social infrastructure compared to current provision. The assessment is limited to open space provision as no other social infrastructure is planned for as part of the Proposed Development.

[1] For the assessment, a blended labour coefficient comprised of New Housing; Infrastructure; and Private Commercial has been used. For this assessment CAPEX has been converted to 2011 prices using the GDP deflator (as a measure of general price inflation) and appropriate category coefficients have been applied to arrive at the gross jobs figure.

[2] Employment was taken from BRES and Total GVA from Regional gross value added. Both datasets utilised 2019 data with a 2% annual uplift applied to arrive at an estimate for 2021 GVA per construction worker in Greater Manchester.

15.33 No on-site employment will be created once the Proposed Development is operational and so no operational economic assessment will be undertaken.

### Methodology for scenarios 1b, 1c, 2b and 2c

#### Construction Impacts (Quantitative and qualitative appraisal)

15.34 For 1b, assessment of job creation and GVA as detailed for 1a. There will be no quantitative assessment of job creation or associated GVA for 1c. This is because it is too early to accurately estimate the construction costs of the SRF which is required for the methodology.

15.35 While it is assumed that the Project Execution Plan (PEP) would be in place to ensure continued access for the existing local population, as well as to mitigate any residual adverse effects (including noise, vibration, air quality, and construction traffic movements) experienced by them, given the scale of development expected to take place, an assessment of the likely impacts of construction on the local community have been considered qualitatively, including potential disruption, access issues and severance.

#### Operational Impacts (Qualitative)

15.36 The assessment considers the following:

- Direct, indirect and induced employment generated during the operational phase of the Proposed Development and the wider Development Project. Given the residential nature of Application 4 within the wider Development Project, a quantitative approach to estimating operational jobs is not required.
- Likely increase to local expenditure due to the new residents moving into the wider Development Project due to Application 4..
- The contribution of new housing provisions will be considered against an assessment of housing need in Greater Manchester and the wider region. This will also consider the level of affordable housing provision against deprivation levels and local need to ascertain the ability to access affordable and suitable homes.
- Change in access to primary and secondary education, primary healthcare, open spaces, and play spaces:
- The impacts on local communities during the operation of the wider Development Project, including potential access for residents to new community facilities, notably open space, schools, and health care facilities.

#### Assessing net impacts

15.37 Additionality factors are detailed in the Homes and Communities Agency (HCA) Additionality Guide (HCA, 2014) and consist of:

- Leakage which refers to the proportion of outputs that benefit those outside of the development's target area or group. The development's target area or group is assessed by considering the project rationale and objectives, the policy context and who is expected to be affected.

- Economic multipliers which account for the further activity/employment beyond the project (for this assessment, a multiplier has been used to estimate indirect supply chain effects
- Displacement which shows how much benefit is being offset by reductions of benefit (e.g. employment) elsewhere;
- Deadweight, which accounts for that which would have occurred anyway (without the project), i.e. the level of outputs/outcomes that would happen in the absence of the intervention.
- Substitution, which asks 'will the intervention/option result in a firm substituting one activity or input for a similar one to take advantage of public funding? If yes, where and by how much?'

15.38 The additionality assumptions applied are detailed in Table 15-9 below.

*Table 15-9: Additionality assumptions applied*

| | **Zone of Impact[3]** | | | |
|---|---|---|---|---|
| **Additionality factors[4]** | **Manchester City Council Area** | | **Greater Manchester** | |
| Leakage | 25% | Medium leakage ready reckoner from the HCA Additionality Guide. At a borough level, leakage is likely to be higher i.e. greater employment sourced from other Manchester Boroughs and the wider region. | 10 % | Low leakage ready reckoner from the HCA Guide. It is assumed that the estimated number of construction workers required for the construction phase of the Proposed Development and the wider Development Project could be sourced from within Greater Manchester. |
| Displacement | 25% | A low displacement of construction employment has been assumed for the MCC Area and an even lower proportion for Greater Manchester. The HCA Additionality Guide estimates "low" displacement to be 25%. | 10 % | See across. |
| Multiplier[5] | 1.1 | Medium multiplier (average linkages) (neighbourhood level) | 1.5 | Medium multiplier (average linkages) (regional level) |
| Deadweight | 0%- For the purposes of this assessment the reference case is that the Site remains in its current (undeveloped) state. | | | |
| Substitution | 0% No substitution of construction jobs is anticipated to take place during the construction phase. | | | |

[3] Applying additionality factors to a neighbourhood level was not deemed to be appropriate given the granularity of geographical level. The purpose of displaying the two other zone of impacts (Manchester City Council area and Greater Manchester) is to illustrate the potential differences in magnitude of impact across these two areas; i.e. net construction employment impacts are likely to be greater across GM than in the Manchester City Council local authority area.
[4] Selected from HCA Additionality Guide (HCA, 2014)
[5] Composite multipliers have been applied which reflect indirect and induced impacts

### Study Area

15.39 The socio-economic assessment has identified the relevant geographical areas within which socio-economic impacts are likely to occur. The appropriate study area / the geographical extent of assessment varies depending on the socio-economic baseline information collected or socio-economic impact assessed. The general approach has been to consider:

- Neighbourhood level effects including Harpurhey and Cheetham Wards. Neighbourhood level effects include impacts of construction on the local community, including demolitions, potential disruption, access issues and severance, as well as increased local spend from temporary construction workers; and provision of accessible social infrastructure when operational including primary schools, GPs, and neighbourhood and local areas of play.
- Local effects on a borough-wide basis – Manchester City Council. Local level effects include access to additional new and affordable homes and new public green infrastructure, delivered as part of the Red Bank built development (Application 4).
- Strategic effects that area likely to be generated across the Greater Manchester region (all ten Council areas) including the gross value added, creation of addition employment opportunities in both the construction and operation phases, and access to the new City River Park.

15.40 In some cases, the study area has been subject to the geographical level of which the data is available.

### Methods of Baseline Data Collection

15.41 Prior to considering the socio-economic impacts it is necessary to establish a clear understanding of baseline socio-economic conditions within the geographical areas relevant to the Site.

15.42 The socio-economic assessment details local socio-economic conditions, including analysis of the following issues:

- A detailed breakdown of employment and unemployment data (including workforce data, breakdown of employment by broad industry groups, construction employment) – borough level;
- A profile of the local community (including resident population demography, working-age population, employment and qualifications, employment rates and average qualification rates) – borough level;
- Housing profile, deprivation and housing needs (level of housing provision, tenure of households within the study area, housing need, indices of deprivation) – borough level;
- An assessment of existing community facilities and capacity levels, including primary and secondary school provision, primary healthcare facilities and publicly accessible open space and provision of child and young people play space – neighbourhood level.

15.43 The socio-economic baselining exercise has primarily involved collating and analysing the following datasets: Census 2011 (unless the 2021 data has been released), Office of National Statistics datasets (such as the Business

Register and Employment Survey, Annual Population Survey and Census data), Index of Multiple Deprivation and HM Land Registry, Local Plan policy maps and observations from site visits.

15.44 The geographical level of the baseline analysis will be tailored to reflect the impact area relevant to each topic. Where relevant, local indicators will be compared to regional and national averages.

## Method of Assessment

15.45 The assessment uses a three-stage process, first, following a review of the baseline data local receptors are identified and assigned a sensitivity. Secondly following a review of the potential construction and methods and programme and operational affects, impacts upon socio-economic and population receptors are identified with a magnitude of change assigned. Thirdly an assessment is then made on the significance of the overall effect on the assessment topic (i.e. negligible, minor, moderate and major; adverse or beneficial) in order to identify any potentially significant effects.

### Identification of Sensitive Receptors (Part of step 1)

15.46 Receptors include economic entities, the local workforce, existing and future residents, and community resources including community facilities (e.g. schools, healthcare facilities), public open space and play space.

15.47 The specific receptors referred to in this assessment reflect the socio-economic impacts being considered. The assessment types and the receptors referred to are as follows:

*Table 15-10: Socio-economic receptors*

| Receptor group | Receptors |
|---|---|
| Local residents | Includes the existing and future population (includes consideration of affordable housing) |
| Local employees | Includes the existing and future employees |
| Local businesses | Includes existing and future businesses |
| Visitors | Future visitors to the Site |
| Social & Community infrastructure | Includes existing and future education facilities; health care facilities; open space, leisure and recreation facilities. |

15.48 The sensitivity of the receptors is defined as high, medium, low or negligible. In the context of socio-economics, the level of sensitivity depends upon the baseline conditions (i.e. the extent to which unemployment, skills deficit,

or social infrastructure issues etc. are present in an area and thus how much employment or social infrastructure are needed in that area). Sensitivity criteria is as follows:

*Table 15-11: Sensitivity criteria*

| Sensitivity | Definition |
|---|---|
| High | Many receptors on which many employers, businesses and/or people depend and generally where no substitutes are available. |
| Medium | Some receptors on which many employers, businesses and/or people depend, and for which some local substitutes are available. |
| Low | Very few local receptors on which employers, businesses and/or people depend. |
| Negligible | Negligible or no receptors on which businesses and/or people depend. |

### Assessing magnitude of change (step 2)

15.49 Assessing the magnitude of impact has considered the following variables:

*Table 15-12: Magnitude of impact key considerations*

| Magnitude of impact; key considerations | |
|---|---|
| Scale | The *scale* at which any effect will be felt (i.e. site level, at the immediate setting of the Site, at the scale of the study area) |
| Nature of the effect (direct or indirect) | Direct Effects – These are effects that arise from activities that form an integral part of the Proposed Development; e.g. construction employment.<br>Indirect effects – These are effects that arise from activities not explicitly forming part of the Proposed Development. Examples might include economic supply chain multiplier effects. |
| Duration | The duration of any effect. (e.g., short-term, long-term, permanent or temporary).<br>Temporary Effects – that persist for a limited period only, due, for example, construction activities.<br>Permanent Effects – that result from an irreversible change to the baseline environment (for example those which persist as a result of the operation of the Proposed Development). |
| International, national or local standards | |

| Magnitude of impact; key considerations |
|---|
| Relevant planning policy |

*Table 15-13: Magnitude of impact criteria*

| Magnitude of Impact | Definition |
|---|---|
| High | An impact that will be very adverse/beneficial, and very likely to affect large numbers of employees, businesses and/or people (with number depending on the local context and nature of the impact). The impact will usually continue and effectively constitute a permanent, long-term impact on the baseline conditions |
| Medium | An impact that is likely to affect a moderate number of businesses and/or people (with number depending on the local context and nature of the impact) |
| Low | An impact that is likely or may affect a small number of businesses and/or people (with number depending on the local context and nature of the impact) and/or that usually does not extend beyond the life of the project so that the baseline is not affected beyond a short or moderate-term duration |
| Negligible | An impact that is temporary in nature and/or is anticipated to have a slight or no effect on the well-being of businesses, people, or economic activity. |

### Assessing significance and characterising the effect (Step 3)

15.50 The significance of the effect reflects the relationships between the sensitivity of the affected receptor and the magnitude of impact, as presented in the matrix below

*Table 15-14: Significance of effect matrix Impact Matrix*

| Magnitude of Impact | Sensitivity of Receptor | | | |
|---|---|---|---|---|
| | High | Medium | Low | Negligible |
| High | Major | Major | Moderate | Minor |
| Medium | Major | Moderate | Minor | Negligible |
| Low | Moderate | Minor | Negligible | Negligible |
| Negligible | Minor | Negligible | Negligible | Negligible |

15.51 The potential significance of socio-economic impacts has been determined by reference to criteria for each receptor. In order to provide a consistent approach to expressing the outcomes of each of the assessments, the following terminology has been used to assist in determining the degree of significance.

15.52 Deviation from the standard criteria is not necessary. The standardised criteria defined below has been adopted with the significance levels of each effect categorised as either be adverse (produce disbenefits) or beneficial (produce benefits); (e.g. major beneficial, moderate beneficial, etc).

*Table 15-15: Significance criteria*

| Significance | Criteria |
|---|---|
| Major | These impacts are likely to be important considerations at a regional or district scale but, if adverse, are potential concerns to the project, depending upon the relative importance attached to the issue during the decision making process. Mitigation measures and detailed design work are unlikely to remove all of the impact upon the receptor. |
| Moderate | These impacts, if adverse, while important at a local scale, are not likely to be key decision making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or a particular resource. They represent issues where impacts will be experienced but mitigation measures and detailed design work may ameliorate/enhance some of the consequences upon affected communities or interest. Some residual impact may still arise. |
| Minor | These effects may be raised as local issues but are unlikely to be of importance in the decision making process. Nevertheless, they are of relevance in the detailed design of the project and consideration of mitigation measures. |
| Negligible | Potential impact is beneath levels of perception, within normal bounds of variation or within the margin of forecasting error. |
| No Impact | No Impact is predicted. |

### Significance Criteria

15.53 For socioeconomics, there is no accepted definition of what constitutes a significant (or not significant) socioeconomic effect, and so policy and professional experience will be used to assess the significant of the effects of the Proposed Development against baseline conditions.

15.54 Effects are described as adverse or beneficial. Moderate and major adverse or beneficial effects are 'significant' for the purposes of the assessment.

## Assumptions

### Receptors

15.55 The assessment has assumed that no residents, employees or businesses currently exist within the Site. As part of the Proposed Development (Application 2), it is understood that there is planned demolition of river walls but no other structures / buildings on site. Whilst Creamline Dairies will be demolished as part of Application 1 (assessed as part of the in-combination assessment), it is understood that this is Manchester City Council's asset (MCC purchased the Creamline Dairies building) and the building is currently empty.

### Capital Expenditure and construction timelines

15.56 The CAPEX estimates include professional fees, DM fees, surveys, inflation and contingency and are in the price year 2021. Where cost ranges were provided the lower bound was selected to be conservative, although estimated job estimates would be lower if contingency was excluded.

*Table 15-16: Capex Estimates*

| Scenario | Estimated CAPEX |
|---|---|
| Scenario 1a (Proposed development only; application 2) | £41,932,646 |
| Scenario 1b (Proposed development plus impacts associated with applications 1, 3 and 4) | Application 1: £1,667,354<br>Application 2: £41,932,646<br>Application 3: £8,000,000<br>Application 4: £1,100,000,000<br>Total: £1,151,600,000 |

15.57 In the absence of detailed cost profiles, it is assumed that construction costs are spread evenly over the anticipated timelines. It is anticipated that for application 2, the construction period is 2022-2024 (Scenario 1a). For applications 1-4, the construction period is anticipated to be 2022-2032.

## Limitations

15.58 The assessment has been undertaken using secondary sources and has not involved any primary surveys.

15.59 The consideration of other assessment scenarios has largely been a qualitative assessment based on publicly available documents, given the unavailability of detailed design as this stage in the process (with the exception of estimated construction employment for 1b).

15.60 The construction costs, used as the basis for quantifiable assessment, were based on indicative high-level estimates. The results presented in this EIA are therefore high-level estimates and are not based on detailed analysis.

15.61 The latest HCA guidance documents used to estimate potential employment impacts are standard, but somewhat outdated (Additionality Guide 2014; Calculating Cost Per Job Best Practice Note 2015).

15.62 Assessing indirect and induced impacts: It is recognised that the spatial context of supply chain effects could range from local to national and even international depending on the supply and sourcing of construction materials and other supplies. Furthermore, it is difficult to assess the level of spending captured locally at this stage.

### Consultation

15.63 The EIA Scoping Report identified that the assessment of socio-economic effects include consultation with the following bodies who have specific environmental responsibilities:

- Natural England;
- Environment Agency;
- Greater Manchester Ecology Unit (GMEU);
- Greater Manchester Archaeology Advisory Service (GMAAS);
- Transport for Greater Manchester (TfGM);
- United Utilities;
- City Council Highway Services;
- City Council Environmental Health;
- City Council Flood Risk Management;
- City Council Arborist;
- City Council works and skills;
- Aerodrome Safeguarding;
- Design for Security at Greater Manchester Police.

15.64 Consultation on the scoping report was undertaken by Deputy Director of Planning at Manchester City Council. There were no socio-economic issues raised by Manchester City Council's case officer in this response (see EIA Scoping Opinion at **Appendix 2.2**).

# Baseline Conditions

15.65 This section describes the baseline conditions at the Site (and surrounding area as appropriate). The table below provides an explanation of why each baseline element has been considered.

*Table 15-17: Justification for baseline elements*

| Assessment | Reasons for inclusion |
|---|---|
| Population | Population data illustrates how densely populated the area of intervention this. More densely populated areas increase the potential likelihood of disturbance or effects on nearby residents and local businesses for example. Understanding population density helps to inform the types of effects which are likely to occur. |
| Employment, Unemployment and Qualifications | Understanding existing levels of income, benefit claimants, economic activity, the relative dominance of certain industries and job types / occupations helps to assess the supply of labour and informs the sensitivity of the Site to the effects of job creation. |
| Housing | Understanding the current provision of housing, or lack of, including the types of housing and quality of housing helps to inform the effects of new housing provision. |
| Deprivation | Understanding the levels of deprivation helps to inform the sensitivity of the Site to the effects of investment, such as job creation, with more deprived areas potentially being more sensitive to investment. |
| Social and community infrastructure (education, open space, health) | Considering local provision and capacity of local community facilities such as schools and healthcare providers helps to assess if the development is likely to cause excess demand and therefore exceed the capacity of current infrastructure. If this is deemed to be the case, additional provisions will likely be required as a mitigation. Furthermore, understanding the existing provision of open space may provide a useful indication of the relative benefit of new green infrastructure. |

### Population

15.66 The Proposed Development Site (PDS) lies across the Cheetham and Harpurhey Wards. Cheetham saw a population decline between 2011 and 2020, dropping from 22,562 residents to 20,557 respectively. For the same period, Harphurey has seen a population increase, from 17,652 in 2011 to 19,872 in 2020. Manchester's population

as a whole is however on the rise. The Manchester Local Authority area had a population of 503,127 in 2011 and is predicted to reach 598,149 in 2043 (ONS, 2018), after seeing an estimated population increase of 0.5% from mid-2019 to mid-2020 (ONS, 2021a). At the regional level, the Greater Manchester area had a 2011 population of 2,553,379 which is predicted to reach 3,097,334 in 2043 (ONS, 2018), demonstrating that Manchester's growth is part of the broader growth of the region.

15.67 In 2011, Cheetham and Harpurhey's working age population (those aged 16 to 64) was recorded as 15,544 (69%), in Cheetham and 11,714 (66%) in Harpurhey (ONS, 2018). These figures were below those of Manchester LA (71%) but just above those for the Greater Manchester area (65.6%), the North-West region (64.5%) and England (64.8%) (ONS, 2018). There were also more children aged 15 and under in Cheetham (24.7%) and Harpurhey (23.3%) compared to Manchester as a whole (19.3%) (ONS, 2018). Ethnically, Cheetham ward was far more diverse than Harpurhey and Manchester overall, with 62.8% of its residents identifying as Black, Asian or Minority Ethnic in 2011, compared to 28.9% and 33.4% respectively (ONS, 2018).

### Employment, Unemployment and Qualifications

15.68 This section describes the nature of the local economy and the types of existing jobs in the local area. Specifically, it looks at; income, benefit claimants, economic activity and the relative dominance of certain industries, as well job types / occupations.

15.69 In 2011, the predominant occupations for Cheetham's residents were 'Elementary occupations' (17.9%), 'Professional occupations' (16%) and 'Sales and customer service occupations' (13.9%) (ONS, 2018). For Harpurhey they were 'Elementary occupations' (24.2%), 'Caring, leisure and other service occupations' (13.8%) and 'Sales and customer service occupations" (10.8%) (ONS, 2018). In comparison, 'Professional occupations' was the predominant occupation for Manchester (20%) and Greater Manchester (16.6%) (ONS, 2018). According to the ONS 2021 Annual Population Survey, 'Professional occupations' was still the most common occupation at 33%, which is a higher proportion than Greater Manchester (24%), the North West (22%) and England (23.4%) (ONS, 2021b).

The median annual gross pay for residents of Manchester in 2021 was £27,502, placing it below Greater Manchester (£28,980), the North West (£29,655) and England (£31,490) (ONS, 2021c).

15.70 Table 15-18 below summarises the qualification attainment of Manchester's working age population for the year 2020 and compares it against wider geographies. The data shows that when compared to Greater Manchester, England and the North West, Manchester has the lowest percentage of residents with GCSEs, A-Levels or in higher education. However, it does have a greater percentage of people with a degree level education, perhaps indicating that highly educated people from outside of Manchester are choosing to live in the city.

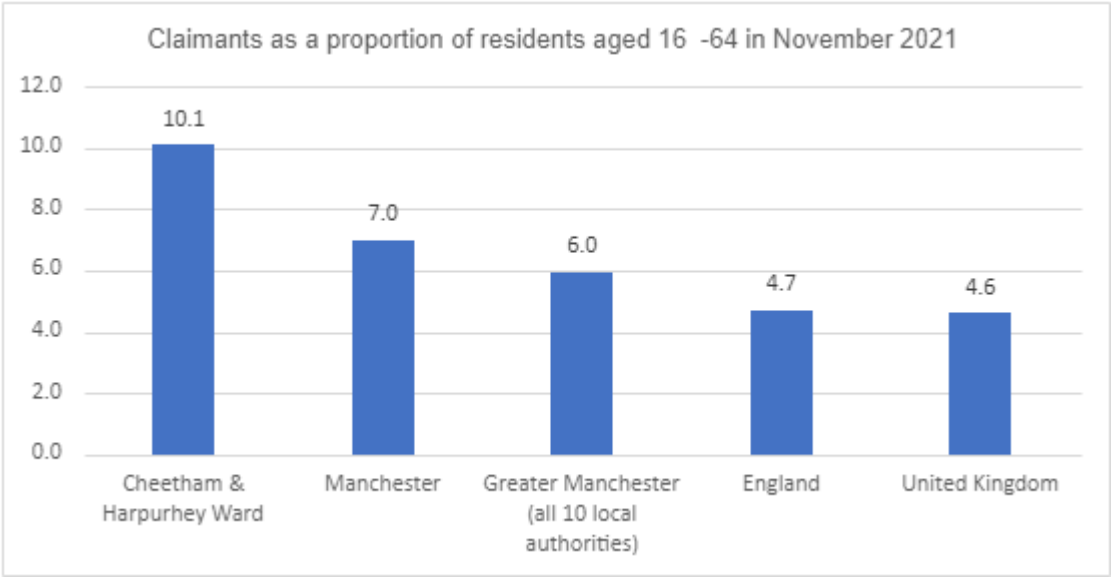
*Table 15-18: Qualification attainment of Manchester's working age population (ONS, 2020)*

| | Manchester LA | | Greater Manchester | | England | | North West | |
|---|---|---|---|---|---|---|---|---|
| **Qualification** | **Count** | **%** | **Count** | **%** | **Count** | **%** | **Count** | **%** |
| None | 28,900 | 8% | 138,100 | 8% | 2,153,900 | 6% | 340,800 | 8% |
| GCSE grades A*-C or equivalent ) | 59,100 | 16% | 395,400 | 23% | 7,077,700 | 21% | 1,021,700 | 23% |
| GCE A-level or equivalent ) | 70,200 | 18% | 388,100 | 22% | 7,533,100 | 22% | 1,011,100 | 23% |
| In Higher Education ) | 24,300 | 6% | 116,800 | 7% | 2,612,500 | 8% | 339,700 | 8% |
| Degree or equivalent ) | 163,500 | 43% | 580,600 | 33% | 12,260,900 | 36% | 1,389,600 | 32% |
| Other Qualifications ) | 34,600 | 9% | 134,500 | 8% | 2,623,500 | 8% | 295,900 | 7% |

15.71 In 2020, 3.9% of Manchester's households were unemployed**Error! Bookmark not defined.**. Between January and November 2021, an average of 9.9% of Cheetham's working age residents claimed Universal Credit or Jobseeker's Allowance, less than the 12.9% of Harpurhey's working age residents (ONS, 2021d).

15.72 **Figure 15.1** below displays the number of claimants as a proportion of residents aged 16-64 in November 2021 (Source: ONS; claimant count data).

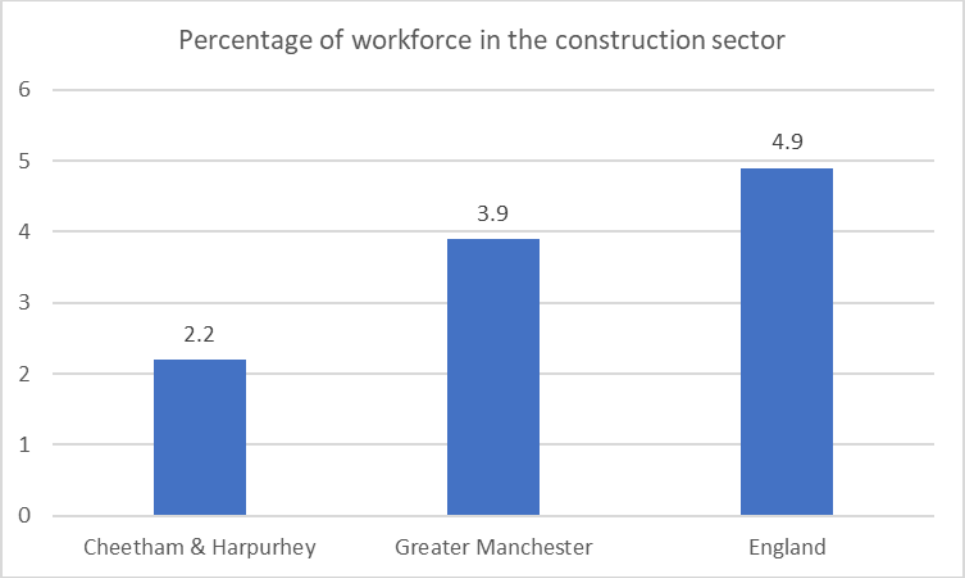
*Figure 15.1: Claimants as a proportion of residents aged 16-64 in November 2021*



### Construction Sector Employment

15.73 To generate an understanding of the significance of job creation, total employment for the construction sector within Greater Manchester have been collected as a benchmark (Source: BRES, ONS. Data relates to 2020). Cheetham and Harpurhey have less than half the national average of their workforce in the construction industry, with only 2.2% compared to the national average of 4.9%. Greater Manchester also has relatively lower levels of employment within the construction sector. **Figure 15.2** below shows the percentage of workforce within the construction sector for Cheetham and Harpurhey, Greater Manchester and England.

*Figure 15.2: Percentage of workforce in the construction sector*




## Housing

15.74 This section considers the housing profile of the area and levels of deprivation.

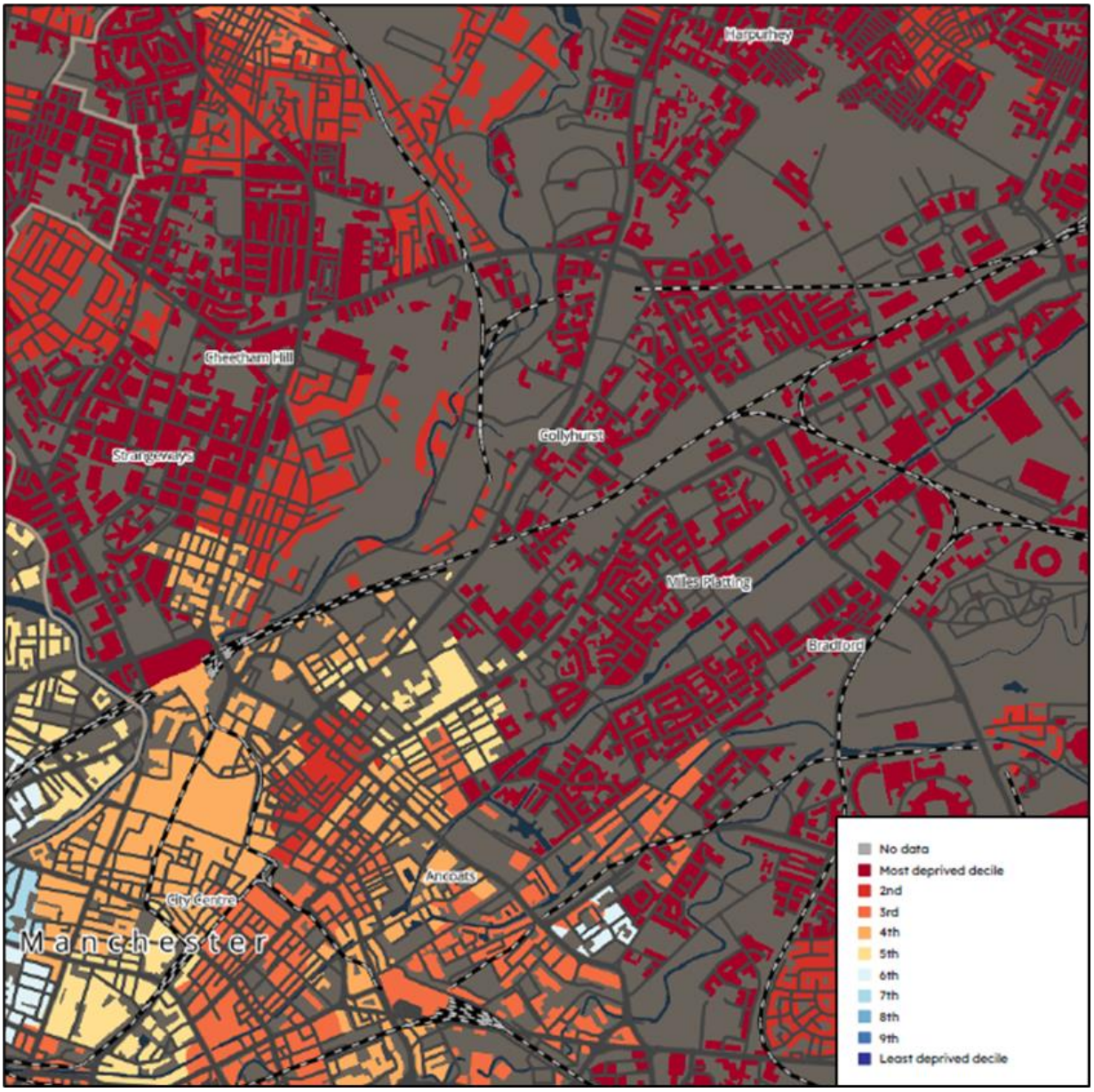
15.75 In 2011, Cheetham had 8,730 dwellings, 6.4% of which were detached, 23.5% semi-detached, 29.5% terraced and 40.2% flats (ONS, 2018). In Harpurhey there were 8,145 dwellings, 4.1% of which were detached, 21.6% semi-detached, 49.5% terraced and 24.8% flats (ONS, 2018). Policy JP-H 1, of the Places for Everyone long term plan for nine of Greater Manchester's districts, states that Manchester is expected to be able to deliver an average of 3,533 new homes a year between 2021 and 2037 (GMCA, 2021).

15.76 In 2011, Cheetham 66.1% of households were privately owned or rented, whilst 32.3% were socially rented (ONS, 2018). In Harpurhey 55.6% were privately owned or rented and 42.5% were socially rented (ONS, 2018). Both wards therefore had a higher proportion of socially rented housing in comparison to Manchester (31.6%), Greater Manchester (21.9%) and England (17.7%) (ONS, 2018).

15.77 The PDS falls within the Manchester 056C Lower Super Output Area (LSOA). In the 2019 Indices of Multiple Deprivation (IMD) it ranked 5,691 out of 32,844 LSOAs in England (where 1 is the most deprived), making it amongst the 20% most deprived neighbourhoods in the country (MHCLG, 2019). Manchester Local Authority was ranked

the second most deprived LA out of 317 LAs in 2019, highlighting the difficulties the city faces in all seven domains that influence the IMD; income, employment, health, education, crime, barriers and living. **Figure 15.3** below provides a visual depiction of the deprivation the area around the PDS faces (CDRC, 2019). In comparison to the more central area of Manchester to the south-west it is quite significantly more deprived, however it aligns with the other neighbouring areas that sit at the periphery of the city centre.

*Figure 15.3: Map showing indices of multiple deprivation in the area containing the PDS*



## Social and Community Infrastructure

### Education

*Primary Schools*

15.78 According to Transport for Greater Manchester, 75% of primary school children travel less than two kilometres to school, equating to a 12-minute walk or a four-minute bike ride (TfGM, 2022). Table 15-19 below shows the 24 primary schools within a 2km radius of the centre of the PDS, along with the maximum capacity for each school and the number of pupils currently enrolled. Of these schools, 20.8% of them are over capacity – however the majority of the schools are not at full capacity, meaning that the area should be able to accommodate an increase in pupil numbers.

*Table 15-19: Primary schools within 2km of the PDS and their capacity (Department for Education, 2021)*

| | Establishment | Phase of Education | School Capacity | Number of Pupils | % above/below capacity |
|---|---|---|---|---|---|
| 1. | Abbott Community Primary School | Primary | 240 | 244 | 101.7% |
| 2. | Abraham Moss Community School | All-through | 1830 | 1823 | 99.6% |
| 3. | Cheetham CofE Community Academy | Primary | 690 | 670 | 97.1% |
| 4. | Cheetham CofE Community School | Primary | 420 | Not available | 0.0% |
| 5. | Chetham's School of Music | Age 8-19 | 335 | 328 | 97.9% |
| 6. | Irk Valley Community School | Primary | 472 | 462 | 97.9% |
| 7. | King of Kings | All-through | 50 | 23 | 46.0% |
| 8. | Manchester Communication Primary Academy | Primary | 420 | 424 | 101.0% |
| 9. | Marlborough Road Academy | Primary | 480 | 345 | 71.9% |
| 10. | New Islington Free School | Primary | 420 | 318 | 75.7% |
| 11. | Oasis Academy Harpur Mount | Primary | 420 | 442 | 105.2% |
| 12. | Oasis Academy Temple | Primary | 709 | 686 | 96.8% |
| 13. | Park View Community Primary | Primary | 459 | 402 | 87.6% |
| 14. | River View Community Primary School | Primary | 420 | 483 | 115.0% |
| 15. | Saviour CofE Primary School | Primary | 210 | 211 | 100.5% |
| 16. | St Anne's RC Primary School | Primary | 218 | 202 | 92.7% |
| 17. | St Augustine's CofE Primary School | Primary | 240 | 222 | 92.5% |
| 18. | St Chad's RC Primary School | Primary | 240 | 238 | 99.2% |
| 19. | St Edmund's RC Primary School | Primary | 240 | 224 | 93.3% |
| 20. | St Malachy's RC Primary School | Primary | 248 | 221 | 89.1% |
| 21. | St Patrick's RC Primary School | Primary | 250 | 176 | 70.4% |

| | Establishment | Phase of Education | School Capacity | Number of Pupils | % above/below capacity |
|---|---|---|---|---|---|
| 22. | The Cathedral School of St Peter and St John RC Primary | Primary | 240 | 203 | 84.6% |
| 23. | The Friars Primary School | Primary | 450 | 323 | 71.8% |
| 24. | Unity Community Primary | Primary | 330 | 290 | 87.9% |

*Secondary Schools*

15.79 Table 15-20 below shows the 10 secondary schools within a 2km radius of the centre of the development PDS, along with the maximum capacity for each school and the number of pupils currently enrolled. None of the schools are currently at capacity, indicating that an increase in pupil numbers can be accommodated at all establishments. However, three of the 10 schools are less than 1% away from reaching capacity.

*Table 15-20: Secondary schools within 2km of the PDS and their capacity (Department for Education, 2021)*

| | Establishment | Phase of Education | School Capacity | Number of Pupils | % of capacity |
|---|---|---|---|---|---|
| 1. | Abbey College Manchester | Age 14-23 | 264 | 156 | 59.1% |
| 2. | Abraham Moss Community School | All-through | 1830 | 1823 | 99.6% |
| 3. | Beis Ruchel Girls High School | Secondary | 370 | 307 | 83.0% |
| 4. | Chetham's School of Music | Age 8-19 | 335 | 328 | 97.9% |
| 5. | Eden Boys' Leadership Academy, Manchester | Secondary | 800 | 495 | 61.9% |
| 6. | Eden Girls' Leadership Academy , Manchester | Secondary | 800 | 497 | 62.1% |
| 7. | King of Kings | All-through | 50 | 023 | 46.0% |
| 8. | Manchester Communication Academy | Secondary | 1200 | 1191 | 99.3% |
| 9. | The Cooperative College | Not applicable | Not available. | Not available. | Not available. |
| 10. | The Manchester College | 16 plus | Not available. | Not available. | Not available. |

*Nurseries*

15.80 Nurseries within a 2km radius of the centre of the development site are shown below. It should be noted that children on nursery rolls do not all attend at the same time and as such nurseries have greater flexibility in terms of capacity. Data is therefore not available for the capacity of the below facilities specifically for nursery provision:

- Acorn Grove Nursery
- Childminders "LoveOurChild" Child Care
- Clever Bees Nursery Ltd

- Collyhurst Nursery School & Children's Centre
- Echoes Day Nursery
- Little Learning Ladder
- N X T Generation Childcare Ltd
- Over The Rainbow Day Care
- Paint Pots Manchester Day Nursery
- Park View Community School
- St Anne's R C Nursery School
- Tarbiyah Nurseries Ltd
- The King Of Kings School
- Tiddlywinks Nursery Ancoats
- Tiny Tigers Nursery ltd
- WMB Carisbrook Day Nursery
- WMB Cornerstone Day Nursery (The Beehive)
- WMB Hillcity Day Nursery
- WMB Winstanley Day Nursery

### Health Provision

15.81 The Site lies within the Manchester Clinical Commissioning Group (CCG) which has 519 General Practitioners (GPs) serving 689,595 patients (which includes both dispensing and prescribing lists), meaning there is an average of 1,329 patients per GP (NHS Business Services Authority, 2021). Whitley Road Medical Centre is the only GP surgery within a 1km radius of the PDS and provides five GPs for their 6,175 patient list, equating to 1,235 patients per GP (NHS Business Services Authority, 2021). The national target GP to patient ratio is currently 1 GP to 1,800 patients therefore there is currently a surplus in the local GP provision.

### Open Space

15.82 According to Manchester City Council, local parks, amenity green space and a provision of open space for young people should be within a 10-minute walk (480m) of all residents, as shown in **Figure 15.4** below (MCC, 2012). There are just two open spaces within this radius of the PDS (measured from the centre of the site), offering various forms of open space, however none of them offer children's play facilities;

- St Catherine's - green space / landscaped area that runs alongside the River Irk. Located approximately 115m north-east of the site.
- St Michael's Flags & Angel Meadow Park - green space / landscaped area on the Site of a former burial ground. Located approximately 345m south-west of the site.

15.83 If the radius is widened to a 15-minute walk (720m), one additional area of green space is included;

- Sand Hills - green space / landscaped area that forms part of the Irk Valley green corridor. Located approximately 700m north-east of the site.

15.84 Just outside the 720m boundary lies Village Park to the east and Cheetham Park to the west.

*Figure 15.4: Extract from the MCC Core Strategy (MCC, 2012) which shows the recommended provision of open space*

| Open space type | Quantity | Accessibility |
|---|---|---|
| City Parks | 0.2 ha per 1000 population | 15 minute Public Transport Time<br><br>City Centre – 15 minute drive time (Public Transport) |
| Local Parks | 0.49 ha per 1000 population | 10 minute walk time (480m) |
| Natural and Semi Natural Open Space | 1.86 ha per 1000 population | 15 min walk (720m)<br><br>City Centre – 15 minute drive time (Public Transport) |
| Amenity Green Space | 0.40 ha per 1000 population | 10 minute walk time (480m) |
| Provision for Children | 0.0265 ha per 1000 population | 10 minute walk time (480m) |
| Provision for Young People | 0.035 ha per 1000 population | 15 minute walk time (720m) |
| Outdoor Sports | 0.98 ha per 1000 population | 15 minute walk time – grass pitches, tennis courts and bowling greens<br><br>20 minute drive time for athletics facilities and Synthetic Turf Pitches.<br><br>Golf Courses – 30 minutes drive time. |
| Allotments | 0.13 ha per 1000 population | 15 minute walk time |
| Indoor Sports | Quality standards only - see below | Quality standards only - see below |

## Key conclusions of baseline conditions

15.85 The baseline sets out the demographic conditions and levels of social infrastructure in and around the Site area. This assists in understanding the sensitivities of the receptors and the types of effects that are likely to occur. The key findings of the baseline review are as follows:

- Manchester's populations is growing, and is expected to continue to grow over the next 20 years. Despite this, Cheetham ward has experienced some decline in population since 2011.
- The two wards and Greater Manchester have a larger than UK average working age population. In both wards, the predominant occupation is 'Elementary occupations'. The ONS states that this major group covers occupations which require the knowledge and experience necessary to perform mostly routine tasks, often involving the use of simple hand-held tools and, in some cases, requiring a degree of physical effort. Most

occupations in this major group do not require formal educational qualifications but will usually have an associated short period of formal experience-related training. This compares with Manchester and Greater Manchester, which are dominated with occupations that require a degree or equivalent qualification.

- Qualification attainment from GCSE to Higher Educations levels is lower in Manchester and Greater Manchester compared with both the North-West and England. There is a higher rate of no qualifications than the English average. Conversely, attainment of degree level qualifications are higher in Manchester than the rest of England.
- There is high demand for housing across Greater Manchester, with a need for 3,533 new homes annually to 2037, including the provision of affordable housing. This is notable within the Site area which falls into the 20% most deprived neighbourhoods in the country.
- However, education provision including early years, primary and secondary education is adequate within the surrounding areas, with schools reporting surplus capacity to absorb some future demand. However, new provision is likely to be required to accommodate the level of new housing that is expected to be delivered.
- While some surplus capacity is recorded in nearby GP surgeries to accommodate immediate growth, it is likely that additional provision is required to support new residents.
- There are just three open spaces surrounding the Site, none of which offer children's play facilities.

## Receptors and Receptor Sensitivity

15.86 The table below sets out the identified receptors (both existing and introduced), their sensitivity and the rationale behind this categorisation.

*Table 15-21: Identified receptors and their sensitivity*

| Sensitivity | Definition | Receptor group and Assessment of Receptor sensitivity | Rationale |
|---|---|---|---|
| High | Many receptors on which many employers, businesses and/or people depend and generally where no substitutes are available. | Local residents (Includes the existing and future population) | By definition, residents spend some, if not all, of their time within the study area and are therefore sensitive to changes in their environment. |
| Medium | Some receptors on which many employers, businesses and/or people depend, and for which some local substitutes are available. | Local employees (Includes the existing and future employees) | Whilst local employees have the potential to benefit from jobs generated during the construction phase, in Cheetham and Harpurhey, residents are predominantly employed in 'Elementary Occupations but the development would likely need "Skilled Trades Occupations" to fill the kinds of jobs available. There is therefore no guarantee that all those looking for work are looking for construction jobs and/or would meet the requirements. |
| | | Local businesses (Includes existing | Local businesses have the potential to indirectly benefit from jobs generated during the construction phase, as construction workers are likely to spend locally e.g. in shops and hospitality venues. |

| Sensitivity | Definition | Receptor group and Assessment of Receptor sensitivity | Rationale |
|---|---|---|---|
| | | and future businesses) | |
| | | Social & Community infrastructure (Includes existing education facilities; health care facilities; open space, leisure and recreation facilities) | There is no existing social and community infrastructure within the PDS. Whilst social and community infrastructure in the local area will be sensitive to changes in population, it is assumed that this will be a material consideration within the infrastructure delivery plan for the scheme; e.g. provision of a new primary school, a nursery, a health centre, and other social infrastructure as part of the Red Bank development. |
| Low | Very few local receptors on which employers, businesses and/or people depend. | Visitors (Future visitors to the Site) | By definition, visitors (to the City Park, in the case of this assessment) can choose whether or not to visit. Visitors have socio-economic value and could contribute to the local economy (albeit less so than residents and employees). |
| | | The local and regional economy | Whilst the local and regional economy is expected to benefit from the Proposed Development, the wider Development Project and the wider SRF, the economy is not sensitive to the scheme's proposals. |
| Negligible | Negligible or no receptors on which | The national economy | The national economy is deemed to be resistant to the change resulting from the Proposed Development, the wider Development Project and the wider SRF. |

| Sensitivity | Definition | Receptor group and Assessment of Receptor sensitivity | Rationale |
|---|---|---|---|
| | businesses and/or people depend. | | |

# Embedded Mitigation

### Demolition and Construction

15.87 No embedded mitigation measures have been identified as part of the demolition and construction phases.

### The Completed and Operational Development

15.88 In relation to Scenario 2b, it is anticipated that community and social infrastructure is provided as part of the Red Bank development (application 4). Although there is surplus capacity in the existing local school and GP provision, given the level of new housing to be delivered, additional provision is likely to be required. It is understood that this could include a new primary school with associated nursery facility, a health centre and other social infrastructure, a community clubhouse, and high street uses including shops, restaurants and cafes (Red Bank Regeneration, 2021 – Phase 2 Consultation). Full details of the community and social infrastructure proposed is not yet available however it is anticipated that this will be considered in greater detail during subsequent applications; once infrastructure delivery plans have been finalised, for example.

15.89 In relation to Scenario 2c, limited details are available on the proposed community and social infrastructure to be provided in the wider SRF area however the Northern Gateway SRF (MCC, 2019b) anticipates that a range of facilities, amenities, and community spaces will be provided to support the new residential and mixed-use population. Given the approach to the assessment, it is assumed that the infrastructure delivery requirements will be considered in detail at each subsequent application stage.

# Standard Mitigation

### Demolition and Construction

15.90 The construction of the Proposed Development results in no loss of existing amenity or services used by current residents (Scenario 1a). However, in order to ensure continued access for the existing local population, as well as to mitigate any residual adverse effects (including noise, vibration, air quality, and construction traffic movements) experienced by them, a PEP will be required through planning conditions. This will require standard well-tested mitigation measures to be put in place by the contractor to reduce any potential adverse impacts from construction and to protect the amenity of the existing local population.

15.91 For Applications 1, 3 and 4, it is assumed that the impact of construction will be considered further within their respective applications. However, it is assumed that construction hours would be limited within daylight hours and avoid peak times to mitigate these impacts. It is also assumed that employees and businesses will be given sufficient notice and alternatives regarding the aforementioned effects and alternative access routes where appropriate.

### The Completed and Operational Development

15.92 No further standard mitigation measures have been identified in relation to the completed and operational development.

## Assessment of Likely Significant Effects

15.93 This section presents an assessment of the potential socio-economic impacts, which are divided into those occurring in the construction and operational phases of the project.

### Demolition and Construction

Assessment Scenario 1a – Proposed Development Only

*Effect 1: Temporary direct, indirect and induced employment during the construction phase.*

15.94 Construction impacts are defined as those temporary effects that arise during enabling works and construction which cease after the completion of construction. There will be direct employment effects through the construction of the Proposed Development as well as wider effects through indirect and induced effects. During the construction phase, employment would be generated directly in construction and through both the supply chain (indirect impacts) and wage expenditure (induced impacts).

15.95 Having estimated the total direct construction jobs generated within the construction phase of the Proposed Development, the net employment for the Impact Areas has been taken into account. Additionality has been calculated by considering the overall impact of job gains to the area based on the additionality assumptions outlined in Table 15-9.

15.96 Table 15-22 below presents the additionality calculation and assumed values when applied to the construction jobs (FTE workers) created during the construction phase of the Proposed Development. The table sets out the analysis of net employment across the local authority area and Greater Manchester (the impacts should not be added together).

15.97 It is assumed that these impacts would be annual (in each construction year).

*Table 15-22: Construction jobs created during the construction phase*

| | Manchester City Council Area | Greater Manchester |
|---|---|---|
| **Direct Construction Employment (gross)** | **286** | **286** |

| | Manchester City Council Area | Greater Manchester |
|---|---|---|
| After Leakage | 214 | 257 |
| After Displacement | 161 | 232 |
| **Direct Construction Employment (net)** | **161** | **232** |
| After Composite Multiplier Effect | 177 | 347 |
| **Net additional construction jobs (direct, indirect and induced)** | **177** | **347** |
| **GVA associated with all net jobs (direct, indirect and induced)** | **£14.03m** | **£27.54m** |

15.98 This analysis estimates that the local net construction effect could equate to 177 FTE construction jobs within the Manchester borough and 347 within Greater Manchester during each construction year.

15.99 The Proposed Development would result in indirect benefits including supply chain effects and spending by construction workers within shops surrounding the Site. The composite multiplier has sought to capture these indirect and induced benefits through estimating indirect and induced employment and associated GVA. Whilst these indirect effects cannot be robustly deduced at this stage, the values presented intends to provide an indication of magnitude; that is, it is anticipated that the effect on the supply chain and local economy would be **beneficial** but **Not Significant**.

15.100 Within Manchester (borough-level) and Greater Manchester (all 10 boroughs), there are relatively high unemployment rates compared to the UK average (2.4% and 1.4% percentage points higher respectively in November 2021). In the Cheetham and Harpurhey Wards in which the Site is located, the number of claimants is significantly higher than the UK average (5.4% higher). In addition, there are relatively high concentrations of deprivation across the impact areas.

15.101 Despite this effect being beneficial, job creation is relatively low, especially within the context of the population of the Manchester City Council Local Authority Area and Greater Manchester region. Whilst some workers will come from within the wards, it is likely that a lot will come from across the borough and Greater Manchester. This is reinforced by the lower than national average proportion of the workforce within construction employment within Greater Manchester. Furthermore, in Cheetham and Harpurhey wards, residents are employed in predominantly 'Elementary Occupations but the development would likely need "Skilled Trades Occupations" to fill the kinds of jobs available. This further rationalises the assessment of existing employees as medium sensitivity; that is, there

is no guarantee that all those looking for work are looking for construction jobs and/or would meet the requirements.

15.102 To summarise, whilst the creation of construction jobs would result in beneficial effects on receptors seeking employment at the Greater Manchester level (employees are expected to be drawn from a wider area given the Site's accessible location), the quantum of employment is not considered to be significant at these scales.

*Table 15-23: Significance of effect – assessment Scenario 1a, effect 1*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | Local employees (medium sensitivity) |
| Magnitude of Effect | Duration: Temporary<br>Scale: Manchester City Council Local Authority Area and Greater Manchester<br>Nature: Direct and indirect<br>Overall: Low |
| Effect | **Minor Beneficial (Not Significant)** |

*Effect 2: Potential Disruption through Changes to Environmental Quality*

15.103 While it is assumed that the PEP would be in place to ensure continued access for the existing local population, as well as to mitigate any residual adverse effects (including noise, vibration, air quality, and construction traffic movements) experienced by them, given the scale of development expected to take place, local residents and businesses may be impacted. It is assumed that an increase in HGV movements could potentially impact access for residents and businesses and cause vibrations.

*Table 15-24: Significance of effect – assessment Scenario 1a, effect 2, local residents*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | Local residents (high sensitivity) |
| Magnitude of Effect | Duration: Temporary<br>Scale: Neighbourhood level (Harpurhey and Cheetham Wards)<br>Nature: Direct<br>Overall: Negligible |
| Effect | **Minor Adverse (Not Significant)** |

*Table 15-25: Significance of effect – assessment Scenario 1a, effect 2, local businesses.*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | Local businesses (medium sensitivity) |
| Magnitude of Effect | Duration: Temporary<br>Scale: Neighbourhood level (Harpurhey and Cheetham Wards)<br>Nature: Direct<br>Overall: Negligible |
| Effect | **Negligible (Not Significant)** |

Assessment Scenario 1b – Proposed Development plus impacts associated with Applications 1, 3 and 4

*Effect 1: Temporary Direct, Indirect and Induced Employment During the Construction Phase.*

15.104 Table 15-26 below presents the additionality calculation and assumed values when applied to the construction jobs created during the construction phase of the Proposed Development and the wider Development Project (Applications 1, 3 and 4). The table sets out the analysis of net employment across the local authority area and Greater Manchester.

*Table 15-26: Construction jobs created during the construction phase*

| | **Manchester City Council Area** | **Greater Manchester** |
|---|---|---|
| **Direct Construction Employment (gross)** | **1570** | **1570** |
| After Leakage | 1178 | 1413 |
| After Displacement | 883 | 1272 |
| **Direct Construction Employment (net)** | **883** | **1272** |
| After Composite Multiplier Effect | 972 | 1908 |
| **Net additional construction jobs (direct, indirect and induced)** | **972** | **1908** |

| | Manchester City Council Area | Greater Manchester |
|---|---|---|
| **GVA associated with all net jobs (direct, indirect and induced)** | **£77.05m** | **£151.29m** |

15.105 This analysis estimates that the local net construction effect could equate to 972 FTE construction jobs within the Manchester borough and 1,908 within Greater Manchester during each construction year.

15.106 Whilst the anticipated effects are still temporary, the construction period is over a relatively significant duration (10 years); significantly longer than under scenario 1b. The number of jobs created is also significantly higher than under scenario 1a and therefore more substantial within the context of the population of the Manchester City Council Local Authority Area and Greater Manchester region. The magnitude of effect has therefore been categorised as Medium.

*Table 15-27: Significance of effect – assessment Scenario 1b, effect 1*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | Local employees (medium sensitivity) |
| Magnitude of Effect | Duration: Temporary<br>Scale: Manchester City Council Local Authority Area and Greater Manchester<br>Nature: Direct and indirect<br>Overall: Medium |
| Effect | **Moderate Beneficial (Significant)** |

*Effect 2: Potential Disruption through Changes to Environmental Quality*

15.107 While it is assumed that the PEP would be in place to ensure continued access for the existing local population, as well as to mitigate any residual adverse effects (including noise, vibration, air quality, and construction traffic movements) experienced by them, given the scale of development expected to take place, local residents and businesses may be impacted. It is assumed that an increase in HGV movements could potentially impact access for residents and businesses and cause vibrations.

15.108 The changes in environmental quality relating to scenario 1b will be considered in greater detail within the subsequent applications (3 and 4).

*Table 15-28: Significance of effect – assessment Scenario 1b, effect 2, local residents*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | Local residents (high sensitivity) |
| Magnitude of Effect | Duration: Temporary<br>Scale: Neighbourhood level (Harpurhey and Cheetham Wards)<br>Nature: Direct<br>Overall: Negligible |
| Effect | **Minor Adverse (Not Significant)** |

*Table 15-29: Significance of effect – assessment Scenario 1b, effect 2, local businesses*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | Local businesses (medium sensitivity) |
| Magnitude of Effect | Duration: Temporary<br>Scale: Neighbourhood level (Harpurhey and Cheetham Wards) Nature: Direct<br>Overall: Negligible |
| Effect | **Negligible (Not Significant)** |

Assessment Scenario 1c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

*Effect 1: Temporary Direct, Indirect and Induced Employment During the Construction Phase.*

15.109 Whilst the anticipated effects are still temporary, the construction period is over a relatively significant duration (15-20 years); significantly longer than under scenario 1b.

15.110 As the CAPEX costs for the wider SRF are unknown at this stage, it has not been possible to quantitatively assess employment impacts. However, given the scale of development (the area covered by the SRF takes up nearly a third of the size of the extended city centre (MCC, 2019b)), it is likely that the number of construction jobs created would be **Significant**, both in terms of the number of direct construction jobs but also indirect and induced impacts. For example, a significant number of construction workers on site for the next 15-20 years would

seemingly have a significant contribution to the local economy (e.g. in local shops, hospitality venues, local transport etc).

*Table 15-30: Significance of effect – assessment Scenario 1c, effect 1*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | Local employees (medium sensitivity)<br>Local businesses (medium sensitivity) |
| Magnitude of Effect | Duration: Temporary<br>Scale: Manchester City Council Local Authority Area and Greater Manchester<br>Nature: Direct and indirect<br>Overall: High |
| Effect | **Major Beneficial (Significant)** |

***Effect 2: Potential Disruption through Changes to Environmental quality***

15.111 While it is assumed that the PEP would be in place to ensure continued access for the existing local population, as well as to mitigate any residual adverse effects (including noise, vibration, air quality, and construction traffic movements) experienced by them, given the scale of development expected to take place, an assessment of the likely impacts of construction on the local community has been considered.

15.112 Recognising the scale of the SRF development, the likely impacts of construction on the local community will be considered in greater detail within each respective application, in order to take into account the site-specific context and design plans.

15.113 As in scenario 1b, at this stage this effect is assumed to be **Not Significant** for local residents and businesses.

### The Completed and Operational Development

Assessment Scenario 2a – Proposed Development Only

*Effect 1: Provision of Green Infrastructure Including the Creation of Green Links and a New City River Park.*

15.114 The completed and operational development will see the completion of a new City River Park; "*one of Manchester's largest city centre green spaces*"[6]. The park "*will vary in character providing a diverse and active new recreational corridor for the community including parks and smaller amenity spaces*"[7] .

15.115 The park is one of the 3 core objectives within the overall SRF, demonstrating it is a significant element of the scheme to be delivered. The City River Park seeks to create 'a leisure corridor connecting the city centre and North Manchester as part of an extensive network of high-quality open space and public realm'.

15.116 The park will be accessible to local residents, employees and visitors. The creation of new green spaces, walking and cycling routes, is anticipated to have a positive impact on the health and wellbeing of local residents, as well as local employees who may travel through the park or use it for leisure and wellbeing purposes. For example, connectivity and accessibility through new pedestrian and cycle links seeks to promote active lifestyles and wellbeing.

15.117 There are currently only three open spaces within a 10-minute walk of the PDS, none of which offer children's play facilities, demonstrating that the park is an additional benefit to local residents and employees.

*Table 15-31: Significance of effect – assessment Scenario 2a, effect 1, residents and employees*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | Local residents (medium sensitivity)<br>Local employees (medium sensitivity) |
| Magnitude of Effect | Duration: Permanent<br>Scale: Neighbourhood level (Harpurhey and Cheetham Wards); Manchester City Council Local Authority Area<br>Nature: Direct<br>Overall: High |
| Effect | **Major Beneficial (Significant)** |

[6] https://victorianorth.co.uk/
[7] https://victorianorth.co.uk/

15.118 Given its nature and scale, the park has been designed to be a leisure destination, attracting visitors as well as residents. Its visitor attraction will be supported by its close proximity to Manchester Victoria train station.

*Table 15-32: Significance of effect – assessment Scenario 2a, effect 1, visitors*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | Visitors (low sensitivity) |
| Magnitude of Effect | Duration: Permanent<br>Scale: Greater Manchester<br>Nature: Direct<br>Overall: Medium |
| Effect | **Minor Beneficial (Not Significant)** |

Assessment Scenario 2b – Proposed Development plus impacts associated with Applications 1, 3 and 4

*Effect 1: New Residents on Local Expenditure*

15.119 The land controlled by the JV within the Red Bank Neighbourhood (application 4) is anticipated to deliver up to 4,000 new homes. With new residents in the locality, it is anticipated that there would be a boost to the local economy; for example, spending in local shops and hospitality venues.

15.120 At this stage of development, it was not deemed appropriate to quantify the impacts of new residents on local expenditure. It is anticipated that this could be covered within more detail in subsequent assessments.

15.121 Given that the wards of Harpurhey and Cheetham are particularly deprived areas within Manchester, it is likely that increased expenditure in these areas will see more substantial benefits when compared relative to the Manchester City Council Local Authority Area.

*Table 15-33: Significance of effect – assessment Scenario 2b, effect 1*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | Local Economy (Low sensitivity) |
| Magnitude of Effect | Duration: Permanent<br>Scale: Neighbourhood level (Harpurhey and Cheetham Wards); Manchester City Council Local Authority Area |

| Significance of Effect: | |
|---|---|
| | Nature: Direct<br>Overall: Medium |
| Effect | **Minor Beneficial (Not Significant)** |

*Effect 2: Change in housing and affordable housing provision*

15.122 The land controlled by the JV within the Red Bank Neighbourhood (application 4) is anticipated to deliver up to 4,000 new homes. This will significantly contribute to the need for 3,533 new homes annually to 2037 within Manchester, including the provision of affordable housing (GMCA, 2021).

15.123 The impact is anticipated to have a significant local impact, as the Site area falls into the 20% most deprived neighbourhoods in the country.

15.124 The intervention will also support Priority 6 of the Our People Our Place (The Greater Manchester Strategy) (GMCA, 2017); that is to provide 'Safe, decent and affordable housing'.

*Table 15-34: Significance of effect – assessment Scenario 2b, effect 2*

| Significance of Effect: | |
|---|---|
| Receptor sensitivity | Local residents (High Sensitivity) |
| Magnitude of Effect | Duration: Permanent<br>Scale: Neighbourhood level (Harpurhey and Cheetham Wards); Manchester City Council Local Authority Area<br>Nature: Direct<br>Overall: Medium |
| Effect | **Major Beneficial (Significant)** |

*Effect 3: Change in access to social and community infrastructure excluding open spaces and play spaces (e.g primary and secondary education, primary healthcare)*

15.125 The Red Bank neighbourhood is anticipated to include new community facilities; new social infrastructure; new walking and cycling routes; and new green space (including the City River Park which is part of the Proposed Development).

15.126 New provision of community and social facilities is likely to be required to accommodate the level of new housing that is expected to be delivered. As detailed in the Embedded Mitigation section, it is understood that the draft Red Bank development proposals identify that a new primary school with associated nursery facility, a health centre and other social infrastructure, a community clubhouse, and high street uses including shops, restaurants and cafes could be included. Although there is surplus capacity in the existing primary and secondary school and GP provision, given the level of new housing to be delivered, additional provision is likely to be required. Full details of the community and social infrastructure proposed is not yet available and it is not possible to calculate the pupil yield resulting from the Red Bank development given that the housing type is not known at this stage, however the elements identified above will address the primary education and healthcare needs created by the new housing based on the information currently available. Once infrastructure delivery plans have been finalised, it is anticipated that this will be considered in more detail as part of Application 4.

*Table 15-35: Significance of effect – assessment Scenario 2b, effect 3*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | Local Residents (medium sensitivity) |
| Magnitude of Effect | Duration: Permanent<br>Scale: Neighbourhood level (Harpurhey and Cheetham Wards)<br>Nature: Direct<br>Overall: Medium |
| Effect | **Moderate Beneficial (Significant)** |

*Effect 4: Change in access to Open Space*

As detailed in Assessment Scenario 2a, the Proposed Development includes the provision of green infrastructure including the creation of green links and a new City River Park (effect 1). This effect has been categorised as **Major Beneficial** for local residents and employees and **Minor Beneficial** for visitors.

### Assessment Scenario 2c – Proposed Development plus impacts associated with Applications 1, 3 and 4 and wider SRF

15.127 The effect of assessment scenario 2c on new residential local expenditure and on changes in access to social and community infrastructure have been scoped out.

15.128 At this stage of development, it was not deemed appropriate to quantify the impacts of new residents within the wider SRF area on local expenditure and it is anticipated that this could be covered in more detail in subsequent assessments.

15.129 In relation to access to social and community infrastructure, the wider SRF area is anticipated to provide a range of facilities, amenities, and community spaces to support the new residential and mixed-use population however given that specific details on the provision of community and social infrastructure is not available at this stage, this effect has been scoped out. It is anticipated that this could be covered in more detail in subsequent assessments.

*Effect 1: Change in housing and affordable housing provision*

15.130 The vision for the SRF is to deliver approximately 15,000 new homes over the next 15-20 years; 'a range of housing products to meet the needs of residents on a range of incomes'.

15.131 This scale of development is anticipated to have a significant local and regional impact.

*Table 15-36: Significance of effect – assessment Scenario 2c, effect 1*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | Local residents (High Sensitivity) |
| Magnitude of Effect | Duration: Permanent<br>Scale: Manchester City Council Local Authority Area; Greater Manchester<br>Nature: Direct<br>Overall: High |
| Effect | **Major Beneficial (Significant)** |

*Effect 2: Economic growth*

15.132 Whilst Victoria North is a residential-led development scheme, the SRF sets out the vision to deliver green infrastructure and public open spaces (including the aforementioned City River Park) and provide and support community and commercial uses.

15.133 Delivering these components at such scale is anticipated to have a catalytic impact which "*support long term growth and promote economic, social and cultural uses to support the creation of high performing and sustainable new communities"* (MCC, 2019b).

*Table 15-37: Significance of effect – assessment Scenario 2c, effect 2*

| **Significance of Effect:** | |
|---|---|
| Receptor sensitivity | The local and regional economy (Low) |
| Magnitude of Effect | Duration: Temporary<br>Scale: Manchester City Council Local Authority Area and Greater Manchester<br>Nature: Direct and indirect<br>Overall: High |
| Effect | **Moderate Beneficial (Significant)** |

# Additional Mitigation / Enhancement Measures

### Demolition and Construction

15.134 At this stage, no significant adverse impacts relating to the construction phase of the Proposed Development (or Applications 1-4) have been identified.

15.135 However, to capture the positive economic, regeneration and social effects of the Proposed Development there are two enhancement mitigations suggested below.

15.136 With respect to the potential construction employment impacts for all scenarios (1a, 1b and 1c), there could be the option to incorporate measures which encourage upskilling/training of local employees and residents, to enhance the potential for the jobs and the subsequent indirect benefits (e.g. local spending) to impact the local community. For example, this may include committing to provide a number of apprenticeship places that upskill potential employees within the Cheetham and Harpurhey wards with skills beyond those categorised as supporting elementary occupations. It is anticipated that this is considered under the social value workstream.

15.137 Local supply chain procurement could also be encouraged, to enhance the potential for local businesses to benefit from spending within the supply chain. This measure is relevant across all scenarios (1a, 1b and 1c).

### The Completed and Operational Development

15.138 At this stage, no significant adverse impacts relating to the completed and operational development have been identified.

# Likely Residual Effects of the Development and their Significance

15.139 Residual effects refer to significant effects that are likely to remain as a result of the construction or operation of the Proposed Development, after mitigation. This could also include beneficial effects including the creation of employment opportunities and the provision of new homes.

15.140 The residual effect assessment should assume that the mitigation described in the section above has been implemented.

15.141 The following terms are used to describe the effects:

- '**Beneficial, negligible** or **adverse'**
- '**minor, moderate** or **major'** (adverse / beneficial)

15.142 'The likely significant effects are presented in the table below. The additional mitigation and enhancement measures have not resulted in any changes to the effects; therefore the residual effects are the same as described in the sections above.

*Table 15-38: Residual Effects Summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| *Assessment Scenario 1a – proposed development only* | | | |
| Effect 1: Temporary direct, indirect and induced employment during the construction phase. | Minor Beneficial (Not Significant) | Potential for added benefits through measures such as local employment and training schemes however no commitments have been made. | ***Minor Beneficial (Not Significant)*** |
| Effect 2: Potential Disruption through Changes to Environmental Quality | Negligible / Minor Adverse (Not Significant) | N/A | ***Negligible / Minor Adverse (Not Significant)*** |
| *Assessment Scenario 1b – proposed development plus Applications 1, 3 and 4* | | | |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| Effect 1: Temporary direct, indirect and induced employment during the construction phase. | Moderate Beneficial (Significant) | Potential for added benefits through measures such as local employment and training schemes however no commitments have been made. | ***Moderate Beneficial (Significant)*** |
| Effect 2: Potential Disruption through Changes to Environmental Quality | Negligible / Minor Adverse (Not Significant) | N/A | ***Negligible / Minor Adverse (Not Significant)*** |
| *Assessment Scenario 1c – proposed development plus Applications 1, 3 and 4 and wider SRF* | | | |
| Effect 1: Temporary direct, indirect and induced employment during the construction phase. | Major Beneficial (Significant) | Potential for added benefits through measures such as local employment and training schemes however no commitments have been made. | ***Major Beneficial (Significant)*** |
| Effect 2: Potential Disruption through Changes to Environmental Quality | Negligible / Minor Adverse (Not Significant) | N/A | ***Negligible / Minor Adverse (Not Significant)*** |
| ***Completed Development*** | | | |
| *Assessment Scenario 2a – proposed development only* | | | |
| Effect 1: Provision of green infrastructure including the creation of green links and a new City River Park. | *Major Beneficial (Significant) to local residents and employees*<br><br>*Minor Beneficial (Not significant) to visitors* | *N/A* | ***Major Beneficial (Significant) to local residents and employees***<br><br>***Minor Beneficial (Not significant) to visitors*** |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| *Assessment Scenario 2b – proposed development plus Applications 1, 3 and 4* | | | |
| Effect 1: New residents on local expenditure | Minor Beneficial (Not Significant) | *N/A* | ***Minor Beneficial (Not Significant)*** |
| Effect 2: Change in housing and affordable housing provision | Major Beneficial (Significant) | *N/A* | ***Major Beneficial (Significant)*** |
| Effect 3: Change in access to social and community infrastructure excluding open spaces and play spaces | Moderate Beneficial (Significant) | *N/A* | ***Moderate Beneficial (Significant)*** |
| Effect 4: Change in access to open space | Major Beneficial (Significant) to local residents and employees<br><br>Minor Beneficial (Not significant) to visitors | *N/A* | ***Major Beneficial (Significant) to local residents and employees***<br><br>***Minor Beneficial (Not significant) to visitors*** |
| *Assessment Scenario 2c – proposed development plus Applications 2, 3 and 4 and wider SRF* | | | |
| Effect 1: Change in housing and affordable housing provision | Major Beneficial (significant) | *N/A* | ***Major Beneficial (significant)*** |
| Effect 2: Economic Growth | Moderate Beneficial (Significant) | *N/A* | ***Moderate Beneficial (Significant)*** |

## Conclusions

15.143 With respect to the Proposed Development, only the operation of the City Park was identified as a **Significant major beneficial** effect. During demolition and construction, there would be a **minor beneficial** effect on construction employment however this would not be significant. During demolition and construction, there would be a **minor adverse** effect due to the potential disruption through changes to environmental quality however this would not be significant.

15.144 With respect to the Proposed Development plus applications 1, 3 and 4, construction employment provision of housing, and provision of open space and social infrastructure were all identified as **Significant major beneficial** effects. There would be a **Significant moderate beneficial** effect on local residents due to the provision of a primary school, nursery, health centre, and other uses. There would be a **minor beneficial** effect on the local economy as a result of local expenditure from new residents however this would not be significant. During demolition and construction, there would be a **minor adverse** effect on local residents and a negligible effect on local businesses due to the potential disruption through changes to environmental quality however this would not be significant.

15.145 With respect to the Proposed Development plus applications 1, 3 and 4 and the wider SRF, construction employment and housing provision were identified as **Significant major beneficial** effects. The potential for economic growth was identified as a **Significant moderate beneficial** effect. The effect on local expenditure and on the provision of social and community infrastructure has been scoped out of this scenario given the lack of available information on the proposed infrastructure within the wider SRF area. It is anticipated that this could be covered in more detail in subsequent assessments.

## Assessment of Cumulative Effects and their Significance

15.146 The Cumulative Impact Assessment (CIA) is presented as 3 scenarios. This is to ensure that the assessment is as robust as possible. The scenarios to be considered are as follows:

- Scenario 3a - Assessment of the cumulative socio-economic impacts relating to the Proposed Development plus socio-economic impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative socio-economic impacts relating to the Proposed Development, plus socio-economic impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
- Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 1 (Enabling works works), 3 (Flood alleviation works) and 4 (Red Bank built development), the wider SRF, and the agreed cumulative sites.

15.147 In terms of socio-economic effects, Assessment Scenarios 1a-1c and 2a-2c resulted in a number of beneficial effects however the focus of the CIA is to identify the potential for any adverse cumulative effects.

15.148 The extent of the cumulative effects on construction employment is dependent on the build costs for each of the cumulative sites however for all 3 scenarios it is considered that construction of the cumulative developments would lead to beneficial effects in terms of temporary employment.

15.149 It is possible that additional disruption and residual adverse effects (including noise, vibration, air quality, and construction traffic movement) from construction works occurring on cumulative sites may give rise to significant

effects during the construction phase of the proposed development. This will depend on a number of factors, not all of which can be determined; for example, the location of cumulative sites relative to the proposed development and relative to the identified receptors, the timing and duration of construction works for cumulative sites, and the nature of construction activities on cumulative sites. Cumulative sites which are more than 225m from the Site are scoped out of this part of the CIA based on the thresholds applied by relevant contributory topics.

15.150 The cumulative effects of additional housing provision, affordable housing provision, and the likely increase to local expenditure have all been considered. In addition, the cumulative effects on local communities during the operation of the developments including access to primary and secondary education, primary healthcare, and open spaces has been considered.

15.151 As no on-site employment will be created once the Proposed Development is operational, no cumulative assessment of operational employment has been undertaken.

15.152 Table 15-39 provides a list of the developments which are to be included within the cumulative sites assessment.

*Table 15-39: Cumulative Sites*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | 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 | Approved Jun 2021 | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. In addition, the scheme is within the same ownership therefore the construction is under the control of the applicant and could be appropriately managed as part of a combined PEP. |
| 2 | 127971/FO/2020 | 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 | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | |
| 3 | 128248/FO/2020 | 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 | 150m south | Approved June 2021 | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Due to proximity to the Site, also scoped in for assessment of cumulative effects of disruption during construction. |
| 4 | 116366/FO/2017 | 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 | 150m south | Approved Aug 2017<br><br>Under construction | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Due to proximity to the Site, also scoped in for assessment of cumulative effects of disruption during construction. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | Street, School Street, Naples Street & Ludgate Street Manchester | | | | |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<br><br>Under construction | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 | Scoped in | Scoped in for assessment of cumulative effects on construction jobs.<br><br>Scoped out of assessment of cumulative effects on housing provision and effects on local communities (access to education, healthcare, and open space) due to the non-residential use.<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 7 | 124973/FO/2019 | 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 | 350m south | Approved Feb 2016 | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |
| 8 | 111777/FO/2016/C1 | 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 | 250m south east | Approved Sep 2016<br><br>Under construction | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 9 | 121375/FO/2018 | 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. | 840m south | Approved Oct 2020 | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | Approved Oct 2018<br><br>Under construction | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 11 | 20/76134/FUL | 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 | 1000m south west | Approved Feb 2020 | Scoped in. | Scoped in for assessment of cumulative effects on construction jobs.<br><br>Scoped out of assessment of cumulative effects on housing provision and effects on local communities (access to education, healthcare, and open space) due to the non-residential use.<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br><br>Under construction | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |
| 13 | 19/74465/HYBEIA | Hybrid planning application for demolition of existing buildings on the Site and comprehensive redevelopment to create between 1,407 and 1,521 dwellings, | 960m south west | Validated Nov 2019 | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 7BN | | | | on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |
| 14 | 126944/FO/2020 | 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 | 140m south east | Approved Sep 2020<br><br>Under Construction | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Due to proximity to the Site, also scoped in for assessment of cumulative effects of disruption during construction however as the scheme is within the same ownership, the construction is under the control of the |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | public realm including the re-instatement of Bromley Street and other associated works | | | | applicant and could be appropriately managed as part of a combined PEP. |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | 145m south east | Approved October 2017 | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Due to proximity to the Site, also scoped in for assessment of cumulative effects of disruption during construction. |
| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | 635m south west | Approved June 2018 | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |
| 19 | 124888/FO/2019 | 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 in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. In addition, the scheme is within the same ownership |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | | | | | therefore the construction is under the control of the applicant and could be appropriately managed as part of a combined PEP. |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | Scoped in | Scoped in for assessment of cumulative effects on construction jobs, housing provision, local expenditure, and effects on local communities (access to education, healthcare, and open space).<br><br>Scoped out of assessment of cumulative effects of disruption during construction due to distance from the Site. |

## Likely Residual Cumulative Effects and their Significance

15.153 Cumulative effects relating to Construction and the Completed and Operational Development have been considered below.

*Table 15-40: Likely residual cumulative effects*

| Assessment Scenario | Potential Effects relating to Construction | Potential Effects relating to Operation |
|---|---|---|
| Scenario 3a - Assessment of the cumulative socio-economic impacts relating to the Proposed Development plus socio-economic impacts associated with agreed cumulative sites. | *Construction employment* – As set out above, the cumulative effects on construction employment are dependent on the build costs for each of the cumulative sites however it is considered that construction of the cumulative developments would lead to beneficial effects in terms of temporary employment.<br><br>*Potential disruption through changes to environmental quality* – It is anticipated that the cumulative developments will have their own PEP (or Construction Environmental Management Plan) required by condition which would limit the potential for residual adverse effects on local residents and local businesses. The noise and vibration CIA concludes that there are no significant cumulative noise or vibration effects from Sites 3, 4, 14 and 15 (the remaining sites are scoped out due to their location). The transport and access CIA concludes that for the majority of the cumulative sites, the construction traffic is unlikely to utilise the same routes and/or the construction traffic impacts are so small that there would be no cumulative effects. Based on the above, it is concluded that there will be no significant adverse cumulative effects as a result of potential disruption from construction. | *Provision of green infrastructure* – The cumulative sites under consideration predominantly include residential uses. A new public park is proposed on Site 1 and Site 13. The increased number of local residents means that a greater number of people will benefit from the proposed park and the additional public parks will add to the provision of green infrastructure for local residents and local employees, albeit this is already considered a significant major beneficial effect. |

| Assessment Scenario | Potential Effects relating to Construction | Potential Effects relating to Operation |
|---|---|---|
| Scenario 3b - Assessment of the cumulative socio-economic impacts relating to the Proposed Development, plus socio-economic impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development). | *Construction employment* – As set out above, the cumulative effects on construction employment are dependent on the build costs for each of the cumulative sites however it is considered that construction of the cumulative developments would lead to beneficial effects in terms of temporary employment.<br><br>*Potential disruption through changes to environmental quality* – The changes in environmental quality and the cumulative impacts will be considered in greater detail within the subsequent applications (3 and 4) and the potential for cumulative effects associated with relevant committed developments will then be reassessed once this information is available. | *Impact on local expenditure* – The cumulative sites predominantly consist of residential uses. The cumulative impact of increased numbers of residents within the locality will increase the beneficial impact on the local economy. As per Assessment Scenario 2b, at this stage of development, it was not deemed appropriate to quantify this however it is anticipated that this could be covered within more detail in subsequent assessments.<br><br>*Change in housing and affordable housing provision* – Application 4 and the cumulative developments will significantly increase the provision of housing and affordable housing within the local authority area, albeit this is already considered a significant major beneficial effect.<br><br>*Change in access to social and community infrastructure* – Application 4 and the cumulative developments will increase the requirement for school places and healthcare provision however the baseline assessment has indicated there is surplus primary and secondary education provision and healthcare provision. In addition, the majority of the cumulative developments consist of residential apartment blocks which do not yield any pupils in terms of education provision (Salford City Council, 2019).[8] As detailed in the Embedded Mitigation section, it is understood that the Red Bank development (Application 4) will include a new primary school with associated nursery facility, a health centre and other social infrastructure, a community clubhouse, and high street uses including shops, restaurants and cafes. A number of the cumulative developments include community and social infrastructure (Site 1, 4, 5, 7, 8, 9, 12, |

[8] In the absence of any guidance documents published by Manchester City Council, the guidance document from neighbouring Salford City Council has been used.

| Assessment Scenario | Potential Effects relating to Construction | Potential Effects relating to Operation |
|---|---|---|
| | | 13, 14, 15, 16, 17, 18, and 20) however full details of the proposed uses are not included within these permissions at this stage. Based on the information available, it is considered that the cumulative developments will have a negligible effect on education and healthcare provision. It is anticipated that the cumulative developments will be considered in more detail as part of Application 4.<br><br>*Change in access to open space* - The cumulative sites under consideration predominantly include residential uses. A new public park is proposed on Site 1 and Site 13. The increased number of local residents means that a greater number of people will benefit from the proposed park and the additional public parks will add to the provision of green infrastructure for local residents and local employees, albeit this is already considered a significant major beneficial effect. |
| Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 1 (Enabling works works), 3 (Flood alleviation works) and 4 (Red Bank built development), the wider SRF, and the agreed cumulative sites. | *Construction employment* – As set out above, the cumulative effects on construction employment are dependent on the build costs for each of the cumulative sites however it is considered that construction of the cumulative developments would lead to beneficial effects in terms of temporary employment.<br><br>*Potential disruption through changes to environmental quality* – Recognising the scale of the SRF development, the likely impacts of construction on the local community will be considered in greater detail within each respective application and the potential for cumulative effects associated with relevant committed developments will then be reassessed once this information is available. | *Change in housing and affordable housing provision* – The wider SRF and the cumulative developments will significantly increase the provision of housing and affordable housing within the local authority area, albeit this is already considered a significant major beneficial effect.<br><br>*Economic growth* – The wider SRF and the cumulative developments will support long term growth which will benefit the local and regional economy, albeit this is already considered a significant moderate beneficial effect. |

15.154 Overall, no significant adverse cumulative effects relating to socio-economics have been identified.

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# 16. Climate Change

## Introduction

16.1 This chapter assesses the likely significant effects of the construction and operation of the Proposed Development with regards to climate change.

16.2 As noted in Chapter 2: Approach, the Development Project is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in 4 planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – planning permission has been granted for the demolition of Creamline dairy, tree and shrub clearance and construction of a temporary haul road.
- HIF Infrastructure Works (referred to hereafter as 'Application 2') – the subject of this application. Creation of development platforms, demolition of sections of existing River Wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diversions and provision of green infrastructure including creation of green links and first phase of the new City River Park.
- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within flood zone 3.
- Land under control of the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. As noted in Chapter 2: Approach, the entire Red Bank Neighbourhood within the SRF, including third party land, will deliver up to 5,500 new dwellings.

16.3 Whilst the Applicant has the detail of the early applications, the later parts of the Development Project (particularly Application 4) are still being designed and the details are not yet available. Therefore, the approach that has been taken in the ES is to break the Development Project into 3 elements, with each element being assessed in a level of detail commensurate with the detail that is available for the relevant part of the Development Project.

16.4 A quantitative assessment has been undertaken of Application 2, and then reasonable assumptions and judgements have informed and been made to assess Applications 1-4 together, and then Applications 1-4 and SRF.

16.5 This climate chapter summarises the legislation and policy framework relevant to the climate change assessment, details the methodology undertaken, and describes the existing environment in the area surrounding the Site. It then considers the design, mitigation and residual effects of the Proposed Development, including taking account of relevant characteristics of the future baseline environment. Any key assumptions and limitations applicable to

the assessment are also identified. The assessment is based upon the information and calculations from the Carbon Management Plan (**Appendix 16.1**), as provided by the VNIF Carbon Management Team, principally the Greenhouse Gas quantifications and associated assumptions. Therefore, this chapter presents assessment of likely significant effects as considered by Arup.

16.6 Aligned to Institute of Environmental Management & Assessment (IEMA) guidance, this chapter presents the climate change assessment under the following two headings:

- **Impact of the project on climate (Greenhouse Gas (GHG) emissions assessment)** – this section covers the potential additional and avoided GHG emissions associated with demolition, construction and operation[1], in comparison with current and future baseline GHG emissions.
- **Vulnerability of the project to climate change (Climate Change Risk (CCR) assessment)** – this section covers how climate change is anticipated to manifest itself in the future and the vulnerability of the project to such climate change.

# Planning Policy Context

16.7 This section lists the legislation, policy and strategy which is considered relevant to the project. Whilst not intended to be an exhaustive list, it considers legislation, policy and strategy at international, national and local levels considered most relevant to the assessment of climate impacts for the project.

## Legislation

16.8 The key legislation and agreements of relevance to climate change are summarised as follows:

### Kyoto Protocol (1997)

16.9 The Kyoto Protocol is an international treaty which extended the 1992 United Nations Framework Convention on Climate Change (UNFCCC). It commits its parties by setting internationally binding emission reduction targets. Under Article 4 of the Kyoto Protocol, the EU created an Effort Sharing Regulation that requires the setting of individual binding GHG emission reduction targets for each of its participant Member States.

### The Paris Agreement (2015)

16.10 At the Conference of the Parties (COP) 21 an internationally treaty/agreement, the Paris Agreement, was reached under the UNFCC and came into force in November 2016. It pledges long-term temperature goals to keep the increase in global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the increase to 1.5°C as soon as possible.

[1] Emissions associated with decommissioning have been scoped out due to the 120-year lifespan of infrastructure works

16.11 As a signatory of the Paris Agreement, the UK submits a *Nationally Determined Contribution* (NDC) to the UNFCCC which sets out how the UK as a nation will pursue efforts to limit temperature increases, as set out in the Paris Agreement. The UK submitted its NDC on 12th December 2020, within which the UK is committing to reduce economy-wide GHG emissions by at least 68% by 2030, compared to 1990 levels[2].

### Climate Change Act 2008

16.12 The Climate Change Act 2008[3] committed the UK to its first statutory GHG emissions reduction target, to reduce GHG emissions by at least 80% from 1990 levels by 2050.

16.13 In June 2019, following recommendations made by the UK Committee on Climate Change (UK CCC), the Climate Change Act 2008 (2050 Target Amendment) Order 2019[4] amended the legislated target to reduce GHG emissions by '*at least 100% below the 1990 baseline year*' (net zero Greenhouse Gas emissions) by 2050.

16.14 The Act also established a requirement to undertake a Climate Change Risk assessment every five years and development of a programme for adaptation action in response to the climate risks identified.

16.15 The Act requires that five-yearly Carbon Budgets are set and not exceeded. In December 2020, the UK CCC released its advice to the UK Government on setting the Sixth Carbon Budget, for the period 2033-2037. Table 16.1 presents the six UK Carbon Budgets currently in existence. Carbon Budgets beyond 2037 have not yet been set.

*Table 16.1: 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 |

[2] UK Government (2020) United Kingdom of Great Britain and Northern Ireland's Nationally Determined Contribution. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/943618/uk-2030-ndc.pdf [Accessed 19 October 2021]

[3] UK Government (2008) Climate Change Act 2008. Available from: https://www.legislation.gov.uk/ukpga/2008/27/contents [Accessed 14 October 2021]

[4] UK Government (2019) The Climate Change Act 2008 (2050 Target Amendment) Order 2019. Available from *https://www.legislation.gov.uk/ukdsi/2019/9780111187654* [Accessed 12 January 2022]

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

16.16 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations)[5] places a requirement upon projects which have the potential for significant effects on the surrounding environment and communities to make a formal assessment of these impacts so that they can be taken into account when a planning application is determined. The EIA Regulations identify the role that the EIA process can play in assessing climate change impacts. It states that *"EIAs must identify, describe and assess the direct and indirect significant effects on climate relevant to the Proposed Development".*

## National Policy

16.17 The principal national policies relating to climate change are summarised as follows:

### National Planning Policy Framework (2021) (NPPF)

16.18 The NPPF[6] sets out the Government's planning policies for England and how these are expected to be applied. It also provides a high-level framework within which development should come forward.

16.19 Paragraph 153 of the NPPF states that "*Plans should take a proactive approach to mitigating and adapting to climate change*". The NPPF states that new development should be planned for in ways that avoid increased vulnerability to the range of impacts arising from climate change and help to reduce greenhouse gas emissions.

## Local policy

### 5-Year Environmental Plan for Greater Manchester 2019-2024

16.20 The 5-Year Environmental Plan for Greater Manchester[7] sets out Greater Manchester's aim to be a carbon neutral city region by 2038 and the actions needed to achieve this over the coming five-year period (2019-2024).

16.21 This plan identifies five challenges that threaten the future health and prosperity of the city region: mitigating climate change; air quality; production and consumption of resources; natural environment; and resilience and adaptation to the impacts of climate change.

16.22 With regards to climate change mitigation, resilience and adaptation, the plan aims "*for our city region to be carbon neutral by 2038 and meet carbon budgets that comply with international commitments*" and "*to be prepared for the impacts of climate change and already be adapting to the future changes from any increase in climate shocks and stresses*."

[5] UK Government (2017) The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/571/contents/made [Accessed 12 January 2022]
[6] MHCLG (2021) National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf [Accessed 12 January 2022]
[7] Greater Manchester Combined Authority (2019) 5-Year Environmental Plan for Greater Manchester 2019-2024. Available at: https://www.greatermanchester-ca.gov.uk/media/1986/5-year-plan-branded_3.pdf [Accessed 12 January 2022]

### Places for Everyone (Due to be adopted 2023)

16.23 Greater Manchester Combined Authority's Places for Everyone[8] plan (formerly the Greater Manchester Spatial Framework) is a long-term plan of nine Greater Manchester districts (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan) for jobs, new homes, and sustainable growth. The plan is early in the adoption process and presently carries little weight. As it progresses through the adoption process, it will gain weight. Following a public consultation (closed October 2021) the plan is to be submitted to the Secretary of State in the first quarter of 2022 for examination by the Planning Inspector(s) and is expected to be adopted across the nine GM districts in 2023.

16.24 The plan holds ten strategic objectives:

1. Meet our housing need;
2. Create neighbourhoods of choice;
3. Playing our part in ensuring a thriving and productive economy in all parts of Greater Manchester;
4. Maximise the potential arising from our national and international assets;
5. Reduce inequalities and improve prosperity;
6. Promote the sustainable movement of people, goods and information;
7. Playing our part in ensuring that Greater Manchester is a more resilient and carbon neutral city-region;
8. Improve the quality of our natural environment and access to green spaces;
9. Ensure access to physical and social infrastructure; and
10. Promote the health and wellbeing of communities.

16.25 Objective seven above is of particular relevance this project, as the plan lays out proposals to support the Greater Manchester ambition to be a carbon neutral city-region by 2038, of which a key element is to require all new development to be net zero carbon by 2028 at the latest.

### Manchester Core Strategy (Adopted March 2012)

16.26 Manchester's Core Strategy[9] is the key Development Plan document in Manchester's Local Development Framework (LDF). It replaced significant elements of the existing Unitary Development Plan (UDP) as the document that sets out the long-term strategic policies for Manchester's future development and forms the framework that planning applications are assessed against.

[8] Greater Manchester Combined Authority (2021) Places for Everyone. Available at: https://www.greatermanchester-ca.gov.uk/what-we-do/planning-and-housing/places-for-everyone/ [Accessed 12 January 2022]
[9] Manchester City Council (2018) Manchester's Core Strategy.
Available at: https://secure.manchester.gov.uk/downloads/download/4964/core_strategy_development_plan [Accessed 19 October 2021]

16.27 As part of the Core Strategy Vision, "*by 2027 Manchester will be […] meeting the challenge of climate change at the forefront of environmental initiatives and improvements and continuing to deliver sustainable development and a more effective Green Infrastructure*."

16.28 Spatial objective 'S06. Environment' of the Manchester Core Strategy aims to "*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*". Objective S06 also states "*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*."

Manchester Climate Change Framework 2020-2025;

16.29 In July 2019, Manchester City Council declared a climate emergency[10]. To address this, the Manchester Climate Change Framework 2020-25[11] was created as the City's high-level strategy for tackling climate change. It sets out how Manchester will '*play its full part in limiting the impacts of climate change*', a commitment in the Our Manchester Strategy - Forward to 2025[12].

16.30 The Strategy sets out six areas for action to meet objectives and targets:

- Buildings (existing and new);
- Renewable energy;
- Transport and flying;
- Food;
- The things we buy and throw away; and
- Green infrastructure and nature-based solutions.

16.31 'Buildings (existing and new)', 'Transport' and 'Green infrastructure and nature-based solutions' are particularly relevant to this project.

[10] Manchester City Council (2019) Council Resolution on Declaring a Climate Emergency. Available at: https://democracy.manchester.gov.uk/documents/s8031/Council%20Climate%20Emergency%20Resolution.pdf [Accessed 12 January 2022]
[11] Manchester Climate Change Agency (2020) Manchester Climate Change Framework 2020-2025. Available at: https://www.manchesterclimate.com/sites/default/files/Manchester%20Climate%20Change%20Framework%202020-25.pdf [Accessed 12 January 2022]
[12] Manchester City Council (2020) Our Manchester Strategy - Forward to 2025. Available at: https://www.manchester.gov.uk/downloads/download/7355/our_manchester_strategy-_forward_to_2025 [Accessed 12 January 2022]

Manchester City Council Climate Change Action Plan 2020-2025;

16.32 The MCC Climate Change Action Plan 2020-2025 [13]sets out the Council's commitments to tackling climate change over the period 2020-2025. The Plan supports the delivery of the Citywide Manchester Climate Change Framework (2020-2025).

Manchester Climate Risk: A Framework for Understanding Hazards & Vulnerability

16.33 The Manchester Climate Adaptation and Resilience Advisory Group was established in early 2020 to guide efforts in developing informed targets on climate change resilience and adaptation, to identify how action across the City might be supported, and to make recommendations regarding how progress can be monitored and evaluated.

*16.34* The Advisory Group produced Manchester's Climate Change Framework[14] which sets out the city's commitments for the period 2020-25. Alongside reducing $CO_2$ emissions, the Framework recognises that the climate is changing, and that Manchester needs to take action to respond. The Framework sets out the following high-level objective: *"To adapt the city's buildings, infrastructure and natural environment to the changing climate and to increase the climate resilience of our residents and organisations."*

**Other Relevant Policy, Standards and Guidance**

16.35 The following policies, standards and guidance are also considered relevant to this assessment.

Best practice guidance for assessing GHG emissions in EIA

- IEMA's 2017 Guidance on 'Assessing Greenhouse Gas Emissions and Evaluating their Significance'[15];
- PAS 2080 Guidance Document (2016) on Carbon Management in Infrastructure[16]; and
- RICS (2017) Whole Life Carbon Assessment for the built environment (1st edition).[17]

Best practice guidance for assessing the vulnerability of the development to climate change in EIA

- IEMA's EIA Guide to: Climate Change Resilience and Adaptation (2020)[18];

[13] Manchester City Council (2020) MCC Climate Change Action Plan 2020-2025. Available at: https://www.manchester.gov.uk/downloads/download/6033/mcc_climate_change_action_plan [Accessed 12 January 2022]
[14] Manchester Climate Change Agency (2021) Manchester Climate Risk: A Framework for Understanding Hazards & Vulnerability. Available at: https://www.manchesterclimate.com/sites/default/files/Manchester%20Climate%20Risk_A%20Framework%20For%20Understanding%20Hazards%20and%20Vulnerability.pdf [Accessed 12 January 2021]
[15] IEMA (2017) Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance. Available at: https://www.iema.net/preview-document/assessing-greenhouse-gas-emissions-and-evaluating-their-significance [Accessed 12 January 2022]
[16] Green Construction Board (2016) Guidance Document for PAS 2080. Available at: https://www.constructionleadershipcouncil.co.uk/wp-content/uploads/2019/06/Guidance-Document-for-PAS2080_vFinal.pdf [Accessed 12 January 2022]
[17] RICS (2017) Whole Life Carbon Assessment for the built environment. Available at: https://www.rics.org/globalassets/rics-website/media/news/whole-life-carbon-assessment-for-the--built-environment-november-2017.pdf [Accessed 12 January 2022]
[18] 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 12 January 2022]

- IEMA's Principles on Climate Change Mitigation and EIA (2010)[19];
- Climate Change: second national adaptation programme (2018 – 2023) (NAP)[20]; and
- The Adaptation Committee's UK Climate Change Risk Assessment 2017 Evidence Report[21] (which sets out the priority climate change risks and opportunities for the UK).

# Impact of the Proposed Development on Climate (Greenhouse Gas (GHG) Emissions Assessment)

## Assessment methodology

16.36 As set out in Chapter 2: Approach, the EIA is undertaken through the presentation of a series of assessment scenarios in order to assess the Development Project (see Chapter 1: Introduction and Chapter 2: Approach). The assessment scenarios in respect of the EIA for the Proposed Development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
  - Scenario 1a - Assessment of the climate change impacts relating to the Proposed Development only[22].
  - Scenario 1b - Assessment of the climate change impacts relating to the Proposed Development, plus climate change impacts associated with Applications 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development)[23].
  - Scenario 1c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider Strategic Regeneration Framework (SRF).
- Assessment Stage 2 - Completed Development and Operational Phase:
  - Scenario 2a - Assessment of the climate change impacts relating to the Proposed Development only.
  - Scenario 2b Assessment of the climate change impacts relating to the Proposed Development, plus ecological impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
  - Assessment 2c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.

[19] IEMA (2010) Principles on Climate Change Mitigation and EIA. Available at: https://www.iema.net/document-download/33006 [Accessed 12 January 2022]
[20] UK Department for Environment, Food and Rural Affairs (2018) The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/727252/national-adaptation-programme-2018.pdf [Accessed 12 January 2022]
[21] UK Department for Environment, Food and Rural Affairs (2017) UK Climate Change Risk Assessment 2017 Evidence Report. Available at: https://www.theccc.org.uk/uk-climate-change-risk-assessment-2017/ [Accessed 12 January 2022]
[22] Further detail on the Proposed Development can be found in Chapter 5: Proposed Development
[23] Further detail on indicative quantum of development for Applications 1,3 and 4 can be found in Chapter 2: Approach to Assessment

- Assessment Stage 3 – Cumulative assessment
    - Scenario 3a - Assessment of the cumulative impacts relating to the Proposed Development plus impacts associated with agreed cumulative sites.
    - Scenario 3b - Assessment of the cumulative impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4, and the agreed cumulative sites.
    - Scenario 3c - Assessment of the cumulative impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4, the wider SRF, and the agreed cumulative sites.

### Scope of Assessment

16.37 Table 16.2: presents the approach of the GHG assessment for each scenario.

#### Assessment Scenarios 1a and 2a: Impacts of the Proposed Development Only

16.38 A quantitative GHG assessment has been undertaken by the VNIF Carbon Management Team for scenarios 1a and 2a based on information available at the time of their assessment. This information has been used as the evidence to inform the EIA assessment. Table 16.3: presents the scope of this assessment.

16.39 For scenarios 1a and 2a, the approach to estimating GHG emissions, undertaken by the VNIF Carbon Management Team has been to use activity data (a measure of the quantity of an activity) and to quantify the GHG emissions using a GHG emissions factor (a measure of the GHG emissions per unit of activity).

16.40 GHG emissions are reported as tonnes of carbon dioxide equivalent ($tCO_2e$). $CO_2e$ refers to a common unit employed to compare the emissions from various GHGs (methane, ozone, nitrous oxide etc.) based on their global-warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide ($CO_2$).

16.41 RICS Whole Life Carbon Assessment for The Built Environment guidance sets out four stages in the life of a typical project described as life-cycle modules:

- Module A1 – A5 (Product sourcing and construction stage)
- Module B1 – B7 (Use stage)
- Module C1 – C4 (End of life stage)
- Module D (Benefits and loads beyond the system boundary)

16.42 To assess the embodied carbon (A1-A4 emissions), Arup's excel based Infrastructure Carbon Tool has been used by the VNIF Carbon Management Team which incorporates emissions factors from the National Highways Carbon Database[24].

[24] Factors in the National Highways Carbon Database originate from the ICE (Inventory of carbon and energy) V3 database

16.43 Further detail on the carbon quantification methodology, including material quantities and assumptions made to inform the quantification of GHG emissions can be found in Appendix C of the Carbon Management Plan (**Appendix 16.1**).

### In-Combination Assessment: Assessment Scenarios 1b, 1c, 2b and 2c Considering Impacts of the Proposed Development Alongside the Wider Development Project and SRF

16.44 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. Apps 1-4 and the wider SRF). Assessment scenarios 1b,1c, 2b and 2c are presented as qualitative, in-combination assessment as information was not available with which to quantify emissions.

*Table 16.2: GHG emissions assessment - approach*[25]

| Assessment scope: Impact of the development on climate (GHG emissions) | | | | |
|---|---|---|---|---|
| **Stage** | **Assessment scenario** | **Type of assessment** | **Rationale** | **Approach to assessment** |
| **Assessment scenarios 1a and 2a: Impacts of the Proposed Development only** | | | | |
| Stage 1 – Demolition and Construction Phase | 1a | Quantitative assessment (data collection and quantification undertaken by VNIF Carbon Management Team) | The Proposed Development could give rise to significant effects on GHG emissions due to the impact of demolition and construction activities. | The GHG assessment, for assessment scenario 1a quantifies and reports the GHG emissions anticipated to be generated or avoided by the Proposed Development, reported in tonnes of carbon dioxide equivalent ($tCO_2e$).<br><br>To quantify direct and indirect emissions associated with the Proposed Development, a lifecycle approach has been adopted. **Error! Reference source not found.** identifies the key contributing GHG sources or activities from The Proposed Development, with a justification for those excluded from GHG emissions assessment. Emissions from the 'scoped in' sources are compared to the baseline 'do minimum' scenario to quantify the net GHG emissions of the Proposed Development. |
| Stage 2 – Completed Development and Operational Phase | 2a | Quantitative assessment (data collection and quantification undertaken by VNIF Carbon Management Team) | The Proposed Development could give rise to significant effects on GHG emissions due to the impact of operational activities. | The GHG assessment, for assessment scenario 2a quantifies and reports the GHG emissions anticipated to be generated or avoided by the Proposed Development, reported in tonnes of carbon dioxide equivalent ($tCO_2e$).<br><br>To adequately capture direct and indirect emissions associated with the Proposed Development, a lifecycle approach has been adopted. **Error! Reference source not found.** identifies the key contributing |

[25] Cell colours in 'Type of assessment' column indicate whether a quantitative or qualitative assessment has been undertaken

| | | | | |
|---|---|---|---|---|
| **Assessment scope: Impact of the development on climate (GHG emissions)** | | | | |
| | | | | GHG sources or activities from the Proposed Development, with a justification for those excluded from GHG emissions assessment. Emissions from the 'scoped in' sources are compared to the baseline 'do minimum' scenario to quantify the net GHG emissions of the Proposed Development. |
| **In-Combination Assessment: Assessment Scenarios 1b, 1c, 2b and 2c considering impacts of the Proposed Development alongside the wider development project and SRF** | | | | |
| Stage 1 – Demolition and Construction Phase | 1b | Qualitative, in-combination assessment | The Proposed Development could give rise to significant effects on GHG emissions due to the impact of demolition and construction activities.<br><br>The GHG assessment for Application 1 concluded that there would be emissions associated with the demolition and construction phase of the development.<br><br>Activities for Applications 3 and 4 could also give rise to significant effects on GHG emissions. | Detailed construction and demolition information was not available for Applications 3 and 4 at the time of the assessment.<br><br>To ensure the potential impacts of the four combined applications are considered as part of this EIA 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 applications. The high-level assessment is presented in<br><br>Assessment of Likely Significant Effects & In-Combination Assessment. |
| | 1c | Qualitative, in-combination assessment | The Proposed Development could give rise to significant effects on GHG emissions due | Detailed demolition and construction information was not available for Applications 3, 4 and the wider SRF at the time of the assessment. |

| Assessment scope: Impact of the development on climate (GHG emissions) | | | | |
|---|---|---|---|---|
| | | | to the impact of demolition and construction activities.<br><br>The GHG assessment for Application 1 concluded that there would be emissions associated with the demolition and construction phase of the development.<br><br>Activities for Applications 3, 4 and the wider SRF could also give rise to significant effects on GHG emissions. | To ensure the potential impacts of the four combined applications and the wider SRF are considered as part of this EIA, 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 applications and the wider SRF. The high-level assessment will be presented in<br><br>Assessment of Likely Significant Effects & In-Combination Assessment. |
| Stage 2 – Completed Development and Operational Phase | 2b | Qualitative, in-combination assessment | Assessment of operational impacts was not included in the assessment for Application 1 due to the short programme prior to future development.<br><br>Operational activities associated with Applications 3 and 4 could however give rise to significant effects on GHG emissions. | Detailed operational information was not available for Applications 3 and 4 at the time of the assessment.<br><br>To ensure the potential impacts of the four combined applications are considered as part of this EIA 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 applications. The high-level assessment will be presented in<br><br>Assessment of Likely Significant Effects & In-Combination Assessment. |

| Assessment scope: Impact of the development on climate (GHG emissions) | | | | |
|---|---|---|---|---|
| | 2c | Qualitative, in-combination assessment | Assessment of operational impacts was not included in the assessment for Application 1 due to the short programme prior to future development.<br><br>Operational activities associated with Applications 3,4 and the wider SRF could however give rise to significant effects on GHG emissions. | Detailed operational information was not available for Applications 3, 4 and the wider SRF at the time of the assessment.<br><br>To ensure the potential impacts of the four combined applications and the wider SRF are considered as part of this EIA 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 applications and the wider SRF. The high-level assessment will be presented in<br><br>Assessment of Likely Significant Effects & In-Combination Assessment. |

*Table 16.3: Scenarios 1a and 2a GHG emissions assessment – scope of the quantitative assessment undertaken by the VNIF Carbon Management Team*

| Lifecycle stage and source of GHG emissions[26] | Scoped in | Scoped out | Justification where scoped out | Assessment methodology | Data sources |
|---|---|---|---|---|---|
| **Pre-construction phase (A0)** | | | | | |
| GHG emissions associated with the planning and consenting phases | | ✓ | GHG emissions from preliminary studies and works are largely desk-based and for this reason are assumed to be small and would not give rise to significant effect. | n/a | n/a |
| **Demolition and Construction phase – (A1-A5)** | | | | | |
| Materials & Transport of materials (A1-A4) | ✓ | | n/a | Arup's excel based Infrastructure Carbon Tool has been used which incorporates emissions factors from the National Highways Carbon Database. The Database uses emissions factors from the Inventory of Carbon and Energy (ICE) version 3.<br><br>Total quantities of materials were provided by the Proposed Development designers, for each area of development and were multiplied by an appropriate emissions factor available in the ICE database. | Inventory of Carbon and Energy (ICE) Version 3. |

[26] For the purpose of this assessment the 'before use stage' is referred to as the 'demolition construction phase', the 'use stage' is referred to as the 'completed development and operational phase' and the 'end of life stage' is referred to as the 'decommissioning phase'.

| Lifecycle stage and source of GHG emissions[26] | Scoped in | Scoped out | Justification where scoped out | Assessment methodology | Data sources |
|---|---|---|---|---|---|
| Plant (A5) | ✓ | | n/a | Benchmark provided by BAM from previous relatable project emissions.<br><br>30.6t$CO_2$e / £1,000,000 | BAM Nuttall – previous project experience |
| Waste (A5) | ✓ | | n/a | Calculation based on initial plot preparation earthworks and infrastructure related demolition using emission factors from ICE version 3 data base. | Inventory of Carbon and Energy (ICE) Version 3. |
| Land use (A5) | ✓ | | n/a | Data from landscape masterplan drawings has been used to estimate the area of each habitat type lost and the associated carbon stocks within the habitats and soils lost.<br><br>Carbon stock estimates were calculated by identifying the relevant habitat type and using a carbon stock factor as contained within the Natural England report. This stock factor was then multiplied by the area of habitat. | Natural England (2021) Carbon storage and sequestration by habitat: a review of the evidence (second edition)[27]. |
| ***Completed Development and Operational Phase*** **(B1-B9)** | | | | | |
| Transport emissions (B1) | | ✓ | Due to the nature of scenario 1a it is considered that there will be no increase in traffic during operation and | n/a | n/a |

[27] R Gregg, J. L. Elias, I Alonso, I.E. Crosher and P Muto and M.D. Morecroft (2021) Carbon storage and sequestration by habitat: a review of the evidence (second edition) Natural England Research Report NERR094. Natural England, York. Available at: http://publications.naturalengland.org.uk/publication/5419124441481216 [Accessed 11 November 2021]

| Lifecycle stage and source of GHG emissions[26] | Scoped in | Scoped out | Justification where scoped out | Assessment methodology | Data sources |
|---|---|---|---|---|---|
| | | | therefore no change in GHG emissions associated with road users under scenario 1a. | | |
| Land use (B1) | ✓ | | n/a | Data from landscape masterplan drawings has been used to estimate carbon stocks lost by vegetation removal, protected by vegetation retention and additional stock gain from vegetation introduced by the design.<br><br>Carbon stock estimates were calculated by identifying the relevant habitat type and using a carbon stock factor as contained within the Natural England report. This stock factor was then multiplied by the area of habitat to provide a total potential carbon stock. | Natural England (2021) Carbon storage and sequestration by habitat: a review of the evidence (second edition)[28]. |
| Maintenance (B2) | | ✓ | Due to the nature of scenario 1a it is considered that there will be no operational maintenance requirements under scenario 1a. | n/a | n/a |
| Repair (B3) | | ✓ | Due to the nature of scenario 1a it is considered that there will be no operational repair | n/a | n/a |

[28] R Gregg, J. L. Elias, I Alonso, I.E. Crosher and P Muto and M.D. Morecroft (2021) Carbon storage and sequestration by habitat: a review of the evidence (second edition) Natural England Research Report NERR094. Natural England, York. Available at: http://publications.naturalengland.org.uk/publication/5419124441481216 [Accessed 11 November 2021]

| Lifecycle stage and source of GHG emissions[26] | Scoped in | Scoped out | Justification where scoped out | Assessment methodology | Data sources |
|---|---|---|---|---|---|
| | | | requirements under scenario 1a. | | |
| Replacement (B4) | ✓ | | n/a | This will be based on the number of replacement cycles for different elements, materials and assets over the 120-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 site and exported waste emissions to landfill. Further detail on expected design life/replacement cycles can be found in Appendix B of the Carbon Management Plan (**Appendix 16.1**). | Inventory of Carbon and Energy (ICE) Version 3. |
| Refurbishment (B5) | | ✓ | Due to the nature of scenario 1a it is considered that there will be no operational refurbishment requirements under scenario 1a. | n/a | n/a |
| Operational emissions (B6) | | ✓ | Due to the nature of scenario 1a it is considered that there will be no operational energy consumption under scenario 1a. | n/a | n/a |
| Operational water use (B7) | | ✓ | Due to the nature of scenario 1a it is considered that there will be no operational water | n/a | n/a |

| Lifecycle stage and source of GHG emissions[26] | Scoped in | Scoped out | Justification where scoped out | Assessment methodology | Data sources |
|---|---|---|---|---|---|
| | | | consumption under scenario 1a. | | |
| **Decommissioning phase (C1-C4)** | | | | | |
| End of life emissions | | ✓ | Scoped out based upon the 120-year lifespan of infrastructure works suggesting the features of scenario 1a will be permanent infrastructure features, which will not be decommissioned. For elements within the project with a shorter design life, it has assumed these will be replaced and replacement is included in module B4. | n/a | n/a |

## Study area

### Demolition and Construction Phase

16.45 For assessment scenario 1a, the study area for the GHG emissions assessment is the Site red line application boundary (see **Figure 1.1**). The assessment covers all direct GHG emissions arising from activities and land use change where demolition and construction works take place within the boundary. It also includes indirect emissions embedded within any construction materials arising as a result of the energy used for their production as well as emissions arising from the transportation of materials and waste to and from the Site.

16.46 For assessment scenarios 1b and 1c, the study area is the indicative site location plans for those associated developments and the wider SRF (see **Figures 2.1, 2.2, 2.3 and 2.4a**).

### Completed Development and Operational Phase

16.47 For assessment scenario 2a, the study area for the GHG emissions assessment is the Site red line application boundary (see **Figure 1.1**). The assessment covers all direct GHG emissions arising from activities and land use change where operational activities take place within the boundary. It also includes indirect emissions embedded within any construction materials (for module B4: Replacement) arising as a result of the energy used for their production and the transportation of materials and waste to and from the Site.

16.48 For assessment scenarios 2b and 2c, the study area for operational GHG emissions arising from maintenance and refurbishment activities is the indicative site location plans for each of those associated developments and wider SRF (see **Figures 2.1, 2.2, 2.3 and 2.4a**). For emissions associated with vehicles using the highways infrastructure, the study area is indicative site location plans, with consideration given to their setting within the wider transport network.

## Significance Criteria

16.49 Guidance from the IEMA on assessing GHG emissions and evaluating their significance has been used to inform the assessment. This guidance states that "*in the absence of a defined quantitative threshold of GHG emissions, all GHG emissions can be deemed significant*"[29]. The guidance does not provide significance criteria to assess potential effects against a scale of significance in the context of the EIA Regulations.

16.50 In accordance with the IEMA guidance, any GHG emissions associated with the Proposed Development will be deemed significant. The GHG assessment will also be compared to the relevant UK Carbon Budgets, and any regional emissions projections (where relevant), in order to contextualise the emissions, as suggested in the IEMA guidance.

[29]IEMA (2017) Assessing Greenhouse Gas Emissions and Evaluating their Significance. Available at: https://www.iema.net/preview-document/assessing-greenhouse-gas-emissions-and-evaluating-their-significance [Accessed 22 November 2021]

### Assumptions and limitations

16.51 Further detail on the carbon quantification methodology, including material quantities and assumptions used for quantifications of GHG emissions can be found in Appendix C of the Carbon Management Plan (**Appendix 16.1**).

16.52 The GHG assessment presented represents an estimate of GHG emissions which can be quantified at this stage of project design. It is therefore likely to underestimate the potential GHG emissions impact of the project and any totals presented should not be considered to represent the total, final GHG emissions impact of the project.

## Baseline Conditions

16.53 The baseline ("do-minimum" approach) is the reference point against which the impact of the Proposed Development can be compared and assessed. The existing and future GHG emissions, without implementing the Proposed 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.

16.54 The UK's most recent national statistics of GHG emissions (for 2019)[30], set out total UK GHG emissions for 2019 of 454.8 million tonnes of carbon dioxide equivalents ($MtCO_2e$).

16.55 At a local level, in 2019, GHG emissions in Manchester were estimated to be $2MtCO_2e$[31].

## Embedded Mitigation

16.56 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 Phase

16.57 Minimising GHG emissions through design is a core principle of the UK Government's Infrastructure Carbon Review (H.M. Treasury, 2013)[32] and the Specification of infrastructure carbon management (PAS 2080) (British Standard Institute, 2016)[33].

[30] UK Government (2020) National Statistics for carbon emissions. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957887/2019_Final_greenhouse_gas_emissions_statistical_release.pdf [Accessed 03 November 2021]
[31] UK Government (2021) Local Authority and Regional Carbon emissions per industry. Available at: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2019 [Accessed 03 November 2021]
[32] H.M. Treasury (2013) Infrastructure Carbon Review. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/260710/infrastructure_carbon_review_251113.pdf [Accessed 27 October 2021]
[33] British Standard Institute (2016) PAS 2080:2016 Carbon Management in Infrastructure, available at: https://shop.bsigroup.com/ProductDetail?pid=000000000030323493&_ga=2.44876396.974118440.1626686164-579123538.1626686162 [Accessed 27 October 2021]

16.58 The PAS2080 carbon management hierarchy is being used by design teams on this project to influence the design by considering opportunities to *"Build nothing, Build less, Build clever, Build efficiently".*

- Build nothing: assess the basic need for development and consider alternative approaches to achieve the desired outcomes.
- Build less: evaluate the potential for re-using and/or refurbishing existing assets to reduce the extent of new construction required.
- Build clever: consider the use of low carbon solutions (including technologies materials and products) to minimise resource consumption during the construction and operation.
- Build efficiently: use techniques (e.g. construction, operational) that reduce resource consumption during the construction and operation phases of an asset or programme of work.

16.59 Examples (taken from the Carbon Opportunity & Hotspot tracker[34]) of how the mitigation hierarchy has been applied for the Proposed Development include:

- Reduction in the amount of river wall removed (reduced from 500m to 130m of wall removed). In addition, bricks that were due to be sent to landfill will now be re-processed on site.
- Optimisation of cut and fill at St Catherine's Wood – regrading of crest only rather than full slope. Minimum of 80% excavated material to be reused as site won material for plot levelling.
- Reduction in the number of headwalls required at Redbank Plateau. Material choice is also being reviewed to avoid concrete structures.

### The Completed and Operational Development Phase

16.60 There are currently no mitigation measures for climate impact included in the completed or operational development phase of the Proposed Development. There are some opportunities within the Carbon Opportunity & Hotspot tracker, listed as 'requiring further investigation', which have the potential to mitigate climate impact if implemented.

[34] Appendix D of the Carbon Management Plan

# Assessment of Likely Significant Effects & In-Combination Assessment

16.61 The potential sources of GHG emissions during both the Demolition and Construction phase and the Completed Development and Operational phase are listed in Table 16.4:.

*Table 16.4:: Potential sources of GHG emissions*

| Lifecycle stage | Life cycle sub-stage | Potential Sources of GHG Emissions |
|---|---|---|
| Demolition and Construction phase | Product stage: including raw material supply, transport and manufacture | Embodied GHG emissions associated with the required raw materials.<br>Emissions associated with transport of raw materials to the 'factory gate' (i.e. the Site of manufacture).<br>Industrial and energy emissions in the manufacture of materials. |
| | Construction process stage: including transport to/from works site and construction /installation processes | Emissions associated with the transport of materials to site and waste from site.<br>Energy use in construction processes, including fuel use for construction plant. |
| | Land use change | GHG emissions mobilised from vegetation or soil loss/degradation during construction phase. |
| Completed Development and Operational phase | Use of the infrastructure by the end-user (road users) | Emissions from vehicles using highway infrastructure |
| | Operation and maintenance (including repair, replacement and refurbishment) | Energy consumption for infrastructure operation and activities of organisations conducting routine repair, maintenance, replacement and/or refurbishment including the emissions associated with extraction, manufacture, transportation and installation energy use. |
| | Land use change | Ongoing land use GHG emissions during the lifetime of the infrastructure. |

Assessment Scenarios 1a and 2a: Impacts of the Proposed Development Only

*Scenario 1a*

GHG emissions associated with materials (A1-A3) have been quantified as 2,116t$CO_2$e, this represents the largest source of emissions during the demolition and construction phase of the project. Emissions associated with construction processes (A4-A5), excluding land use change have been quantified as 1,840 t$CO_2$e. Emissions associated with carbon stock loss, through land use change has been quantified as 1,274 t$CO_2$e. Therefore, the net demolition and construction impact of GHG emissions is 5,230t$CO_2$e (as shown in

16.62 Table 16.5:).

*Table 16.5: Scenario 1a - GHG emissions*

| Lifecycle stage | Demolition and Construction phase emissions ($tCO_2e$) |
|---|---|
| Materials (A1-A3) | 2,116 |
| Construction processes (A4-A5) | 1,840 |
| Land use change (A5) | 1,274 |
| **Net total** | **5,230** |

16.63 To contextualise emissions, and in accordance with the relevant IEMA guidance, the demolition and construction phase emissions have been compared against national and regional emissions information.

16.64 Emissions are also contextualised against the relevant UK Carbon Budget. Demolition and construction of the Proposed Development is anticipated to commence in July 2022 and be completed by March 2024. Demolition and construction phase GHG emissions have therefore been assessed against the UK's Fourth Carbon Budget (2023-2027), as the majority of the construction programme (main works) falls within 2023/24. The estimated demolition and construction phase GHG emissions would represent 0.0000027% of the Fourth Carbon Budget.

*Table 16.6: Estimated emissions as a % of UK Carbon Budget*

| UK Carbon Budget | Years | Demolition and Construction phase emissions ($tCO_2e$) | Carbon Budget (for 5-year period) ($MtCO_2e$) | Estimated emissions from the project as a % of the UK Carbon Budget |
|---|---|---|---|---|
| Fourth | 2023-2027 | 5,230 | 1,950 | 0.0000027% |

16.65 In 2019, emissions in Manchester were $2MtCO_2e$. Demolition and construction phase emissions would therefore represent 0.0026% of Manchester's total annual emissions in 2019.

16.66 The assessment has concluded that there would be GHG emissions associated with the demolition and construction phase of the development. These emissions are considered unlikely to impact the UK Government's ability to meet the relevant Carbon Budgets. However, the nature of GHG emissions are cumulative over time and as such, and as set out in the IEMA guidance, any GHG emissions can be considered significant. Therefore, it is concluded that there will be a significant effect due to GHG emissions.

*Scenario 2a*

16.67 GHG emissions associated with replacement cycles have been estimated to be 2,518 $tCO_2e$. The estimated total carbon stock, which could be achieved (once established) in proposed vegetation planting has been estimated as $1,081tCO_2e$. Therefore, the net operational impact of GHG emissions is $1,437tCO_2e$ (as shown in Table 16.7:).

*Table 16.7: Scenario 2a - Operational emissions*

| Lifecycle stage | Operational phase emissions ($tCO_2e$) |
|---|---|
| Replacement cycles (B4) | 2,518 |
| Land use change (B1) | -1,081 (Benefit from carbon stock, once established) |
| **Net total** | **1,437** |

16.68 These GHG emissions have been compared against the UK's Sixth Carbon Budget (2033-2037), as the Proposed Development has a design life of 120 years and so the comparison is made against the Carbon Budget that is the furthest in the future currently available (the Sixth Carbon Budget). Emissions associated with replacement cycles represents 0.0000015% of the Sixth Carbon Budget (as shown in Table 16.8:).

*Table 16.8: Estimated emissions as a % of UK Carbon Budget*

| UK Carbon Budget | Years | Completed Development and Operational phase net emissions ($tCO_2e$) | Carbon Budget (for 5-year period) ($MtCO_2e$) | Estimated emissions from the project as a % of the UK Carbon Budget |
|---|---|---|---|---|
| Sixth | 2033-2037 | 1437 | 965 | 0.0000015 |

16.69 The assessment has concluded that there will be GHG emissions associated with the completed and operational development phase of the project. These emissions would be unlikely to impact the UK Government's ability to meet the Sixth Carbon Budget. However, this conclusion is limited as the Carbon Budget period only runs to 2037 and the expected lifetime of the asset will be 120 years (falling beyond 2050, when the UK is committed to reaching net zero GHG emissions). The nature of GHG emissions are cumulative over time and as such, and as set out in the IEMA guidance, any GHG emissions can be considered significant. Therefore, it is concluded that there will be a significant effect due to GHG emissions.

## In-Combination Assessment: Assessment Scenarios 1b, 1c, 2b and 2c Considering Impacts of the Proposed Development Alongside the Wider Development Project and SRF

16.70 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. Apps 1-4 and the wider SRF).

*Table 16.9: In-combination assessment*

| Assessment scenario | In-Combination Assessment |
|---|---|
| 1b | **Application 1: Enabling works** – The GHG assessment for Application 1 concluded that there would be GHG emissions associated with demolition and construction. In line with IEMA guidance this will result in a significant effect. |

| Assessment scenario | In-Combination Assessment |
|---|---|
| | **Application 2: HIF** – The GHG assessment for this Application also concluded that there would be GHG emissions associated with demolition and construction. In line with IEMA guidance, this will result in a significant effect.<br><br>**Applications 3 and 4** - Indicative quanta of development for Applications 3 and 4 set out in Chapter 2: Approach to Assessment indicate that construction works will be required for both Applications. Therefore, it is assumed that there are likely to be GHG emissions as a result of construction.<br><br>In line with IEMA guidance such emissions will result in a significant effect.<br><br>**Scenario 1b In-Combination conclusion** - Applications 1, 2, 3 and 4 will result in GHG emissions during construction. In line with IEMA guidance this will result in a significant effect. |
| 1c | **Scenario 1b In-Combination conclusion** - Applications 1, 2, 3 and 4 will result in GHG emissions during demolition and construction phases. In line with IEMA guidance this will result in a significant effect.<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 this will result in a significant effect.<br><br>**Scenario 1c In-Combination conclusion -** Applications 1, 2, 3, 4 and the wider SRF will result in GHG emissions during construction. In line with IEMA guidance this will result in a significant effect. |
| 2b | **Application 1** - No assessment of operational emissions was conducted for Application 1 due to the short programme prior to Application 2 commencing.<br><br>**Application 2 -** The GHG assessment for this Application concluded that there would be a significant effect from GHG emissions associated with operation.<br><br>**Applications 3 and 4 -** Indicative quantum of development for Application 4 set out in Chapter 2: Approach to Assessment indicates that 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 line with IEMA guidance this will result in a significant effect.<br><br>**Scenario 2b In-Combination conclusion –** Operational activity associated with Application 4 is likely to result in GHG emissions and therefore, in line with IEMA guidance will result in a significant effect. Therefore, in combination Applications 1, 2, 3 and 4 are likely to result in a significant effect. |
| 2c | **Scenario 2b In-Combination conclusion –** Operational activity associated with Application 4 is likely to result in GHG emissions and therefore, in line with IEMA guidance will result in a significant effect. Therefore, in combination Applications 1, 2, 3 and 4 are likely to result in a significant effect.<br><br>**The Wider SRF** - Indicative quantum of development set out in Chapter 2: Approach to Assessment indicates that there is likely to be operational activity associated with energy consumption, |

| Assessment scenario | In-Combination Assessment |
|---|---|
| | maintenance and refurbishment and vehicles using the infrastructure and therefore operational GHG emissions. In line with IEMA guidance this will result in a significant effect.<br><br>**Scenario 2c In-Combination conclusion –** Operational activity associated with Application 4 and the wider SRF is likely to result in GHG emissions. Therefore, in line with IEMA guidance, it will result in a significant effect. In conclusion, in combination Applications 1, 2, 3, 4 and the wider SRF are likely to result in a significant effect. |

# Additional Mitigation and Enhancement Measures

16.71 A Project Execution Plan (PEP) will be produced by Arup/BAM for the Proposed Development which will include standard construction working practices, such as:

- The appointment of a Site Manager that will manage waste generated by the development using a bespoke version of the Building Research Establishment (BRE) SMART Waste Plan. The project team will use this plan to identify waste streams, forecast waste volumes and identify suitable methods to eliminate, or where this is not practicable, reduce waste generated by the project;
- The burning of materials or waste on site will not be permitted; and,
- Best practice measures and an environmental toolbox of procedures that will minimise the risk and in the event of an incident, will seek to mitigate the environmental impacts. These will seek to ensure minimal loss of carbon stock within vegetation and soil.

16.72 A Carbon Management Plan (**Appendix 16.1**) has been produced by the VNIF Carbon Management Team to support Applications 1, 2, 3, 4 and the wider SRF. The Plan takes a whole life approach to carbon management to reduce carbon in every lifecycle stage of the project. The purpose of whole life carbon management is to ensure that the emissions during construction are minimised and that the future emissions are reduced as a result of the project.

# Vulnerability of the Proposed Development to Climate Change (Climate Change Risk (CCR) assessment)

### Assessment methodology

16.73 As set out in Chapter 2: Approach, the EIA is undertaken through the presentation of a series of assessment scenarios. The assessment scenarios in respect of the EIA for the Proposed Development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:

- Scenario 1a - Assessment of the climate change impacts relating to the Proposed Development only[35].
- Scenario 1b - Assessment of the climate change impacts relating to the Proposed Development, plus climate change impacts associated with Applications 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development)[36].
- Scenario 1c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider Strategic Regeneration Framework (SRF).

- Assessment Stage 2 - Completed Development and Operational Phase:
  - Scenario 2a - Assessment of the climate change impacts relating to the Proposed Development only.
  - Scenario 2b Assessment of the climate change impacts relating to the Proposed Development, plus ecological impacts associated with Application 1 (Enabling works), 3 (Flood alleviation works) and 4 (Red Bank built development).
  - Assessment 2c - Assessment of the impacts relating to the Proposed Development, Applications 1, 3 and 4, and the wider SRF.
- Assessment Stage 3 – Cumulative assessment
  - Scenario 3a - Assessment of the cumulative impacts relating to the Proposed Development plus impacts associated with agreed cumulative sites.
  - Scenario 3b - Assessment of the cumulative impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4, and the agreed cumulative sites.
  - Scenario 3c - Assessment of the cumulative impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4, the wider SRF, and the agreed cumulative sites.

16.74 Aligned with IEMA best practice guidance, the CCR assessment is a qualitative assessment to identify whether anticipated changes in climatic conditions and weather events are likely to have significant adverse effects on the Proposed Development. It considers the potential impacts and risks of climate change on the project and is based on professional expertise and judgement.

16.75 Table 16.10: presents the approach of the CCR assessment for each scenario.

[35] Further detail on the Proposed Development can be found in Chapter 5: Proposed Development
[36] Further detail on indicative quantum of development for Applications 1,3 and 4 can be found in Chapter 2: Approach to Assessment

*Table 16.10: CCR assessment - approach*

| Assessment approach: Impact of the development on climate (CCR) | | | | |
|---|---|---|---|---|
| **Stage** | **Assessment scenario** | **Type of assessment** | **Rationale** | **Approach to assessment** |
| **Assessment scenarios 1a and 2a: Impacts of the Proposed Development only** | | | | |
| Stage 1 – Demolition and Construction Phase | 1a | Not included in assessment | The short-term nature of the construction period (2022-2024) means there is a lower likelihood of an extreme climate event occurring within the construction period than operational phase of the project.<br><br>In this context, and on the assumption that the PEP and other associated climate risk management and site safety procedures are implemented effectively and are successful in mitigating risk, it is therefore considered there are not likely to be any significant effects associated with the vulnerability to climate change during the construction phase, such that a likely significant effect could occur.<br><br>Therefore, vulnerability of the development to climate change has not been included in this CCR assessment for scenarios 1a, 1b and 1c.<br><br>Key issues related to adaptation to climate change e.g. flood risk are considered within other chapters e.g. Drainage and Flood Risk. | N/A |
| Stage 2 – Completed | 2a | Qualitative assessment | Operational activities associated with Application 2 could be impacted by anticipated changes in climate. | To ensure the potential impacts have considered as part of this EIA a high-level, qualitative assessment on the potential impact on climate change resilience has been undertaken. |

| Assessment approach: Impact of the development on climate (CCR) | | | | |
|---|---|---|---|---|
| **Stage** | **Assessment scenario** | **Type of assessment** | **Rationale** | **Approach to assessment** |
| Development and Operational Phase | | | | This has been based on current, high-level understanding of the application. The high-level assessment is presented in<br><br>Assessment of Likely Significant Effects |
| **In-Combination Assessment: Assessment Scenarios 1b, 1c, 2b and 2c considering impacts of the Proposed Development alongside the wider development project and SRF** | | | | |
| Stage 1 – Demolition and Construction Phase | 1b | Not included in assessment | The short-term nature of the construction period (2022-2024) means there is a lower likelihood of an extreme climate event occurring within the construction period than operational phase of the project.<br><br>In this context, and on the assumption that the PEP and other associated climate risk management and site safety procedures are implemented effectively and are successful in mitigating risk, it is therefore considered there are not likely to be any significant effects associated with the vulnerability to climate change during the construction phase, such that a likely significant effect could occur.<br><br>Therefore, vulnerability of the development to climate change has not been included in this CCR assessment for scenarios 1a, 1b and 1c.<br><br>Key issues related to adaptation to climate change e.g. flood risk are considered within other chapters e.g. Drainage and Flood Risk. | N/A |
| | 1c | Not included in assessment | | N/A |

| Assessment approach: Impact of the development on climate (CCR) | | | | |
|---|---|---|---|---|
| **Stage** | **Assessment scenario** | **Type of assessment** | **Rationale** | **Approach to assessment** |
| Stage 2 – Completed Development and Operational Phase | 2b | Qualitative, in-combination assessment | Assessment of operational impacts was not included in the CCR assessment for Application 1 as the future development was not expected to be long enough to experience any notable changes in the climate.<br><br>Operational activities associated with Applications 2,3 and 4 could be impacted by anticipated changes in climate. | To ensure the potential impacts of the four combined applications are considered as part of this EIA a high-level, qualitative assessment on the potential impact on climate change resilience has been undertaken.<br><br>This has been based on current, high-level understanding of the applications. The high-level assessment is presented in<br><br>Assessment of Likely Significant Effects. |
| | 2c | Qualitative, in-combination assessment | Assessment of operational impacts was not included in the CCR assessment for Application 1 as the future development was not expected to be long enough to experience any notable changes in the climate.<br><br>Operational activities associated with Applications 2,3, 4 and the wider SRF could be impacted by anticipated changes in climate. | To ensure the potential impacts of the four combined applications are considered as part of this EIA a high-level, qualitative assessment on the potential impact on climate change resilience has been undertaken.<br><br>This has been based on current, high-level understanding of the applications. The high-level assessment is presented in<br><br>Assessment of Likely Significant Effects. |

### Assumptions and limitations

16.76 As detailed operational information is not available for Applications 3, 4 and the wider SRF at the time of the assessment a qualitative assessment has been undertaken for scenarios 2b and 2c based on a high level understanding of the applications. This is a limitation of the assessment and there is therefore a low confidence in the conclusions and a risk that the project could carry a higher vulnerability to climate change in its operation.

16.77 The CCR assessment has assumed that mitigation measures for effects during construction or operational assessed by other topics e.g. flood risk will be implemented effectively.

16.78 The CCR assessment also assumes that the PEP will be developed for the construction phase, and that this will be effectively implemented and provide appropriate, effective and successful mitigation for extreme weather-related effects during construction.

16.79 UKCP18 climate projections (as outlined in Baseline Conditions below) are used to understand the potential changes in climate, which inform the CCR assessment. These projections are simulations of potential future climate scenarios, under a range of hypothetical emissions scenarios and assumptions, and should not be viewed as predictions or forecasts. Therefore, the statistics used to establish a future baseline for this assessment should not be viewed as exact.

### Study area

16.80 For assessment scenarios 2b and 2c, which were assessed by the CCR assessment, the study area for the climate change resilience (CCR) assessment is the indicative site location plans for the associated developments and wider SRF (see **Figures 2.1, 2.2, 2.3 and 2.4a**).

## Baseline Conditions

### Historic baseline

16.81 The Met Office generates climatologies including historical regional climate information for different areas of the UK, known as climate districts. The Proposed Development is located within the North-West and North Wales climate district[37].

16.82 Table 16.11: sets out the baseline climate data for the region, as described in the Met Office's North-West England & Isle of Man Climate Report[38].

37 Met Office (Unknown) UK climate districts map Available at: https://www.metoffice.gov.uk/research/climate/maps-and-data/about/districts-map [Accessed 12 January 2022]

38 Met Office (2016) North West England & Isle of Man: climate. Available at: UK regional climates. Available online: north-west-england--isle-of-man_-climate---met-office.pdf [Accessed 12 January 2022]

*Table 16.11: UK regional historical climate characteristics for the North-West of England, representing the current climate conditions in the study area*

| Parameter | North-West England Regional Climate Observations |
|---|---|
| Temperature | Mean annual temperatures over the region depend very much on altitude and, to some extent, proximity to the coast. |
| Rainfall | The exposure of NW England 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. Manchester averages 830mm. Whilst rainfall is generally well distributed through the year, there is a seasonal pattern. The driest season is spring whilst there is an autumn/winter maximum, when the Atlantic depressions are at their most vigorous. |
| Wind | NW England is among the most exposed parts of the UK as it is close to the Atlantic and contains large upland areas. The region experiences 5-10 gales per year, defined as days that the wind reaches a mean speed greater than 34 knots over ten consecutive minutes. |
| Sunshine | Sunshine duration is controlled by the length of day and cloudiness. It decreases with increasing altitude, latitude and distance from the coast. Average annual sunshine hours over NW England range from 1200 hours to 1500 hours. |
| Ground frost | Ground frost refers to a temperature below 0°C measured on a grass surface. In NW England ground frost occurs on average between 75 and 150 days per year. |
| Snowfall | The occurrence of snow is closely linked to temperature. Over most of the area, snowfall is normally confined to the months from November to April, but upland areas may have occasional falls in October and May. On average, the number of days with snow falling is about 20 days in lower-lying parts of the mainland but as much as 50 days over the highest ground. |

### Future baseline

16.83 The UK Climate Projections 2018 (UKCP18)[39] is the latest national climate projections for the United Kingdom and provides the most recent scientific view on projected climate changes. Projections across the UK generally show an increased chance of warmer, wetter winters and hotter, drier summers along with an increase in the frequency and intensity of extremes. Near surface wind speeds over the UK are also projected to increase in the second half of the 21st century.

16.84 Probabilistic projections[40] for North-West England for the time horizon 2080-2099 under the RCP8.5 emissions scenario are presented in Table 16.12:.

*Table 16.12: Probabilistic projections for North-West England*

| Parameter | 50th percentile change (2080-2099) |
|---|---|
| Mean annual temperature (°C) | 3.9 °C |
| Mean winter temperature (°C) | 3.4 °C |

[39] Met Office (2018) UK Climate Projections (UKCP). Available at: https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index [Accessed 12 January 2022]
[40] Met Office (2018) UKCP18 key results. Available at: https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/key-results [Accessed 12 January 2022]

| Parameter | 50th percentile change (2080-2099) |
|---|---|
| Mean summer temperature (°C) | 4.7 °C |
| Mean winter precipitation (%) | 20% |
| Mean summer precipitation (%) | -30% |

16.85 The likely increase in floods, storms, and extreme heat as a result of changes in climate and associated weather patterns has the potential to damage buildings, disrupt transport, and affect human health. Buildings and infrastructure will need to be built resilient to, or be adapted to cope with, these changed climatic conditions.

## Embedded Mitigation

16.86 The project will be designed to be resilient to impacts arising from weather events and climatic conditions in accordance with current planning, design and engineering practice, standards and codes. The climate assessment assumes that design and engineering practice standards and codes incorporate conservative assumptions of future climatic conditions, as guided by UKCP18, and that these are being used in the design process, particularly for safety critical assets. It also assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is mitigated. An example of this is the mitigation related to flood risk, which is set out in Chapter 9: Drainage and Flood Risk and the Victoria North HIF Drainage Strategy.

16.87 Most weather and climate-related resilience effects during operation are expected to be mitigated through measures embedded in the design and future maintenance of the project as a result of meeting current planning, design and engineering practice and codes (examples of such mitigation is shown in Table 16.13:). It is expected that these practices and codes will provide effective resilience throughout the operational phase of the project.

*Table 16.13: Examples of potential embedded mitigation*

| Climate hazard | Potential climate change impact | Potential embedded mitigation |
|---|---|---|
| High temperatures | Increased heat stress for staff, particularly outdoor maintenance works, due to increased number of hot days (operational phase maintenance) | Proposed maintenance delivery regimes to incorporate potential temperature impacts on maintenance workers through risk assessments. Regular review to ensure health and safety requirements within Highways England are met |
| High temperatures | Increased risk of thermal expansion joints being pushed beyond their design capability, presenting a | Design standards consider climate change allowances for the upper and lower bound temperatures on structure design |

| Climate hazard | Potential climate change impact | Potential embedded mitigation |
|---|---|---|
| | direct risk of damage to structures and assets | |
| High temperatures | Asphalt surfaces may exhibit permanent deformation in long periods of hot, sunny conditions | Engineers to incorporate resilience through pavement design and material specifications. Regular monitoring/maintenance regimes will preserve pavement surface conditions throughout operation |
| High temperatures | Increased temperatures may impact the performance of electrical equipment, such as the reduced efficiency and lifespan of LED luminaries | Mitigated through monitoring regimes to identify equipment failures and maintenance regimes to replace failed equipment as quickly as possible |
| High winds | Increased risk of extreme winds leading to possible blockage of drainage systems due to obstructions from wind-blown debris | Mitigated through drainage design and monitoring and maintenance regimes |
| High humidity | Increased humidity leading to accelerated stripping process of road surface | Mitigated through appropriate pavement design, material specifications, and regular monitoring/maintenance regimes |
| High precipitation | Increased flooding of access roads and/or infrastructure | Flood modelling will be carried out to assess the potential flooding impact on the scheme and to assist in the design of mitigation to address risks identified in modelling<br><br>In line with drainage design standards, runoff systems will be designed to take into account future rainfall intensity. |
| High precipitation | Increased risk of sewage outflow in floodwater causing damage and impacting health of residents, general public and maintenance workers | Mitigated through monitoring and maintenance regimes which may be adapted to ensure health and safety requirements within Highways England are met. |
| High precipitation | Reduced skid resistance due to increased frequency of wet surfaces | Mitigated through appropriate pavement design, material specifications, and regular monitoring/maintenance regime |

# Assessment of Likely Significant Effects & In-Combination Assessment

16.88 There is potential for a changing climate and anticipated associated increase in frequency and severity of weather events to impact on project in the medium to longer-term.

16.89 A summary of the potential impacts on the project from weather events, associated with climate change, that may affect the study area is presented in Table 16.14:.

*Table 16.14:Summary of weather events associated with climate change and the potential impacts on the project*

| Primary Weather Event | Potential Impacts |
|---|---|
| Heavy rain / flooding | Raised river levels, flooded drains, collapsed culverts<br>Road closures<br>Danger to road users and risk to life from reduced grip on the road surface, flooding and associated sewage contamination.<br>Contaminated water<br>Fallen trees<br>Water scour causing structural damage<br>Weakening or wash out of structural soils<br>Changes in ground water level and soil moisture impacting earthwork stability |
| High winds / gales | Damage to structures from wind borne debris<br>Power cuts associated with damage to power cables<br>Additional or uneven loading of structures<br>Fallen trees and damage to landscaping<br>Disruption and potential danger to crossing users<br>Road closures<br>Danger to road users and risk to life from wind borne debris |
| Increased temperatures and prolonged periods of hot weather | Drought and water shortages<br>Death and/or health impacts from breathing problems, heatstroke and sunstroke<br>Grass and forest fires<br>Stress on structures and technology<br>Challenges from maintenance regimes |
| Increased frequency of extreme weather events | Increased requirement for maintenance and repair<br>Increased costs (e.g. associated with increased frequency of maintenance and repair)<br>Increased frequency of risks to life and human health outlined in other weather features, e.g. flooding. |
| Lightning | Structural damage<br>Danger to road users (e.g. from fallen trees blocking the road)<br>Power surge and tripping electricity breakers<br>Fires<br>Death and/or injury from direct strikes |

| Primary Weather Event | Potential Impacts |
|---|---|
| Snow and ice | Road closures<br>Danger to road users from reduced grip on the road surface<br>Damage to roads<br>Death and/or injury from slipping on ice<br>Health impacts and chest illnesses due to low temperatures |
| Fog | Danger to road users and risk to life due to reduced visibility |

### Assessment scenario 2a: Impacts of the Proposed Development Only

16.90 It is expected that most weather and climate-related resilience effects during operation will be mitigated through measures embedded in the design of the project as a result of meeting current planning, design and engineering practice and codes (examples of such mitigation is shown in Table 16.13:). The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is mitigated. Subject to this, it is expected that these practices and codes will provide effective resilience throughout the operational phase of the project.

### In-Combination Assessment: Assessment Scenarios 2b and 2c Considering Impacts of the Proposed Development Alongside the Wider Development Project and SRF

16.91 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. Apps 1-4 and the wider SRF)

*Table 16.15: In-combination assessment*

| Assessment scenario | In combination assessment |
|---|---|
| 2b | **Application 1: Enabling works** - The assessment of vulnerability of the development to climate change for scenario 2a was not included in the CCR assessment as the short-term nature of the operational period, prior to future works means there is a lower likelihood of an extreme climate event occurring.<br><br>It was also expected that most weather and climate-related resilience effects during operation would be mitigated through measures embedded in the design of the project as a result of meeting current planning, design and engineering practice and codes (examples of such mitigation is shown in Table 16.13:). The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is mitigated. Subject to this, it was expected that these practices and codes will provide effective resilience throughout the operational phase of the project.<br><br>**Application 2: HIF** – It is expected that most weather and climate-related resilience effects during operation will be mitigated through measures embedded in the design of the project as a result of meeting current planning, design and engineering practice and codes (examples of such mitigation is shown in Table 16.13:). The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the |

| Assessment scenario | In combination assessment |
|---|---|
| | climate risk is mitigated. Subject to this, it is expected that these practices and codes will provide effective resilience throughout the operational phase of the project.<br><br>**Applications 3 and 4 -** The design life of Applications 3 and 4 is assumed to be 120 years[41]. By 2090[42] the Met Office projects that winters in North-West England will be 3.4°C warmer and up to 20% wetter, while summers will be 4.7°C warmer and up to 30% drier. These changes in climate have the potential, without the implementation of sufficient and effective mitigation, to result in a vulnerability of the project to climate change.<br><br>However, it is expected that the project will be designed to be resilient to impacts arising from weather events and climatic conditions in accordance with current planning, design and engineering practice, standards and codes (examples of such mitigation is shown in Table 16.13:). It is assumed that design and engineering practice standards and codes will incorporate conservative assumptions of future climatic conditions, as guided by UKCP18, and that these are being used in the design process, particularly for safety critical assets. The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is mitigated.<br><br>**Scenario 2b In-Combination conclusion** – So long as Applications 1,2,3 and 4 are designed in accordance with current planning, design and engineering practice, standards and codes, and that additional mitigation proposed is effectively implemented it is concluded that there is unlikely to be a significant effect on the vulnerability of the development to climate change.<br><br>It should, however, be noted that this assessment is based on the limited information available at the time of assessment and that future EIAs for Applications 3 and 4 should be subject to CCR assessments which may draw different conclusions. |
| 2c | **Scenario 2b In-Combination conclusion** - So long as Applications 1,2,3 and 4 are designed in accordance with current planning, design and engineering practice, standards and codes, and that additional mitigation proposed is effectively implemented it is concluded that there is unlikely to be a significant effect on the vulnerability of the development to climate change.<br><br>**The Wider SRF** – As with Applications 3 and 4 it is assumed that the wider SRF will have a design life of 120 years and therefore has the potential to be impacted by changes in climate. However, it is expected that the project will be designed to be resilient to impacts arising from weather events and climatic conditions in accordance with current planning, design and engineering practice, standards and codes. It is assumed that design and engineering practice standards and codes will incorporate conservative assumptions of future climatic conditions, as guided by UKCP18, and that these are being used in the design process, particularly for safety critical assets. The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is mitigated. |

[41] In line with RICS (2017) Whole Life Carbon Assessment for the built environment (1st edition).
[42] Projections furthest into the future, available for the assessment are 2080-2099

| Assessment scenario | In combination assessment |
|---|---|
| | **Scenario 2c In-Combination conclusion** – So long as Applications 1,2,3,4 and the wider SRF are designed in accordance with current planning, design and engineering practice, standards and codes, and that additional mitigation proposed is effectively implemented it is concluded that there is unlikely to be a significant effect on the vulnerability of the development to climate change.<br><br>It should, however, be noted that this assessment is based on the limited information available at the time of assessment and that future EIAs for Applications 3, 4 and the wider SRF should be subject to CCR assessments which may draw different conclusions. |

## Additional Mitigation and Enhancement Measures

16.92 General mitigation and adaptation measures to address CCR risks relate to impacts associated with other topic chapters and so have been identified within the relevant topic chapters. For example, water management and addressing drainage issues relating to flooding are considered in Chapter 9: Drainage and Flood Risk.

## Likely Residual Effects of the Development and their Significance

16.93 Table 16.16: summarises the likely residual climate change effects of the development and their significance, as assessed by this assessment. This presents the effects which remain after all the embedded and proposed additional mitigation measures are implemented.

*Table 16.16: Residual Effects Summary*

| Description of effect | Initial Assessment Before Mitigation | Proposed Mitigation | Residual effect including significance |
|---|---|---|---|
| ***GHG ASSESSMENT*** | | | |
| ***Construction and Demolition*** | | | |
| Assessment Scenario 1a | Significant effect | Best practice measures implemented via a PEP | Significant effect |
| Assessment Scenario 1b | Significant effect | Best practice measures implemented via a PEP | Significant effect |
| Assessment Scenario 1c | Significant effect | Best practice measures implemented via a PEP | Significant effect |

| Description of effect | Initial Assessment Before Mitigation | Proposed Mitigation | Residual effect including significance |
|---|---|---|---|
| ***Completed and Operational Development*** | | | |
| Assessment Scenario 2a | Significant effect | Use of mitigation hierarchy to influence design to decarbonise the project. | Significant effect |
| Assessment Scenario 2b | Significant effect | Use of mitigation hierarchy to influence design to decarbonise the project. | Significant effect |
| Assessment Scenario 2c | Significant effect | Use of mitigation hierarchy to influence design to decarbonise the project. | Significant effect |
| ***CCR ASSESSMENT*** | | | |
| ***Construction and Demolition*** | | | |
| Assessment Scenario 1a | Not included in the assessment as the short-term nature of the construction period (2022-2024) means there is a lower likelihood of an extreme climate event occurring within the construction period than operational phase of the project.<br><br>***In this context, and on the assumption that the PEP and other day-to-day, standard tried and tested associated climate risk management and site safety procedures are implemented effectively and are successful in mitigating risk, it is therefore considered there are not likely to be any significant effects associated with the vulnerability to climate change during the construction phase, such that a likely significant effect could occur.*** | n/a | n/a |
| Assessment Scenario 1b | Not included (see scenario 1a above for justification) | n/a | n/a |

| Description of effect | Initial Assessment Before Mitigation | Proposed Mitigation | Residual effect including significance |
|---|---|---|---|
| Assessment Scenario 1c | Not included (see scenario 1a above for justification) | n/a | n/a |
| ***Completed and Operational Development*** | | | |
| Assessment Scenario 2a | Not significant effect | It is expected that most weather and climate-related resilience effects during operation will be mitigated through measures embedded in the design of the project as a result of meeting current planning, design and engineering practice and codes. The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is mitigated. Subject to this, it is expected that these practices and codes will provide effective resilience throughout the operational phase of the project | Not significant effect |
| Assessment Scenario 2b | Not significant effect | It is expected that most weather and climate-related resilience effects during operation will be mitigated through measures embedded in the design of the project as a result of meeting current planning, design and engineering practice and codes. The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is mitigated. Subject to this, it is expected that these practices and codes will provide effective resilience throughout the operational phase of the project. | Not significant effect |
| Assessment Scenario 2c | Not significant effect | It is expected that most weather and climate-related resilience effects during operation will be mitigated through measures | Not significant effect |

| Description of effect | Initial Assessment Before Mitigation | Proposed Mitigation | Residual effect including significance |
|---|---|---|---|
| | | embedded in the design of the project as a result of meeting current planning, design and engineering practice and codes. The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is mitigated. Subject to this, it is expected that these practices and codes will provide effective resilience throughout the operational phase of the project. | |

# Conclusions

### Impact of the project on climate (Greenhouse Gas (GHG) emissions assessment)

16.94 For context, the UK's total GHG emissions in 2019 were 454.8 million tonnes of carbon dioxide equivalents ($MtCO_{2e}$). At a local level, in 2019, emissions in Manchester were $2MtCO_{2e}$.

16.95 The assessment of the impact of the Proposed Development on climate (GHG emissions assessment) quantitatively assessed the potential GHG emissions from scenarios 1a and 2a. The assessment concluded that the demolition and construction phase would result in estimated net GHG emissions of $5,230tCO_2e$, and the completed and operational phase would result in estimated net GHG emissions of $1,437tCO_2e$. Overall, these emissions were considered unlikely to impact the UK Government's ability to meet the relevant UK Carbon Budget. However, the nature of GHG emissions are cumulative over time and as such, and as set out in the IEMA guidance, any GHG emissions can be considered significant. Therefore, it is concluded that there will be a significant effect on climate due to GHG emissions.

16.96 High-level, qualitative assessments were undertaken of scenarios 1b, 1c, 2b and 2c based on current understanding of the applications and professional judgement. All scenarios were considered likely to result in GHG emissions. The nature of GHG emissions are cumulative over time and as such, and as set out in the IEMA guidance, any GHG emissions can be considered significant. Therefore, it was concluded that there will be a significant in-combination effect due to GHG emissions of the development as a whole (Applications 1-4 and the wider SRF).

### Vulnerability of the project to climate change (Climate Change Risk (CCR) assessment))

16.97 The UK CP18 future climate projections, indicate an increased likelihood of warmer, wetter winters and hotter, drier summers, in addition to an increase in the frequency of extreme weather events. The likelihood of an increase in floods, storms, and extreme heat as a result of changes in climate and associated weather patterns has the potential to damage buildings, disrupt transport, and affect health. Buildings and infrastructure will need to be built resilient to, or be adapted to cope with these changed climatic conditions.

16.98 A high-level, qualitative assessment was undertaken of scenarios 2a, 2b and 2c based on current understanding of the applications.

16.99 It was concluded that so long as Applications 1, 2, 3, 4 and the wider SRF are designed in accordance with current planning, design and engineering practice, standards and codes, and that additional mitigation proposed is effectively implemented that there would not be a significant effect on the vulnerability of the development to climate change. The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is mitigated.

16.100 It should, however, be noted that future EIAs for Applications 3 and 4 should be subject to CCR assessments to reassess CCR with more information about these development stages and that such consideration may draw different conclusions.

## Cumulative Assessment

16.101 The Cumulative Impact Assessment is presented as three scenarios. The scenarios to be considered are as follows:

- Scenario 3a - Assessment of the cumulative impacts relating to the Proposed Development plus impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4, and the agreed cumulative sites.
- Scenario 3c - Assessment of the cumulative impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4, the wider SRF, and the agreed cumulative sites.

16.102 The cumulative assessment seeks to determine whether any non-significant effects on climate change 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.

16.103 Table 16-1 provides a list of the developments selected by Avison Young and agreed with MCC for the Cumulative Impact Assessment.

16.104 The Cumulative Impact Assessment, based upon the information provided, is summarised in Table 16.17.

*Table 16-1 Cumulative Sites*

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | City Council Development for the erection of 168, three and four storey dwelling houses (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 dwelling houses, the Collyhurst Village Store and associated car parking | 650m northeast | Approved Jun 2021 | Scoped in | **Impact of the project on climate (Greenhouse Gas (GHG) emissions assessment)**<br>Owing to the transboundary nature of GHG emissions, the effects of the Proposed Development must be considered in the context of global GHG emissions and concentrations of GHGs in the atmosphere. The IEMA guidance states that the GHG emissions from all projects will contribute to climate change, the largest inter-related cumulative environmental effect. |
| 2 | 127971/FO/2020 | 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 | Scoped in | |
| 3 | 128248/FO/2020 | 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 | 150m south | Approved June 2021 | Scoped in | |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 4 | 116366/FO/2017 | 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 | 150m south | Approved Aug 2017<br><br>Under construction | Scoped in | **<u>Vulnerability of the project to climate change (Climate Change Risk (CCR) assessment))</u>**<br><br>The consequences of a changing climate have the potential to lead to significant environmental effects on all topics in the EIA Directive – e.g. Population, Fauna, Soil, etc. |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<br><br>Under construction | Scoped in | |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 | Scoped in | |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 7 | 124973/FO/2019 | 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 | 350m south | Approved Feb 2016 | Scoped in | |
| 8 | 111777/FO/2016/C1 | 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 | 250m southeast | Approved Sep 2016<br><br>Under construction | Scoped in | |
| 9 | 121375/FO/2018 | 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 | 840m south | Approved Oct 2020 | Scoped in | |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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. | | | | |
| 10 | 18/71330/FUL | 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 in | |
| 11 | 20/76134/FUL | 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 | 1000m southwest | Approved Feb 2020 | Scoped in | |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m southwest | Approved Nov 2017<br><br>Under construction | Scoped in | |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 13 | 19/74465/HYBEIA | 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 7BN | 960m southwest | Validated Nov 2019 | Scoped in | |
| 14 | 126944/FO/2020 | 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 | 140m southeast | Approved Sep 2020<br>Under Construction | Scoped in | |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | 145m southeast | Approved October 2017 | Scoped in | |
| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 | Scoped in | |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | 635m southwest | Approved June 2018 | Scoped in | |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | Scoped in | |

| Site Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | E), public realm and landscaping, with supporting infrastructure and associated works following demolition of existing building | | | | |
| 19 | 124888/FO/2019 | 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>Under Construction | Scoped in | |
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | Scoped in | |

*Table 16-17 Cumulative Impact Assessment summary*

| Assessment scenario | Potential effects |
|---|---|
| **GHG ASSESSMENT** | |
| 3a – Assessment of the cumulative impacts relating to the enabling works plus impacts associated with the agreed cumulative sites | The assessment of the impact of the project on climate concluded that there would be emissions associated with the demolition and construction phase of the development. These emissions are unlikely to impact the UK Government's ability to meet the relevant Carbon Budget. The nature of GHG emissions are cumulative over time and as such, and as set out in the IEMA guidance, any GHG emissions can be considered significant. Therefore, it is concluded that there will be a significant cumulative effect due to GHG emissions.<br><br>Owing to the transboundary nature of GHG emissions, the effects of the Proposed Development must be considered in the context of global GHG emissions and concentrations of GHGs in the atmosphere. The IEMA guidance states that the GHG emissions from all projects will contribute to climate change, the largest inter-related cumulative environmental effect. |
| 3b – Assessment of cumulative impacts relating to the enabling works, plus impacts associated with Application 1, 3 and 4, and the agreed cumulative sites | The assessment of the impact of the project on climate concluded that there would be emissions associated with the demolition, construction and operation of the project. These are unlikely to impact the UK Government's ability to meet the relevant Carbon Budget. The nature of the GHG emissions are cumulative over time and as such, and as set out in the IEMA guidance, they can be considered significant. Therefore, it is concluded that there will be a significant cumulative effect due to GHG emissions.<br>Owing to the transboundary nature of GHG emissions, the effects of the Proposed Development must be considered in the context of global GHG emissions and concentrations of GHGs in the atmosphere. The IEMA guidance states that the GHG emissions from all projects will contribute to climate change, the largest inter-related cumulative environmental effect. |
| 3c – Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 1, 3, and 4, the wider SRF and the agreed cumulative sites | The assessment of the impact of the project on climate concluded that there would be emissions associated with the demolition, construction and operation of the project. These emissions are unlikely to impact the UK Government's ability to meet the relevant Carbon Budget The nature of the GHG emissions are cumulative over time and as such, and as set out in the IEMA guidance, any GHG emissions they can be considered significant. Therefore, it is concluded that there will be a significant cumulative effect due to GHG emissions.<br><br>Owing to the transboundary nature of GHG emissions, the effects of the Proposed Development must be considered in the context of global GHG emissions and concentrations of GHGs in the atmosphere. The IEMA guidance states that the GHG emissions from all projects will contribute to climate change, the largest inter-related cumulative environmental effect. |

| Assessment scenario | Potential effects |
|---|---|
| **CCR ASSESSMENT** | |
| 3a – Assessment of the cumulative impacts relating to the Proposed Development plus impacts associated with the agreed cumulative sites | The consequences of a changing climate have the potential to lead to significant environmental effects. However, it is anticipated that Application 2 and the agreed cumulative sites will be designed in accordance with current planning, design and engineering practice, standards and codes and that therefore there would not be a significant effect on the vulnerability of the development to climate change. The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is mitigated. |
| 3b – Assessment of cumulative impacts relating to the Proposed Development, plus impacts associated with Application 1, 3 and 4, and the agreed cumulative sites | The consequences of a changing climate have the potential to lead to significant environmental effects. However, it is anticipated that Application 1,2,3,4 and the agreed cumulative sites will be designed in accordance with current planning, design and engineering practice, standards and codes and that therefore there would not be a significant effect on the vulnerability of the development to climate change. The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is mitigated. It should, however, be noted that future EIAs for Applications 3 and 4 should be subject to CCR assessments to reassess CCR with more information about these development stages and that such consideration may draw different conclusions. |
| 3c – Assessment of the cumulative impacts relating to the Proposed Development, plus impacts associated with Application 1, 3, and 4, the wider SRF and the agreed cumulative sites | The consequences of a changing climate have the potential to lead to significant environmental effects. However, it is anticipated that Application 1,2,3,4, the wider SRF and the agreed cumulative sites will be designed in accordance with current planning, design and engineering practice, standards and codes and that therefore there would not be a significant effect on the vulnerability of the development to climate change. The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is mitigated. It should, however, be noted that future EIAs for Applications 3 and 4 should be subject to CCR |

| Assessment scenario | Potential effects |
|---|---|
| | assessments to reassess CCR with more information about these development stages and that such consideration which may draw different conclusions. |

# 17. Health and Wellbeing

## Introduction

17.1 The Red Bank Neighbourhood project as a whole is the First Phase in respect of the Initial Development Area identified for development within the Northern Gateway SRF. It is intended that FEC will progress an application for a new residential-led neighbourhood application for approximately 4,000 dwellings on land controlled by the JV. This project is proposed for on an area of land which forms part of Victoria North, located to the north east of Victoria Station, immediately adjacent to Manchester City Centre (hereafter referred to as 'the Site').

17.2 As noted in Chapter 2: Approach, this ES assesses the Development Project, which is the regeneration of the area in accordance with the SRF. The Development Project is coming forward in four planning applications:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1'). – planning permission has been granted for the demolition of Creamline dairy, tree and shrub clearance and construction of a temporary haul road.
- HIF Infrastructure Works (referred to hereafter as 'Application 2') – the subject of this application. Creation of development platforms, demolition of sections of existing River Wall, remediation and earthworks, construction of Plateau Avenue and junction from Red Bank, creation of SUDs, utility and service connections and diversions and provision of green infrastructure including creation of green links and first phase of the new City River Park.
- HIF Flood Defence Works (referred to hereafter as 'Application 3') – flood mitigation and defence works along the River Irk to reduce the area within flood zone 3.
- Land under control of the JV within the Red Bank Neighbourhood (referred to hereafter as 'Application 4') approximately 4,000 new dwellings including a number of landmark buildings at height. Retail and commercial floorspace, open and amenity space, access and associated infrastructure. As noted in Chapter 2: Approach, the entire Red Bank Neighbourhood within the SRF, including third party land, will deliver up to 5,500 new dwellings.

17.3 All four of these applications together comprise the development project taking place across the Red Bank site.

17.4 This chapter has been written by Arup.

### Assessment scenarios (for whole EIA)

17.5 This EIA has been prepared for submission with the HIF Infrastructure Works (Application 2). See **Figures 1.1** and **5.1-5.3** for information relating to this proposed development. As noted in Chapter 2: Approach, a number of assessment scenarios have been identified in respect of the EIA for Application 2 as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
    - Scenario 1a - Assessment of the impacts relating to the proposed HIF Infrastructure Works only.
    - Scenario 1b - Assessment of the impacts relating to the HIF Infrastructure Works, plus impacts associated with Applications 1, 3 and 4).
    - Scenario 1c - Assessment of the impacts relating to the proposed development (HIF Infrastructure Works), Applications 1, 3 and 4, and the wider SRF.
- Assessment Stage 2 - Completed Development and Operational Phase:
    - Scenario 2a - Assessment of the impacts relating to the HIF Infrastructure Works only.
    - Scenario 2b – Assessment of the impacts relating to the proposed development, plus impacts associated with Applications 1, 3 and 4.
    - Scenario 2c – Assessment of the impacts relating to the proposed development, Applications 1, 3 and 4, and the wider SRF.

### Assessment scenarios (for health and wellbeing assessment)

17.6 As identified in the EIA Scoping Report (see **Appendix 2.1**), there are unlikely to be any significant health and wellbeing effects associated with the HIF infrastructure works themselves. No assessment is therefore made in relation to Assessment Scenario 1a (HIF Infrastructure Works only). However, when considered in-combination with the other assessment scenarios that are outlined in the introduction section, there is a potential for there to be significant effects with regards to health and wellbeing. The purpose of this assessment is therefore to identify what health effects are considered likely for the following assessment scenarios:

- Scenario 1b/2b - Assessment of the impacts relating to the HIF Infrastructure Works, plus impacts associated with Applications 1, 3 and 4).
- Scenario 1c/2c – Assessment of the impacts relating to the proposed development, Applications 1, 3 and 4, and the wider SRF.

17.7 The chapter describes the methods used to identify what likely health and wellbeing effects will arise when considering these in-combination effects. This requires that the baseline conditions currently existing in the communities surrounding the site are identified. Potential direct and indirect effects on health determinants arising from the in-combination effects, and the potential these changes have on health and wellbeing outcomes within the study area during construction and on completion of the projects will be defined. Mitigation measures required to prevent, reduce, or offset any identified effects are set out.

17.8 The following has been provided in the appendices to this report as part of the assessment:

- **Appendix 17.1:** Evidence base for assessment.

# Planning Policy Context

## National Legislation

17.9 There is no legislation in relation to health and wellbeing in England.

## Planning Policy

### National Planning Policy Framework[1]

17.10 Chapter 8 of the National Planning Policy Framework (2021) covers objectives for promoting healthy and safe communities which includes provision for open space and recreation. Planning policies and decisions should aim to achieve healthy, inclusive, and safe places which promote:

- Social interaction;
- Being safe and accessible; and
- Enabling and supporting healthy lifestyles.

### Local Planning Policy

17.11 Manchester Joint Health and Wellbeing Strategy (2016)[2] is the is the city's overarching 10-year plan for reducing health inequalities and improving health outcomes for Manchester residents. The strategic priorities centre around:

- Getting the youngest people in our communities off to the best start;
- Improving people's mental health and wellbeing;
- Bringing people into employment and ensuring good work for all;
- Enabling people to keep well and live independently as they grow older;
- Turning round the lives of troubled families as part of the Confident and Achieving Manchester programme;
- One health and care system – right care, right place, right time; and
- Self-care.

17.12 Manchester Core Strategy[3] features the provision of interventions for improved health outcomes in Manchester in all six of its spatial objectives. The strategy also includes health in its core strategy vision for 2027: "*a City with an*

[1] National Planning Policy Framework (2021). Ministry of Housing, Communities and Local Government. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2
[2] Manchester Joint Health and Wellbeing Strategy, 2016 Refresh. Available at: https://www.manchester.gov.uk/downloads/download/5657/joint_health_and_wellbeing_strategy
[3] Manchester Local Development Framework. Core Strategy development Plan Document, 2012. Available at: https://secure.manchester.gov.uk/downloads/download/5672/core_strategy

*increased and sustainable healthy population and a community which both benefits from and drives the City's productivity upwards*."

17.13 The Manchester Strategy 2025[4] features improving health and wellbeing outcomes in Manchester as one of it's key aims to achieve by 2025. Closing health inequality gaps in Manchester is part of the *"… progressive and equitable city*" theme, as well as improving physical activity levels in "*A connected city*".

17.14 The Greater Manchester Strategy[5] lists "A *place where people live healthy lives and older people are valued*" as one of its visions. This is then incorporated into the strategy's priorities, including Priority 9: Healthy lives, with quality care available for those that need it.

### Other Relevant Policy, Standards and Guidance

17.15 Relevant guidance that would be followed for the assessment include:

- Rapid Health Impact Assessment Tool, National Health Service (NHS) London Healthy Urban Development Unit (HUDU) (2017)[6];
- IMPACT Urban Health Impact Assessment methodology (UrHIA), Liverpool University (2015)[7]; and
- Wales Health Impact Assessment Support Unit (WHIASU) Health Impact Assessment – A practical guide (2011)[8].

## Assessment Methodology and Significance Criteria

### Overview

17.16 The assessment has been undertaken in accordance with the relevant general EIA guidance. The assessment method includes the following steps:

- Establishment of baseline health and well-being status of the local communities. This is based on desk-top research using publicly available data.
- Review of assessment outcomes from other topics within EIA which relate to determinants of health – in particular air quality, ground conditions, noise and landscape.

[4] Our Manchester Strategy, Forward to 2025. Available at: https://www.manchester.gov.uk/downloads/download/7355/our_manchester_strategy-_forward_to_2025
[5] Our People, Our Place. The Greater Manchester Strategy. Available online at: https://www.greatermanchester-ca.gov.uk/what-we-do/greater-manchester-strategy/
[6] NHS, 2019. Health Impact Assessment Tool, Healthy Urban Design Unit (HUDU). Available online at: https://www.healthyurbandevelopment.nhs.uk/our-services/delivering-healthy-urban-development/health-impact-assessment/
[7] Liverpool University, 2015. Urban Health Impact Assessment Methodology. Available online at: https://livrepository.liverpool.ac.uk/2018902/
[8] Wales Health Impact Assessment Support Unit, 2011. Health Impact Assessment, a Practical Guide. Available online at: https://whiasu.publichealthnetwork.cymru/files/1415/0710/5107/HIA_Tool_Kit_V2_WEB.pdf

## Study Area

17.17 The proposed HIF infrastructure works site boundary falls across the wards of Cheetham and Harpurhey which are the wards that are considered in the context of the infrastructure works. However, as the application site sits within the wider context of the Northern Gateway SRF, potential health and wellbeing impacts are considered across the neighbourhoods of four Manchester wards which are included within the site boundary of the SRF, as shown in **Figure 17.1**:

- Piccadilly (E05011356);
- Cheetham (E05011356);
- Miles Platting and Newton Heath (E05011371); and
- Harpurhey (E05011366).

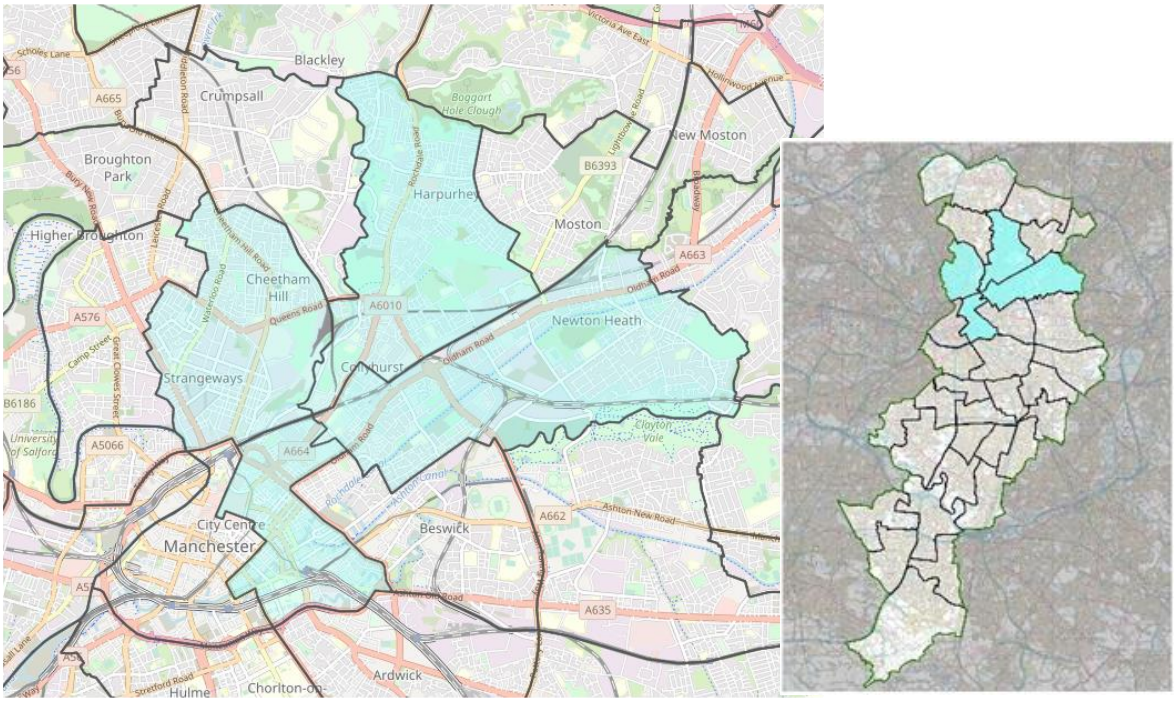



*Figure 17.1: Wards Included within the Study Area*

## Community health profile – desk-based assessment

17.18 Where available, local authority, ward and Lower Super Output Area (LSOA) level data has been reviewed with a focus on the groups of people who are likely to be more vulnerable to changes in health determinants. The principal sources of data include:

- ONS annual small area population estimates (ward and local authority level data);
- ONS Census data, 2011 (ward and local authority level data);
- Index of Multiple Deprivation 2015 (lower layer super output areas);

- Public Health England Health Profiles for Manchester;
- Annual Public Health Reports for Manchester;
- Local policy and strategy documents such as Joint Strategic Needs Assessments; and
- Ward level data on key health indicators such as life expectancy and limiting long-term illness or disability, obtained through consultation with local authority public health teams.

### Health literature review

17.19 A literature review has been undertaken, using publicly available information. The aim of the literature review is to establish the evidence for links between the health determinants identified and potential health outcomes. The health literature review is included at **Appendix 17.1**.

### Assessment approach

17.20 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 at each stage of the development 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.

17.21 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. It is possible in theory to quantify health effects from increased exposure of a large population to noise and air emissions. However, given the relatively short duration of the study, it would not be possible to identify a statistically significant effect. Therefore, a quantitative assessment of health effects has been scoped out.

17.22 It should also be noted that at this stage there is no assessment information available relevant to Applications 3 and 4 which means that assumptions have needed to be made based on expected assessment outcomes. This is based on experience of working on similar development projects and from an understanding of issues that arise in relation to impacts on health determinants from developments of this scale.

17.23 Health determinants are factors that can influence health outcomes and include social, environmental and economic factors. Health determinants which are typically considered within an assessment are listed below in Table 17.1. Whilst no significant health and wellbeing effects are considered likely in relation to the HIF Infrastructure works alone (i.e. Scenarios 1a and 2a), health determinants considered relevant to the in-combination assessment with the other assessment scenarios have been identified and it is these which are considered further in this chapter (i.e. Scenarios 1b, 1c, 2b and 2c).

*Table 17.1 Health determinants scoped in for the HIF in-combination assessment*

| Health determinant | Scoped in for HIF in-combination assessment? | Justification for scoping in/out |
|---|---|---|
| Housing design and affordability | **X** | The infrastructure works will not affect housing design or quality. |
| Access to employment, training and education | ✓ | There are likely to be employment and training opportunities as a result of the construction phase of the infrastructure works. |
| Access to health and social care services and other social infrastructure | **X** | The infrastructure works will not affect access to social infrastructure. |
| Access to open space and nature | ✓ | During the construction phase, the infrastructure works may remove opportunities for accessing nature. |
| Air quality | ✓ | All construction works have the potential to affect air quality as a result of construction dust, vehicle emissions and earthworks. |
| Noise | ✓ | All construction works have the potential to affect the noise environment as a result of construction activities and vehicles. |
| Neighbourhood amenity | ✓ | During construction works may result in changes to the neighbourhood amenity which includes the aesthetic quality – construction works may reduce aesthetics. |
| Accessibility and active travel | **X** | Infrastructure works will not affect accessibility of or opportunities for active travel. |
| Crime reduction and community safety | ✓ | During construction, when there is more movement on and around the site, this may result in perceived or real crime and reduction in community safety. |
| Access to healthy food | **X** | Infrastructure works have no influence on access to healthy food. |

| Health determinant | Scoped in for HIF in-combination assessment? | Justification for scoping in/out |
|---|---|---|
| Social cohesion and inclusive design | **X** | Infrastructure works have no influence on social cohesion and inclusive design. |
| Climate change | **X** | Infrastructure works have no influence on climate change. |

### Magnitude of impact

17.24 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 (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, e.g. effects on physical or mental health conditions, quality of life, or comfort.

*Table 17.2 Methodology for assessing magnitude of health impact*

| Magnitude | Guidelines |
|---|---|
| High | A substantial change to a health determinant, with two or more of the following characteristics:<br>assessed as 'major' by relevant environmental topics (where applicable[9]);<br>likely to be perceived by the population as a major change;<br>has the potential to affect the occurrence of acute or chronic mental or physical illness;<br>long term duration or permanent. |
| Medium | A moderate change to a health determinant, with two or more of the following characteristics:<br>assessed as 'moderate' by relevant environmental topics (where applicable[9]);<br>likely to be perceived by the population as a moderate change; |

[9] Other EIA topics' assessment results are not always relevant to the health assessment. For example, a 'major' effect on an individual receptor would not necessarily constitute a major change to a health determinant that would affect the population as a whole. Professional judgement is required when using information from other topics in the health assessment.

| Magnitude | Guidelines |
|---|---|
| | has the potential to improve / reduce mental wellbeing or quality of life, exacerbate / alleviate symptoms of existing illness, or cause nuisance impacts;<br><br>medium to long-term duration. |
| Low | A minor change to a health determinant, with two or more of the following characteristics:<br><br>assessed as 'minor' by relevant environmental topics (where applicable[9]);<br><br>likely to be perceived by the population as a minor change;<br><br>has the potential to lower or raise wellbeing in terms of levels of comfort and contentment (for example in relation to noise, odour, or visual amenity);<br><br>short to medium term duration. |
| Negligible | A 'negligible' magnitude of impact is likely to be perceptible and localised. It may have the potential to lower or raise wellbeing in terms of levels of comfort and contentment. |

### Population sensitivity

17.25 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*

| Rating | Guidelines | |
|---|---|---|
| | **Population exposure** | **Population vulnerability** |
| High | A high level of exposure would occur over a wide geographical area and/or be likely to affect a large number of people (e.g. over 500). | Affected population includes a higher than national average proportion of vulnerable or disadvantaged groups (such as children or older people) who are more likely to experience adverse health effects as a result of the impact in question. |
| Medium | A medium level of exposure would occur over a relatively localised area and/or be likely to affect a moderate-large number of people (e.g. 100-500). | Affected population includes an average or close to average proportion of vulnerable or disadvantaged groups who are more likely to experience adverse health effects as a result of the impact in question. |
| Low | A low level of exposure would over a small, local area and/or affect a small | Affected population includes a below average proportion of vulnerable or disadvantaged groups |

| Rating | Guidelines | |
|---|---|---|
| | Population exposure | Population vulnerability |
| | number of people (e.g. fewer than 100). | who are more likely to experience adverse health effects as a result of the impact in question. |
| Very low | A very low level of exposure would affect a small number of individuals. | Not applicable (no population is considered |

17.26 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 (Table 17.4).

*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 |

17.27 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.

*Table 17.5: Significance of impact*

| Magnitude of impact | Population sensitivity | | | |
|---|---|---|---|---|
| | High | Medium | Low | Very low |
| **High** | Major | Major | Moderate | Minor |
| **Medium** | Major | Moderate | Minor | Minor |
| **Low** | Moderate | Minor | Minor | Minor |
| **Negligible** | Minor | Minor | Negligible | Negligible |

## Assumptions/Limitations

17.28 The majority of the information included in this assessment is derived from desk-based studies and other EIA outcomes. 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. Where data is taken from Census data, it should be noted that this is now ten years old. Where possible and available, more recent data is used, however 2021 data has not yet been released.

17.29 Planning Applications 3 and 4 have not yet been made and therefore there is no environmental assessment information available for them. However, a number of assumptions have been made in terms of the scope of applications 3 and 4 and the wider SRF and is set out in Chapter 2: Approach.

17.30 It should be noted that the design of the wider development project and of the wider SRF are yet to be completed and therefore, the consideration of in-combination effects should be regarded as preliminary and based on available information at the time of writing.

### Consultation

17.31 The EIA Scoping Report was issued to MCC on 25th November 2021 which outlined the approach to the Health and Wellbeing assessment. The Scoping Opinion received on 7th January 2022 confirmed that the approach to the assessment was acceptable.

## Baseline Conditions

17.32 This section describes the baseline conditions within the study area defined above. This considers the social and health baseline within the study area in addition to elements of the local environment which act as health determinants within the local area.

### Health baseline

#### Health deprivation

17.33 The Index of Multiple Deprivation (IMD) is a system for measuring relative deprivation across small areas of the UK, usually lower-layer super output areas (LSOA) which are made up of approximately 1600 people. Domains considered within the overall IMD measure include income, employment, health deprivation and disability, education, skills training, crime, barriers to housing and services and living environment. Ward areas cover a number of LSOAs and within the study area, the majority of the LSOAs fall within the 50-20% most deprived areas of England. In terms of the specific health domain, much of the study area falls within the 10% most deprived neighbourhoods[10]. LSOAs within Piccadilly ward generally rank higher than the other wards (i.e. are not as deprived).

[10] Indices of Deprivation: 2019. DCLG. Available at: http://dclgapps.communities.gov.uk/imd/iod_index.html#

### Population

17.34 The population within the study area was 78,640[11] in 2020, which compares to a population of 555,741 across the whole of Manchester (14% of the population). A slightly higher proportion are males (52.7%) within the study area, compared to 50.8% males across Manchester[11]. 2011 data shows that within Cheetham ward there are significantly fewer ethnically white people (37%) compared to the England (85.4%) and Manchester (66.6%). By comparison, Miles Platting and Newton Health is less ethnically diverse than the Manchester averages, being more in line with the England. This emphasises that within very small geographical areas, there can be large changes in ethnicity within the population.

### Young people

17.35 Three of the wards in the Northern Gateway SRF area have a significantly higher population of under-16s at 25% – 27% compared to the England average of 19%. Piccadilly has only 2% under-16s, reflecting city centre living.

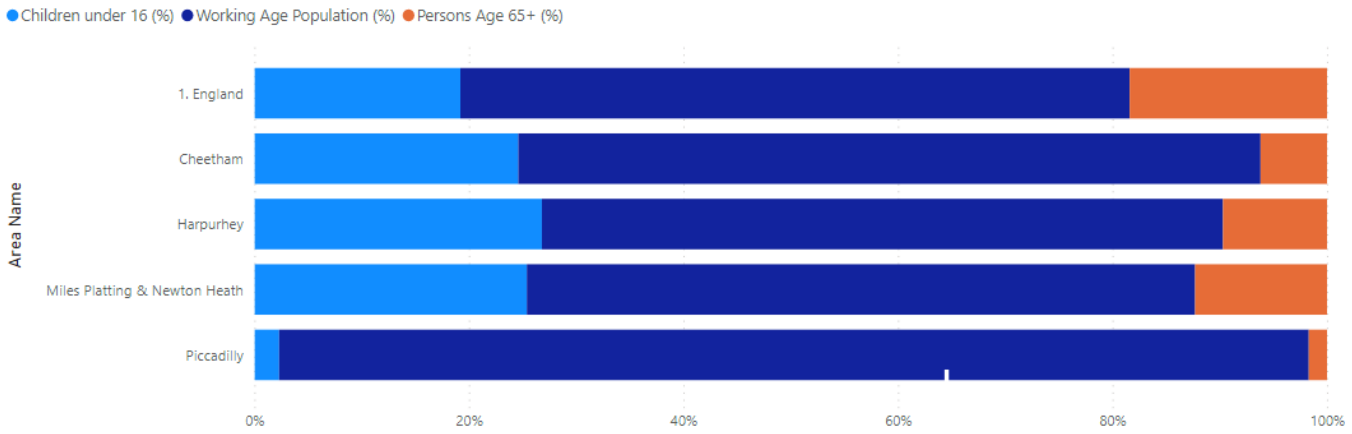



*Figure 17.2 Children under 16 (%), working age population (%) and persons age 65+ (%) by ward[12]*

[11] ONS Data (2021) Mid-2020 Population Estimates for 2020 Wards. Available at: Ward-level population estimates (Experimental Statistics) - Office for National Statistics (ons.gov.uk)
[12] Census (2011) *Population statistics*

### Life expectancy

17.36 Except for Piccadilly ward, all wards experience higher than national average health deprivation which results in lower life expectancy. **Figure 17.3** illustrates life expectancy across the study wards.

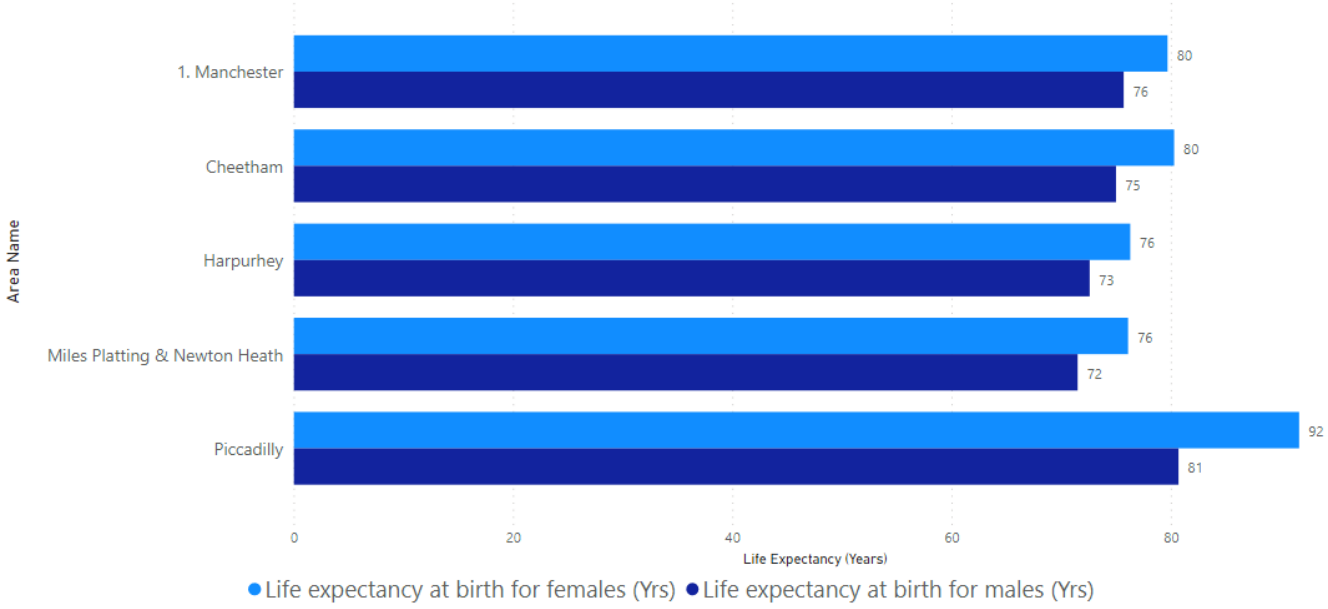



*Figure 17.3 Life expectancy in each ward within the study area*[13]

### Self-reported health

17.37 In the 2011 census, 9% of people in Miles Platting ward rated their own health as "Bad", which is twice the national reported level (4.25%). All the wards, apart from Piccadilly, perform worse than the England and GM position in terms of people rating their health as 'Bad' or 'Very Bad', as illustrated below in **Figure 17.4**.

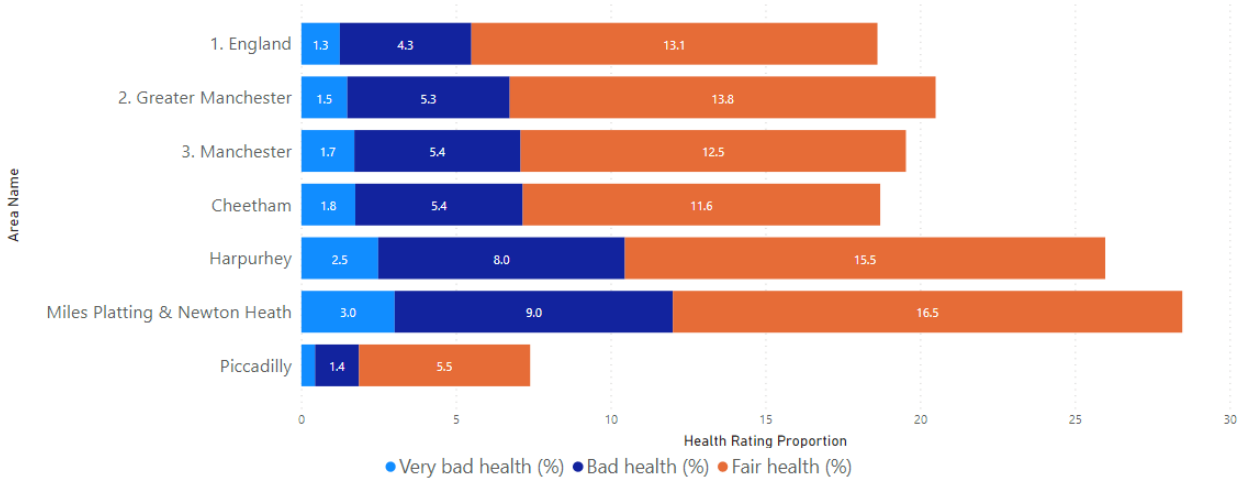



*Figure 17.4 Self-reported health rating in study wards*[14]

[13] Office for National Statistics (2013-2017) *Life Expectancy Statistics.*
[14] Census (2011) *General Health - Self Reported*

### Hospital admission rates

17.38 The communities' perception of poor health is mirrored by hospital admission data in relation to heart disease and Chronic obstructive pulmonary disease (COPD), as shown in **Figure 17.5**. In Harpurhey and Miles Platting, COPD admissions are over 180% greater than the expected admissions levels (based on national averages).

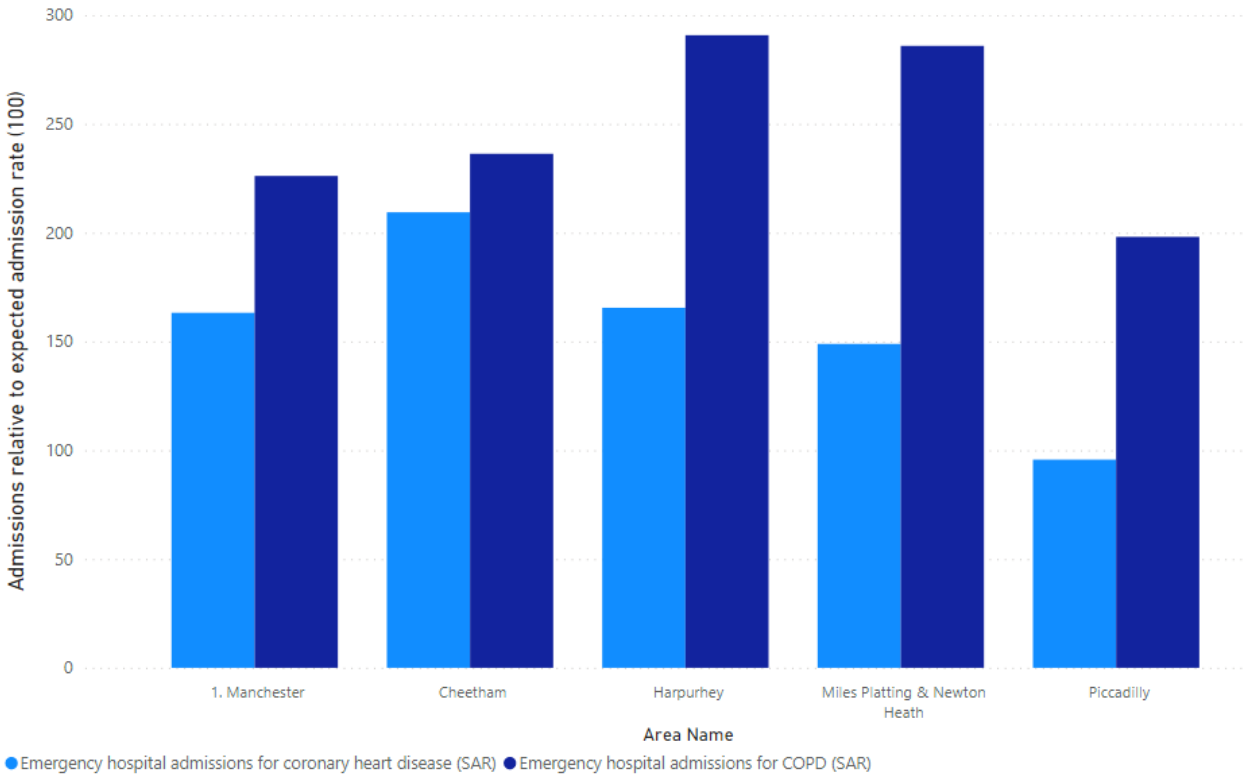



*Figure 17.5 Hospital admission for heart disease, COPD and alcohol related harm*[15]

### Employment and income deprivation

17.39 Recent employment data is not available by ward, rather only at regional and national level. Due to the dynamic nature of employment, it is not considered relevant to use data from 2011 which includes ward level, but is now significantly dated. Total economic activity in the North West in 2021 was not substantially different to that across England as a whole (61.6% compared to 63.7%), with 4.4% unemployed compared to 4.3% in England[16]. However, caution should be given when using regional data, as there is likely to be significant differences in smaller geographical areas, as demonstrated through consideration of the IMD (see above).

17.40 The employment deprivation domain of the 2019 IMD data shows that within the study area, Piccadilly ward represents 10% least deprived, whilst the neighbouring wards of Harpurhey and Miles Platting and Newton Heath are mostly within the 10% most deprived, and Cheetham ward has areas that are in the 10% most deprived as well as areas that are within the 10% least deprived. The diversity of employment status within the study area means

[15] Public Health England (NHS Digital), Hospital Episode Statistics (HES) and the Office for National Statistics (ONS) (2014-2018) *Hospital admission for heart disease, COPD and alcohol related harm*
[16] Nomis data 2021. Labour force survey. Available at: https://www.nomisweb.co.uk/

that people experiencing socioeconomic disadvantage will be living in relatively close proximity to those who are not. In Miles Platting and Newton, and Harpurhey most neighbourhoods are within the 10% most deprived in relation to income deprivation affecting children.

### Wider determinants of health

#### Open space/neighbourhood amenity

17.41 Piccadilly ward has very little open space (mostly consists of urban city centre) and ranks in the 10% most deprived in the IMD under the living environment domain (which measures the quality of the local environment)[10]. Harpurhey contains Queens Park which is a community park dating back to 1846. It includes paved paths, football pitches and a children's play park. St Catherine's Wood is also within this ward but is currently not easily accessible. Miles Platting and Newtown has some open space including Philips Park Cemetery and Brookdale Park which offers a children's play area, multiuse games area, BMX track and skate park, tennis courts, a bowling green and a pond dipping platform. It also includes Clayton Vale to the east which is an area of green space in Clayton, through which the River Medlock flows. The area was redeveloped in 1986 as a natural habitat for wildlife and has been designated as Local Nature Reserve. Within Cheetham there is little open space, but Smedley Land Playing fields offers space for recreation including a children's play area, multi- use sports area and football pitches.

#### Employment, training and education

17.42 The study area is very close to Manchester city centre and therefore has easy access to the employment, training and education opportunities on offer in a large, vibrant city. However, with the exception of Piccadilly ward, people living in the wards within the study area experience high levels of deprivation, which includes high deprivation in relation to employment[10]. This suggests that there is a disconnect between employment available and the skill set which the population has.

#### Crime

17.43 The IMD predominantly ranks all of the study area within the 10% most deprived in relation to the crime domain[10].

## Embedded Mitigation

17.44 The proposed development proposed for the Redbank Neighbourhod Project includes the provision of green infrastructure which includes (among others) the creation of green links and the creation of a new City River Park.

## Assessment of Likely Significant Effects – In-combination effects

17.45 As noted above, there are unlikely to be any significant health and wellbeing effects associated with the HIF infrastructure works themselves. **No assessment is therefore made in relation to Assessment Scenario 1a (HIF Infrastructure Works only)**. However, when considered in-combination with the other assessment scenarios that are outlined in the introduction section, there are likely to be some impacts to health and wellbeing in relation to

the health determinants identified in Table 17.1. The purpose of this assessment section is therefore to identify what health and well-being effects are considered likely for:

- Scenario 1b - Assessment of the impacts relating to the proposed development (HIF Infrastructure Works), plus impacts associated with Applications 1, 3 and 4).
- Scenario 1c - Assessment of the impacts relating to the proposed development (HIF Infrastructure Works), Applications 1, 3 and 4, and the wider SRF.

17.46 It should be noted that any identified health and wellbeing effects would likely be the same for each of the scenarios. The difference would be in the magnitude (and therefore potentially assigned significance) of effect which would be larger in the case of Scenario 1c as this covers a much wider area involving more development.

### Construction

#### Access to employment, training and education

17.47 During the construction phase of the HIF Infrastructure Works employment opportunities would become available within the construction industry. The socioeconomic assessment (ES Chapter 15) estimates that the local net construction effect could equate to 177 FTE construction jobs within the Manchester borough and 347 within Greater Manchester during each construction year. The same is likely for access to training and education opportunities where contractors have training schemes within their terms of contract. The size of the proposed developments at Victoria North are such that it is likely that significant opportunities within the construction industry will be afforded in this sector across the North West, and particularly Manchester itself.

17.48 It is not yet known whether the same contractors would work on each of the development applications or whether people from within the local area would be employed/offered training opportunities. However, it is assumed that there is a high possibility that this would be the case and that this would continue over a number of years. Within the study area there are high levels of deprivation, therefore where opportunities for training and employment are available, these should be offered to local people where appropriate.

17.49 Assessment of in-combination effect

### Scenario 1b

- Population sensitivity = high (high vulnerability to change x medium exposure)
- Magnitude of impact = low
- Significance of impact = **moderate beneficial health effect**

### Scenario 1c

- Population sensitivity = high (high vulnerability to change x medium exposure)
- Magnitude of impact = medium

- Significance of impact = **major beneficial health effect**

### Access to open space

17.50 During the construction phase of the HIF Infrastructure Works access to open space would not be affected as any areas that are currently open are not publicly accessible. Works related to the other applications will likely affect access to open space as they include areas that contain existing open space which would need to be closed to public access during construction works. This part of Manchester City has existing low access to open space and therefore the local population is highly vulnerable to further temporary reductions during construction phases. The phasing of restricted access in comparison to the creation of new open spaces is not clear at this stage and therefore it must be assumed that no replacement would be available during the closure of existing open space (i.e. representing worst case).

17.51 Assessment of in-combination effect

#### Scenario 1b

- Population sensitivity = high (high vulnerability to change x high exposure)
- Magnitude of impact = low
- Significance of impact = **moderate adverse health effect**

#### Scenario 1c

- Population sensitivity = high (high vulnerability to change x high exposure)
- Magnitude of impact = medium
- Significance of impact = **major adverse health effect**

### Air quality

17.52 During construction for all proposed developments, standard construction management practices would be in place to ensure that construction dust and emissions from construction vehicles are managed to mitigate air quality impacts such that they would not be significant. From the community profile it is suggested that the population is likely to be generally more vulnerable to changes in air quality than the general population. This is based on higher proportions of people reporting bad health and higher proportions of younger people in most of the study area. These groups of people may be vulnerable to even small changes in air quality which is usually identified as not significant within the general air quality assessment.

17.53 Assessment of in-combination effect

#### Scenario 1b

- Population sensitivity = medium (high vulnerability to change x very low exposure)

- Magnitude of impact = low
- Significance of impact = **minor adverse health effect**

### Scenario 1c

- Population sensitivity = medium (high vulnerability to change x low exposure)
- Magnitude of impact = low
- Significance of impact = **minor adverse health effect**

Noise

17.54 During construction of the HIF Infrastructure Works, construction noise would be managed through implementation of a Project Execution Plan (PEP). This would manage construction noise levels such that they would not be considered significant. Other development works associated with the other applications would also be managed through the implementation of a PEP. As the assessments for these proposed developments have not yet been carried out, it is not possible to conclude whether noise levels would be an issue for the local population. However, the community profile suggests that the population is likely to be generally more vulnerable to changes in noise than the general population. This is based on higher proportions of people reporting bad health and higher proportions of younger people in most of the study area. These groups of people may be vulnerable to even small changes in noise which may not impact others within the population in the same way. It should also be noted that as the wider area becomes developed and new residents move into the area, it is possible that ongoing construction impacts these new residents, particularly due to their closure proximity to the construction works.

17.55 Assessment of in-combination effect

### Scenario 1b

- Population sensitivity = medium (high vulnerability to change x low exposure)
- Magnitude of impact = very low
- Significance of impact = **minor adverse health effect**

### Scenario 1c

- Population sensitivity = medium (high vulnerability to change x low exposure)
- Magnitude of impact = low
- Significance of impact = **minor adverse health effect**

### Neighbourhood amenity

17.56 The amenity of the existing area is low having experienced years of neglect and industrial use. It is therefore unlikely that neighbourhood amenity would be considered to be affected during any of the construction works as amenity levels are already low. No in-combination effects are therefore predicted.

### Crime reduction and community safety

17.57 During construction, contractors would manage access to the construction site to mitigate against unauthorised persons entering the site. This may include the erection of hoarding and the presence of security guards and security lighting. The large area covered by each of the development plots means the likelihood of these security measures being put in place is high. As such no in-combination crime or community safety impacts are predicted.

## Completed Development

17.58 As described for the construction phase, once completed there would unlikely be any health and well-being effects associated with the HIF infrastructure works. In-combination with the completed developments of the proposed developments included within Scenarios 1b and 1c, the following health and wellbeing effects are likely and should be assessed in detail as the detail of those applications comes forward. Consideration is only given to residents already living within the study area. However, in the full assessments for each of the proposed developments, consideration should also be given to effects likely to be experienced by new residents within the completed developments themselves.

### Access to employment, training and education

17.59 Once the proposed developments across all applications and the wider SRF are competed, there will be significant numbers of housing provision provided in this part of the city. It is likely that some employment will be generated, e.g. through local shops and services which serve the new local communities, but primarily as housing provision, people who reside in the new areas are likely to find employment and access training and education within the Greater Manchester area, rather than locally to the site. As the site is close to employment and education centres of Manchester, access for these people within these new communities is likely to be good, bringing positive health benefits. Much of the existing population within the study area experiences high levels of deprivation. However, access to employment, training and education is not likely to change substantially as a result of the completed proposals themselves.

17.60 Assessment of in-combination effect (for existing population)

## Scenario 2b

- Population sensitivity = medium (high vulnerability to change x low exposure)
- Magnitude of impact = negligible
- Significance of impact = **minor beneficial health effect**

### Scenario 2c

- Population sensitivity = medium (high vulnerability to change x low exposure)
- Magnitude of impact = negligible
- Significance of impact = **minor beneficial health effect**

#### Access to open space

17.61 The completed HIF Infrastructure Works will not result in any changes to access to open space. However, on completion of all the proposed developments across applications and the wider SRF there will be significant gains in provision of public open space that will be accessible for residents and visitors to the area. The study area currently is deprived in terms of access to open space and therefore this improvement represents likely significant health benefits for both existing residents as well as for those people who choose to move into the new residential units. Open space represents opportunities for people to be active, socialise and to generally experience pleasant natural surroundings which benefits both physical and mental wellbeing.

17.62 Assessment of in-combination effect

### Scenario 2b

- Population sensitivity = high (high vulnerability to change x high exposure)
- Magnitude of impact = medium
- Significance of impact = **major beneficial health effect**

### Scenario 2c

- Population sensitivity = high (high vulnerability to change x high exposure)
- Magnitude of impact = high
- Significance of impact = **major beneficial health effect**

#### Air quality

17.63 Once completed, the HIF Infrastructure Works will not result in any air quality effects. Across the wider SRF it is anticipated that any air quality effects will be as a result of vehicle traffic. In the absence of detailed air quality modelling it is not possible to predict the health effects likely to result. This will need to be considered in more detail as these proposals come forward. From the community profile it is suggested that the population is likely to be generally more vulnerable to changes in air quality than the general population. This is based on higher proportions of people reporting bad health and higher proportions of younger people in most of the study area. These groups of people may be vulnerable to even small changes in air quality which is usually identified as not significant within the general air quality assessment.

17.64 Assessment of in-combination effect

### Scenario 2b

- Population sensitivity = medium (high vulnerability to change x low exposure)
- Magnitude of impact = low
- Significance of impact = **minor adverse health effect**

### Scenario 2c

- Population sensitivity = medium (high vulnerability to change x low exposure)
- Magnitude of impact = low
- Significance of impact = **minor adverse health effect**

#### Noise

17.65 Once completed, the HIF Infrastructure Works will not result in any noise impacts. Across the wider SRF, which is predominantly residential development, it is also likely that there would be no increases in noise that would result in in-combination effects on health and well-being. However, this would need to be confirmed for each of the proposed developments as details of them emerges.

#### Neighbourhood amenity

17.66 Once completed, the HIF Infrastructure Works alone will not result in any changes to neighbourhood amenity that would affect public health. Across the wider SRF, the developments represent significant improvements in neighbourhood amenity, with improved public space, creation of parks and connections across the whole area. Details of this are not yet known and would need to be considered in detail for each development as details emerge. However, in general it is anticipated that the following in-combination effects would result:

### Scenario 2b

- Population sensitivity = high (high vulnerability to change x high exposure)
- Magnitude of impact = high
- Significance of impact = **major beneficial health effect**

### Scenario 2c

- Population sensitivity = high (high vulnerability to change x high exposure)
- Magnitude of impact = high
- Significance of impact = **major beneficial health effect**

Crime reduction and community safety

17.67 Once completed, the HIF Infrastructure Works alone will not result in any changes that would affect public health. Across the wider SRF however, it is likely that the improvements made in terms of neighbourhood amenity, the introduction of new neighbourhoods and new/upgraded links across the site will result in improvements to community safety. However, the introduction of large populations of people may result in more crime, simply because there will be significantly more people residing within the study area. This should be assessed in more detail as each development comes forward.

## Recommended Mitigation / Enhancement Measures

17.68 Significant health and well-being beneficial effects identified relate to the improvements in access to open space and the improvements in neighbourhood amenity. These should be designed to be inclusive and connected to the wider existing neighbourhoods to ensure that benefits from investment into the area are experienced by existing communities and not only those that move into the new developments. The local community should be engaged with to get their inputs and ideas integrated in the final designs and to make sure that what is being designed meets the needs and wishes of the local communities.

17.69 This also applies to benefits that are likely to arise as a result of employment, education and training opportunities linked to the construction phases of each of the developments. It is recommended that steps are implemented to maximise benefits that can be experienced by the local communities.

## Likely Residual Effects of the Development and their Significance

17.1 Residual effects are the effects that remain after mitigation. In the case of the health and wellbeing effects identified, mitigation identified only relates to enhancing beneficial effects and these are not considered to change the overall health outcome. In summary, residual effects therefore remain as assessed prior to mitigation. Table 17.6 below summarises the health outcomes.

*Table 17.6: Residual Effects Summary*

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Construction and Demolition*** | | | |
| *Assessment Scenario 1b – proposed development plus Applications 1, 3 and 4* | | | |
| Effects on access to employment, training, and education | Moderate beneficial | None proposed above standard mitigation measures | Moderate beneficial |
| Effects on access to open space | Moderate adverse | | Moderate adverse |
| Effects on air quality | Minor adverse | | Minor adverse |
| Effects on noise | Minor adverse | | Minor adverse |
| Effects on neighbourhood amenity | None | | None |
| Effects on crime reduction and community safety | None | | None |
| *Assessment Scenario 1c – proposed development plus Applications 1, 3 and 4 and wider SRF* | | | |
| Effects on access to employment, training, and education | Major beneficial | None proposed above standard mitigation measures | Major beneficial |
| Effects on access to open space | Major adverse | | Major adverse |
| Effects on air quality | Minor adverse | | Minor adverse |
| Effects on noise | Minor adverse | | Minor adverse |
| Effects on neighbourhood amenity | None | | None |
| Effects on crime reduction and community safety | None | | None |

| Description of Effect | Potential effect including significance | Mitigation | Residual Effect including significance |
|---|---|---|---|
| ***Completed Development*** | | | |
| *Assessment Scenario 2b – proposed development plus Applications 1, 3 and 4* | | | |
| Effects on access to employment, training, and education | Minor beneficial | None proposed | Minor beneficial |
| Effects on access to open space | Major beneficial | | Major beneficial |
| Effects on air quality | Minor beneficial | | Minor beneficial |
| Effects on noise | Not yet known | | Not yet known |
| Effects on neighbourhood amenity | Major beneficial | | Major beneficial |
| Effects on crime reduction and community safety | Not yet known | | Not yet known |
| *Assessment Scenario 2c – proposed development plus Applications 1, 3 and 4 and wider SRF* | | | |
| Effects on access to employment, training, and education | Minor beneficial | None proposed | Minor beneficial |
| Effects on access to open space | Major beneficial | | Major beneficial |
| Effects on air quality | Minor beneficial | | Minor beneficial |
| Effects on noise | Not yet known | | Not yet known |
| Effects on neighbourhood amenity | Major beneficial | | Major beneficial |
| Effects on crime reduction and community safety | Not yet known | | Not yet known |

## Assessment of Cumulative Effects and their Significance

17.70 The Cumulative Impact Assessment (CIA) is presented as three scenarios. This is to ensure that the assessment is as robust as possible. The scenarios to be considered are as follows:

- Scenario 3a - Assessment of the cumulative impacts relating to the HIF Infrastructure Works plus impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative impacts relating to the HIF Infrastructure Works, plus impacts associated with Application 1, 3 and 4, and the agreed cumulative sites.
- Scenario 3c - Assessment of the cumulative impacts relating to the HIF Infrastructure Works, plus impacts associated with Application 1, 3 and 4, the wider SRF, and the agreed cumulative sites.

17.71 Table 17.6 provides a list of the developments which are to be included within the cumulative site's assessment. These are the same list of cumulative developments that each of the topic assessments have based their cumulative assessments on.

*Table 17.6: Cumulative Sites*

| Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 1 | 129393/VO/2021 | City Council Development for the erection of 168, three and four storey dwelling houses (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 dwelling houses, the Collyhurst Village Store and associated car parking | 650m north east | Approved Jun 2021 | Scoped In | Likely to affect same health determinants and communities as those considered in assessment. |
| 2 | 127971/FO/2020 | 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 | Scoped out | Distance from site and relatively small number of units |
| 3 | 128248/FO/2020 | 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 | 150m south | Approved June 2021 | Scoped In | Likely to affect same health determinants and communities as those considered in assessment. |

| Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 4 | 116366/FO/2017 | 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 | 150m south | Approved Aug 2017<br><br>Under construction | Scoped In | Likely to affect same health determinants and communities as those considered in assessment. |
| 5 | 118120/FO/2017 | 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 | 450m south | Approved May 2018<br><br>Under construction | Scoped In | Likely to affect same health determinants and communities as those considered in assessment. |
| 6 | 127537/FO/2020 | 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 | 400m south | Approved Oct 2016 | Scoped In | Likely to affect same health determinants and communities as those considered in assessment. |

| Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 7 | 124973/FO/2019 | 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 | 350m south | Approved Feb 2016 | Scoped In | Likely to affect same health determinants and communities as those considered in assessment. |
| 8 | 111777/FO/2016/C1 | 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 | 250m south east | Approved Sep 2016<br><br>Under construction | Scoped In | Likely to affect same health determinants and communities as those considered in assessment. |
| 9 | 121375/FO/2018 | 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 | 840m south | Approved Oct 2020 | Scoped Out | Distance from site. |

| Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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. | | | | |
| 10 | 18/71330/FUL | Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping | 850m south west | Approved Oct 2018<br><br>Under construction | Scoped Out | Distance from site. |
| 11 | 20/76134/FUL | 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 | 1000m south west | Approved Feb 2020 | Scoped Out | Distance from site. |
| 12 | 17/70626/FUL | Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works. | 840m south west | Approved Nov 2017<br><br>Under construction | Scoped Out | Distance from site. |
| 13 | 19/74465/HYBEIA | 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, | 960m south west | Validated Nov 2019 | Scoped Out | Distance from site. |

| Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| | | 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 7BN | | | | |
| 14 | 126944/FO/2020 | 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 | 140m south east | Approved Sep 2020<br><br>Under Construction | Scoped In | Likely to affect same health determinants and communities as those considered in assessment. |
| 15 | 114860/FO/2016 | Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings | 145m south east | Approved October 2017 | Scoped In | Likely to affect same health determinants and communities as those considered in assessment |

| Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 16 | 131708/FO/2021 | 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 | 450m south | Validated September 2021 | Scoped In | Likely to affect same health determinants and communities as those considered in assessment |
| 17 | 118831/FO/2018 | Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works | 635m south west | Approved June 2018 | Scoped In | Likely to affect same health determinants and communities as those considered in assessment |
| 18 | 128997/FO/2020 | 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 | 730m south | Approved September 2021 | Scoped Out | Distance from site/relatively few units |
| 19 | 124888/FO/2019 | Erection of a 6-9 storey residential building (Use Class C3) comprising 80 no. dwellings including 9 no. townhouses and 71 no. apartments with resident's 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 | Distance from site/relatively few units |

| Ref. | Application No. | Proposal | Approx. Distance and Direction | Status | Scoped In / Scoped Out | Justification |
|---|---|---|---|---|---|---|
| 20 | 125678/FO/2019 | 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 | 640m south | Approved December 2020 | Scoped Out | Distance from site/relatively few units |

*Table 17.8: Cumulative Impact Assessment*

| Assessment scenario | Potential effects |
|---|---|
| 3a – Assessment of the cumulative impacts relating to the Infrastructure Works plus impacts associated with the agreed cumulative sites | No health and wellbeing effects are identified in relation to the HIF Infrastructure works and therefore there would not be any cumulative impacts. |
| 3b – Assessment of cumulative impacts relating to the Infrastructure Works, plus impacts associated with Application 1, 3 and 4, and the agreed cumulative sites | • **Access to employment, training and education** – where construction takes place at the same time, beneficial health effects from increases in opportunities are likely. On completion, residents of the new developments will have easy access to employment, training and education opportunities across the Manchester region. Any new employment opportunities provided by some of the cumulative developments would also benefit these local communities (both new and existing).<br>• **Access to open space** – Where construction across the sites takes place at the same time, any loss of access to open space resulting from these sites would, cumulatively add magnitude to the adverse health effects. Where proposals replace existing buildings, this is unlikely to result in cumulative effects. Once all developments are completed, access to open space is likely to have significantly improved across all sites due to the improved public realm and green spaces that are planned within most of the cumulative developments. Due to the existing environmental deprivation in this part of the city, these improvements across a wide area are likely to bring significant physical and mental health benefits to the population.<br>• **Air quality** – it is assumed that during construction all developments would follow site management practices to mitigate air quality impacts. It is therefore unlikely that there would be any cumulative air quality impacts leading to health effects. On completion, air quality impacts would be related to traffic generated by the developments. The air quality assessments undertaken for these proposals would have already taken account of cumulative developments (as this is intrinsic to the air quality assessment process), it is therefore unlikely that there would be additional health effects resulting.<br>• **Noise** – 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 developments are under separate management which would also mean that coordination of communication with the public regarding when to expect noise would be more difficult. This may result in additional stress for people who are particularly vulnerable to noise. Due to the nature of the developments during operation it is unlikely that there would be cumulative noise impacts of a scale which would affect population health. |

| Assessment scenario | Potential effects |
|---|---|
| | • **Neighbourhood amenity** – no health and well-being effects have been identified in relation to the construction phase of the HIF Infrastructure Works and therefore there would unlikely be any cumulative effects. Once completed, cumulatively the improvements made to neighbourhood amenity are likely to be substantial which will bring increased health and well-being benefits.<br>• **Crime reduction and community safety** - no health and well-being effects have been identified in relation to the construction phase of the HIF Infrastructure Works and therefore there would unlikely be any cumulative effects. Once completed, the cumulative developments will result in increased numbers of people residing and working within the local community. As pointed out in the in-combination assessment, more people generally means that the chance of crime occurring increases. Therefore, the cumulative effect of more people moving into the new residential properties is likely to lead to the potential for more crime and therefore increased adverse health and wellbeing effects. However, there is no reason to suggest that this would not be over and above the average crime rates expected. |
| 3c – Assessment of the cumulative impacts relating to the Infrastructure Works, plus impacts associated with Application 1, 3, and 4, the wider SRF and the agreed cumulative sites | • As above for Scenario 3b but increasing in magnitude as developments progress. |

# 18. Summary of Mitigation and Residual Effects

## Introduction

18.1 The EIA and the design evolution have been an iterative process therefore many measures to mitigate potential adverse environmental effects have been incorporated into the design of the Proposed Development in order to avoid, reduce or offset negative changes. These measures are 'embedded mitigation' and are presented in Chapter 5: Proposed Development. They have been accounted for in each of the technical assessments, where relevant (see Chapters 6 to 17).

18.2 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 mitigation and any additional proposed mitigation measures. The residual effects have been identified for each category in the preceding technical chapters (Chapters 6 to 17) and are summarised in Tables 18.1 to 18.6. It is expected that the appropriate mitigation measures will be secured through appropriately worded planning conditions. Reference should be made to the technical chapters for the definition of the significance of the effect stated.

18.3 Following the table is a discussion of the residual effects and a conclusion.

*Table 18.1: Summary of Mitigation and Residual Effects – Scenario 1a – impacts of the proposed development only during Demolition and Construction*

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| **Ecology and Trees** | Impacts on Semi-Natural Woodland<br><br>*(Regional Value)* | Certain loss of 1.51ha of young semi-natural woodland is considered to be a negative significant effect at Regional level. | Management and enhancement of retained semi-natural woodland habitat.<br><br>Compensation required- biodiversity net gain offsetting (not included within this assessment of residual effects) | Moderate adverse (in the absence of compensation). |
| | | Possible direct impact on adjacent retained woodland is considered to be a negative significant effect at Regional level. | Implementation of tree protection measures as outlined within Arboricultural Method Statement (AMS). | Negligible |
| | | Possible indirect impact on adjacent retained woodland (pollution/ construction dust) is considered to be a negative significant effect at Regional level. | Implementation of Project Execution Plan (PEP). | Negligible |
| | | Likely spread of Himalayan balsam during clearance works across site and wider area is considered to be a negative significant effect. | Implementation of invasive species mitigation strategy. | Minor beneficial |
| | | Retention of 0.15ha of semi-natural broadleaved woodland is considered to be a positive significant effect at Local level. | Management and enhancement of retained semi-natural woodland habitat. | Minor beneficial. |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Impacts on Plantation Woodland (Regional Value) | Certain loss of 0.27ha of plantation woodland is considered to be a negative significant effect at Local level. | Management and enhancement of retained plantation woodland habitat.<br><br>Compensation required- biodiversity net gain offsetting (not included within this assessment of residual effects) | Moderate adverse (in the absence of compensation). |
| | | Possible direct impact on adjacent retained woodland is considered to be a negative significant effect at Regional level. | Implementation of tree protection measures as outlined within AMS. | Negligible |
| | | Possible indirect impact on adjacent retained woodland (pollution/ construction dust) is considered to be a negative significant effect at Regional level. | Implementation *of* PEP. | Negligible |
| | | Likely spread of Himalayan balsam and Japanese knotweed during clearance works across site and wider area is considered to be a negative significant effect. | Implementation of invasive species mitigation strategy. | Minor beneficial |
| | | Retention of 1.368ha of plantation broadleaved woodland is considered to be a positive significant effect at Regional level. | Management and enhancement of retained plantation woodland habitat. | Minor beneficial. |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Impacts on Scattered Broadleaved Trees<br><br>(Local Value) | Certain loss of 1.63ha scattered trees is considered to be a negative significant effect at Local level. | Management and enhancement of retained scattered trees.<br><br>Enhancement of retained woodland habitat includes tree planting. | Minor adverse in the immediate term, changing to Negligible in the medium to short term. |
| | | Possible direct impact on adjacent retained trees is considered to be a negative significant effect at Local level. | Implementation of tree protection measures as outlined within AMS. | Negligible |
| | | Possible indirect impact on adjacent retained woodland is considered to be a negative significant effect at Local level. | Implementation PEP. | Negligible |
| | Impacts on River Irk Corridor<br><br>(Local Value) | De-engineering in three discrete sections of the River Irk corridor & reprofiling riverbanks leading to certain loss of bankside habitat is considered to be a negative significant effect at Local level. | Enhancement of reprofiled sections of River Irk through aquatic marginal planting. | Minor adverse in the immediate term, changing to Minor beneficial in the short to medium term. |
| | | Certain loss of bankside habitat at three drainage outfall locations is considered to be a negative significant effect at Local level. | Enhancement of reprofiled sections of River Irk through aquatic marginal planting. | Minor adverse in the immediate term, changing to Minor beneficial in the short to medium term. |
| | | Possible indirect impact on River Irk (pollution/ construction dust) is considered to be a negative significant effect at Local | Implementation of PEP. | Negligible |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | level. | | |
| | | Likely spread of Himalayan balsam, giant knotweed and Japanese knotweed during construction works across site and wider area is considered to be a negative significant effect. | Implementation of invasive species mitigation strategy. | Minor beneficial |
| | Impacts on Roosting Bats<br><br>(Local Value) | Direct loss of potential roost habitat (up to 5 x trees) is considered to be a negative significant effect at Local level on a precautionary basis. | If necessary, removal of trees with roost potential will be undertaken under Reasonable Avoidance Measures (RAMS).<br><br>Provision of alternative roosting habitat to mitigate for the loss of available roosting habitat. | Negligible |
| | | Possible indirect impact on roosting bats through disturbance during construction (Noise, vibration, light) is considered to be a negative significant effect at Local level. | Bat box strategy.<br><br>Implementation of lighting strategy which would include bat sensitive measures. | Negligible |
| | Impacts on Bat Foraging & Commuting<br><br>(Local Value) | Loss of available bat foraging/commuting habitat is considered to be a negative significant effect at Local level. | Management and enhancement of retained woodland habitat and River Irk corridor. | Minor adverse in the immediate term, changing to Negligible in the short to medium term. |
| | | Construction lighting impact on offsite retained commuting corridors and foraging habitat is considered to be a | Implementation of lighting strategy which would include bat sensitive | Negligible |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | negative significant effect at Local level. | measures. | |
| | Impacts on Breeding Birds<br><br>(Local Value) | Loss of available bird nesting and foraging habitat is considered to be a negative significant effect at Local level. | Bird box strategy.<br><br>Management and enhancement of retained woodland habitat. | Minor adverse in the immediate term, changing to Negligible in the short to medium term. |
| | | Potential for killing or injuring birds/nests through vegetation clearance is considered to be a negative significant effect at Local level. | Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined within PEP. | Neutral. |
| | Impacts on Fish<br><br>(Local Value) | Potential for disturbing spawning fish and fish dispersion during dewatering and trenching of U-tube utilities pipe and wall demolition is considered to be a negative significant effect at Local level. | Restrictions on river works during spawning season (April -July for species encountered during surveys). Outlined within PEP.<br><br>Fish rescue/relocation during dewatering and over-pumping. Outlined in PEP. | Negligible |
| **Townscape and Visual** | Change to Townscape Character due to presence of construction works across the site | Short-term temporary small adverse effect at the local level which is of minor significance. | Best practice measures implemented via a pep. | Short-term temporary small adverse effect at the local level which is of minor significance. |
| | Change to Urban Grain from demolition works | Short-term temporary no change effect at the local level which is not significant. | Best practice measures implemented via a pep. | Short-term temporary no change effect at the local level which is not significant. |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Change to Land Use due to construction works/ demolition | Short-term temporary negligible adverse effect at the local level which is not significant. | Best practice measures implemented via a pep. | Short-term temporary negligible adverse effect at the local level which is not significant. |
| | Change to Public Open Space and Woodland due to construction works in green space / tree removal | Short-term temporary small adverse effect at the local level which is of minor significance. | Best practice measures implemented via a pep. | Short-term temporary small adverse effect at the local level which is of minor significance. |
| | Change to Movement and Linkage – change to quality and character of local routes | Short-term temporary small adverse effect at the local level which is not significant. | Best practice measures implemented via a pep. | Short-term temporary small adverse effect at the local level which is not significant. |
| | Change to Site Character due to removal of tree cover | Short-term temporary small adverse effect at the site level which is of minor significance. | Best practice measures implemented via a pep. | Short-term temporary small adverse effect at the site level which is of minor significance. |
| | Change to Viewpoint 1: clear views of construction works | Short-term temporary medium adverse effect at the local level which is of minor significance. | Best practice measures implemented via a pep. | Short-term temporary medium adverse effect at the local level which is of minor significance. |
| | Change to Viewpoint 2: view of construction works within parkland | Short-term temporary small adverse effect at the local level which is not significant. | Best practice measures implemented via a pep | Short-term temporary small adverse effect at the local level which is not significant. |
| | Change to Viewpoint 3: views of construction | Short-term temporary small adverse effect | Best practice measures | Short-term temporary small adverse effect at the local level |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | works in parkland | at the local level which is not significant. | implemented via a pep. | which is not significant. |
| | Change to Viewpoint 4. Clear open views of construction/ tree removal works | Short-term temporary medium adverse effect at the local level which is moderately significant. | Best practice measures implemented via a pep. | Short-term temporary medium adverse effect at the local level which is moderately significant. |
| | Change to Viewpoint 5. Open views of construction works to new access route | Short-term temporary medium adverse effect at the local level which has minor significance. | Best practice measures implemented via a pep. | Short-term temporary medium adverse effect at the local level which has minor significance. |
| | Change to Viewpoint 6. Glimpsed views of construction works in background. | Short-term temporary small adverse effect at the local level which is not significant. | Best practice measures implemented via a pep. | Short-term temporary small adverse effect at the local level which is not significant. |
| | Change to Viewpoint 7. Open views of construction works and tree removal | Short-term temporary negligible adverse effect at the local level which is not significant. | Best practice measures implemented via a pep. | Short-term temporary negligible adverse effect at the local level which is not significant. |
| **Ground Conditions** | Risks to health of construction workers and adjacent site users from contaminated land | Negligible and not significant | Standard mitigation, PEP | No residual effects |
| | Risks to the quality of controlled waters as a | Moderate adverse and significant | Standard mitigation, Remediation | No residual effects |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | result of exposure of contaminated soils (groundwater and River Irk) | | Strategy | |
| | Risk to the quality of controlled waters as a result of temporary stockpiling | Minor adverse and not significant | Standard mitigation, PEP | No residual effects |
| | Existing contaminated groundwater impact on River Irk and Principal aquifer | Moderate adverse and significant (aquifer)<br><br>Minor adverse and not significant (river) | Standard mitigation, Remediation Strategy | No residual effects |
| **Drainage and Flood Risk** | Water quality impacts from sediment and contaminant runoff: River Irk | Moderate Adverse<br><br>(significant) | None | Moderate Adverse<br><br>(significant) |
| | Water quality impacts from sediment and contaminant runoff: Drain (adjacent to Fairholme Caravan Site) | Slight adverse<br><br>(not significant) | | Slight adverse<br><br>(not significant) |
| | Water quality impacts from sediment and contaminant runoff: Drain (Cheetham Hill | Moderate adverse<br><br>(significant) | | Moderate adverse<br><br>(significant) |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Junction Drain) | | | |
| | Hydromorphology impacts: River Irk | Slight adverse<br><br>(not significant) | • Following standard construction best practice relating to pollution prevention.<br><br>• Minimise the footprint of any in-channel works as far as reasonable possible.<br><br>• Reinstate any impacted marginal habitats.<br><br>• Control the timing of works so that any in-channel works are programmed to take place outside of sensitive times of year for fish and other sensitive species.<br><br>• Following standard best practice to avoid spread of non-native species or pathogens. | Neutral<br><br>(not significant) |
| | Hydromorphology impacts: Drain (adjacent to Fairholme Caravan Site) | Slight adverse<br><br>(not significant) | | Neutral<br><br>(not significant) |
| | Hydromorphology impacts: Drain (Cheetham Hill Junction Drain) | Slight adverse<br><br>(not significant) | | Neutral<br><br>(not significant) |
| | Changing local drainage patterns due to construction activities: River Irk | Moderate adverse<br><br>(significant) | • Implement and maintain site drainage plan.<br><br>• Management of material | Neutral<br><br>(not significant) |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Changing local drainage patterns due to construction activities: Drain (adjacent to Fairholme Caravan Site) | Slight adverse<br><br>(not significant) | removal.<br><br>• Possible options to reduce flood risk downstream of Union Bridge, which will be further developed as the design progresses) include:<br><br>○ Constructing a bund, with the top level of the bund replicating the top level of the wall located at Union Bridge; or<br><br>○ Create an overflow channel that would outskirt the bridge. | Neutral<br><br>(not significant) |
| | Changing local drainage patterns due to construction activities: Drain (Cheetham Hill Junction Drain) | Slight adverse<br><br>(not significant) | | Neutral<br><br>(not significant) |
| | Changing local drainage patterns due to construction activities: Residential and Commercial complex | Moderate adverse<br><br>(not significant) | | Neutral<br><br>(not significant) |
| **Archaeology and Heritage** | Complete or partial removal of potential below ground archaeological deposits ranging from low to medium value. | Minor to moderate permanent adverse effect | Geoarchaeological watching brief during ground investigations<br><br>Geoarchaeological deposit modelling<br><br>Programme of archaeological strip, map and sample investigation of the former Travis Mill site | Minor adverse effect |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Partial removal of or alterations to sections of historic river walls and retaining walls ranging from negligible to low value. | Neutral to minor permanent adverse effect | Level 2 historic building recording of river and retaining walls | Neutral effect |
| | Temporary change to the settings of built heritage assets ranging from negligible to high value as a result of demolition and construction activities. | Neutral to minor temporary adverse effect | Use of appropriate screening during demolition and construction | Neutral effect |
| **Transport and Access** | Changes to Driver Delay | Minor adverse in the short-term at a local level | PEP | Minor adverse in the short-term at a local level |
| | Changes to Pedestrian Delay | Minor adverse in the short-term at a local level | | Minor adverse in the short-term at a local level |
| | Changes to Severance | Major adverse in the short-term at a local level | | Moderate adverse in the short-term at a local level |
| | Changes to Pedestrian Amenity | Major adverse in the short-term at a local level | | Moderate adverse in the short-term at a local level |
| | Changes to Fear and | Major adverse in the short-term at a local | | Moderate adverse in the short- |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Intimidation | level | | term at a local level |
| | Changes to Accidents and Safety | Moderate adverse in the short-term at a local level | | Moderate adverse in the short-term at a local level |
| **Air Quality and Dust** | Construction dust affecting receptors | Dust impacts at areas which would expect a high amenity value (homes, parks etc). High risk prediction on above areas without appropriate mitigation implemented. | Best practice mitigation measures to be included in a construction environmental management plan | **No significant effect** |
| | Construction traffic affecting receptors | No significant impacts predicted. Negligible impacts at all receptors. | No mitigation required | **No significant effect** |
| **Noise and Vibration** | Construction site noise affecting local receptors | Not significant | No additional mitigation proposed beyond use of BPM and adherence to PEP, including public liaison where appropriate | Not significant |
| | Construction traffic noise affecting local receptors | Not significant | | Not significant |
| | Construction site vibration affecting local receptors | Significant during some compaction works | In addition to the above, monitor vibration and if necessary avoid vibratory compaction in closest proximity to dwellings | Not significant |
| **Waste** | Changes to Occupation of remaining inert | Slight adverse environmental effect at a regional level. Non-significant. | Development of a SWMP | Slight adverse environmental effect at a regional level. Non- |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | landfill void space | | | significant. |
| | Changes to Occupation of remaining non-hazardous landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | Development of a SWMP<br><br>Excavated material reuse | Slight adverse environmental effect at a regional level. Non-significant. |
| | Changes to Occupation of remaining hazardous landfill void space | Slight adverse environmental effect at a national level. Non-significant. | Development of a SWMP | Slight adverse environmental effect at a national level. Non-significant. |
| **Health and Wellbeing** | No Assessment Required | | | |
| **Socioeconomics** | Temporary direct, indirect and induced employment during the construction phase. | Minor Beneficial (Not Significant) | Potential for added benefits through measures such as local employment and training schemes however no commitments have been made. | Minor Beneficial (Not Significant) |
| | Potential Disruption through Changes to Environmental Quality | Negligible / Minor Adverse (Not Significant) | N/A | Negligible / Minor Adverse (Not Significant) |
| **Climate Change** | Changes to greenhouse gas emissions | Significant effect | Best practice measures implemented via a PEP | Significant effect |
| | Resilience of the development to climate | Not **included in the assessment as the short-term nature of the construction period (2022-2024) means there is a** | n/a | n/a |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | change effects | **lower likelihood of an extreme climate event occurring within the construction period than** operational phase of the project.<br><br>*In this context, and on the assumption that the PEP and other associated climate risk management and site safety procedures are implemented effectively and are successful in mitigating risk, it is therefore considered there are not likely to be any significant effects associated with the vulnerability to climate change during the construction phase, such that a likely significant effect could occur.* | | |

*Table 18.2: Summary of Mitigation and Residual Effects – Scenario 1b – Impacts of the proposed development alongside Applications 1, 3 and 4 during Demolition and Construction.*

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| **Ecology and Trees** | Effects on Semi-Natural Woodland<br><br>(Regional Value) | Applications 1 and 2 would have certain loss of semi-natural woodland is considered to be a **negative significant effect** at Regional level.<br><br>No effects on semi-natural woodland habitat are anticipated to arise from Applications 3 or 4. | Commitment to achieve 10% BNG for the combined applications, losses arising from Applications 1 & 2 will be adequately mitigated or compensated. | Minor Adverse changing to minor beneficial in the medium to long term. |
| | | Direct & indirect impacts on adjacent retained woodland during all four Applications (1-4) is considered to be a **negative significant effect** at Regional level. | Implementation of tree protection measures as outlined within AMS. | Negligible |
| | | Likely spread of Himalayan balsam during clearance works during Applications 1 & 2 is considered to be a **negative significant effect.** | Implementation of invasive species mitigation strategy. | Minor beneficial |
| | Effects on Plantation Woodland<br><br>(Regional Value) | No effects on plantation woodland habitat are anticipated to arise from Applications 1, 3 or 4. There are no cumulative effects on plantation woodland. | | |
| | Effects on Scattered | No effects on scattered trees are | Commitment to achieve 10% BNG | Minor Adverse changing to |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Trees<br><br>(Local Value) | anticipated to arise from Application 1.<br><br>Application 2 would have certain loss of scattered trees.<br><br>Possible loss of small number of trees under Application 3 & 4 is considered to be a **negative significant effect** at Local level. | for the combined applications, losses arising from Application 2 will be adequately mitigated or compensated. | minor beneficial in the medium to long term. |
| | | Direct & indirect impacts on adjacent retained trees during all four Applications (1-4) is considered to be a **negative significant effect** at Local level. | Implementation of tree protection measures as outlined within AMS. | Negligible |
| | Effects on River Irk Corridor<br><br>(Local Value) | No effects on River Irk Corridor are anticipated to arise from Applications 1 or 4.<br><br>Direct impacts on River Irk Corridor under Applications 2 & 3 is considered to be a **negative significant effect** at Local level. | Enhancement of reprofiled sections of River Irk through aquatic marginal planting. | Minor adverse in the immediate term, changing to Minor beneficial in the short to medium term. |
| | | Indirect impact on River Irk (pollution/ construction dust) under Applications 2 & 3 is considered to be a **negative significant effect** at Local level. | Implementation PEP. | Negligible |
| | | Likely spread of Himalayan balsam, giant knotweed and Japanese knotweed during | Implementation of invasive species | Minor beneficial |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | construction works across site and wider area during Application 2 & 3 is considered to be a **negative significant effect**. | mitigation strategy. | |
| | Effects on Roosting Bats<br><br>(Local Value) | No effects on roosting are anticipated to arise from Applications 1.<br><br>Application 2 and 4 would result in the direct loss of confirmed/potential roosting habitat and potentially kill/injure/disturb roosting bats is considered to be a **negative significant effect** at Local level. | Implementation of RAMS during tree felling/ pruning.<br><br>Provision of alternative roost habitat. | Negligible |
| | | Application 2, 3 & 4 has the potential to indirectly disturb roosting bats through construction lighting is considered to be a **negative significant effect** at Local level. | Implementation of lighting strategy which would include bat sensitive measures. | Negligible |
| | Effects on Bat Foraging & Commuting<br><br>(Local Value) | Loss of available bat foraging & commuting habitat as a result of Applications 1, 2 and 3 is considered to be a **negative significant effect** at Local level.<br><br>No loss of bat foraging or commuting habitat is anticipated as a result of Application 4. | Commitment to achieve 10% BNG for the combined applications, losses of bat foraging and commuting habitat arising from Applications 1, 2 & 3 will be adequately mitigated or compensated. The River Irk will be enhanced under Application 3 which will improve the quality of existing bat foraging and commuting habitat. | Negligible |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | Construction lighting impact on offsite retained commuting corridors and foraging habitat during all four Applications (1-4) is considered to be a **negative significant effect** at Local level. | Implementation of lighting strategy which would include bat sensitive measures. | Negligible |
| | Effects on Breeding Birds<br><br>(Local Value) | Loss of available bird nesting habitat as a result of Applications 1, 2 and 3 is considered to be a **negative significant effect** at Local level.<br><br>No loss of nesting bird habitat is anticipated as a result of Application 4. | Commitment to achieve 10% BNG for the combined applications, losses of nesting bird habitat arising from Applications 1, 2 & 3 will be adequately mitigated or compensated habitat. | Negligible |
| | | Potential for killing or injuring birds/destroying active nests through vegetation clearance during Applications 1, 2, and 3 is considered to be a **negative significant effect** at Local level.<br><br>Potential for killing or injuring birds/destroying active nests through vegetation clearance during is not anticipated as a result of Application 4. | Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined within PEP | Negligible |
| | Effects on Fish<br><br>(Local Value) | No effects on fish are anticipated to arise from Applications 1 or 4.<br><br>Direct impacts on fish under Applications 2 & 3 is considered to be a **negative** | Restrictions on river works during spawning season (April -July for species encountered during surveys). Outlined within PEP. | Negligible |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | **significant effect** at Local level. . | Fish rescue/relocation during dewatering and over-pumping. Outlined in PEP. | |
| **Townscape and Visual** | Change to Townscape Character due to extensive construction works across the study area | Short-term temporary medium adverse effect at the local level (wider study area) which is moderately significant. | Best practice measures implemented via a pep. | Short-term temporary medium adverse effect at the local level (wider study area) which is moderately significant. |
| | Change to Urban Grain from extensive construction works across the study area | Short-term temporary small adverse effect at the local level (wider study area) which is not significant. | Best practice measures implemented via a pep. | Short-term temporary small adverse effect at the local level (wider study area) which is not significant. |
| | Change to Land Use due to extensive construction works across the study area | Short-term temporary small adverse effect at the local level (wider study area) which is not significant. | Best practice measures implemented via a pep. | Short-term temporary small adverse effect at the local level (wider study area) which is not significant. |
| | Change to Public Open Space and Woodland due to extensive construction works in green space / tree removal across the study area | Short-term temporary small adverse effect at the local level (wider study area) which is not significant. | Best practice measures implemented via a pep. | Short-term temporary small adverse effect at the local level (wider study area) which is not significant. |
| | Change to Movement and Linkage – change to quality and character of | Short-term temporary small adverse effect at the local level (wider study area) which is | Best practice measures implemented via a pep. | Short-term temporary small adverse effect at the local level (wider study area) which is not |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | local routes across the study area | not significant. | | significant. |
| | Change to Viewpoint 1: clear views of construction works across the view | Short-term temporary medium adverse effect at the local level (wider study area) which has minor significance. | Best practice measures implemented via a pep. | Short-term temporary medium adverse effect at the local level (wider study area) which has minor significance. |
| | Change to Viewpoint 2: view of construction works within parkland | Short-term temporary small adverse effect at the local level (wider study area) which is not significant. | Best practice measures implemented via a pep. | Short-term temporary small adverse effect at the local level (wider study area) which is not significant. |
| | Change to Viewpoint 3: views of construction works in parkland | Short-term temporary small adverse effect at the local level (wider study area) which is not significant. | Best practice measures implemented via a pep. | Short-term temporary small adverse effect at the local level (wider study area) which is not significant. |
| | Change to Viewpoint 4. Clear open views of substantial construction works | Short-term temporary medium adverse effect at the local level (wider study area) which is moderately significant. | Best practice measures implemented via a pep. | Short-term temporary medium adverse effect at the local level (wider study area) which is moderately significant. |
| | Change to Viewpoint 5. Clear open views of substantial construction works | Short-term temporary *medium adverse* effect at the local level (wider study area) which has *minor significance.* | Best practice measures implemented via a pep. | Short-term temporary *medium adverse* effect at the local level (wider study area) which has *minor significance.* |
| | Change to Viewpoint 6. | Short-term temporary *medium adverse* | Best practice measures | Short-term temporary *medium* |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Clear open views of substantial construction works | effect at the local level (wider study area) which has *minor significance.* | implemented via a pep. | *adverse* effect at the local level (wider study area) which has *minor significance.* |
| | Change to Viewpoint 7. Filtered views of substantial construction works | Short-term temporary *medium adverse* effect at the local level (wider study area) which has *minor significance.* | Best practice measures implemented via a pep. | Short-term temporary *medium adverse* effect at the local level (wider study area) which has *minor significance.* |
| **Ground Conditions** | Risks to health of construction workers and adjacent site users from contaminated land | Negligible and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Standard mitigation, PEP | No residual effects |
| | Risks to the quality of controlled waters as a result of exposure of contaminated soils (groundwater and River Irk) | Moderate adverse and significant<br><br>Significance of effects to be reviewed once detailed design is available | Remediation Strategy | No residual effects |
| | Risk to the quality of controlled waters as a result of temporary stockpiling | Minor adverse and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Standard mitigation, PEP | No residual effects |
| | Existing contaminated groundwater impact on River Irk and Principal | Moderate adverse and significant (aquifer)<br><br>Minor adverse and not significant (river) | Remediation Strategy | No residual effects |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | aquifer | Significance of effects to be reviewed once detailed design is available | | |
| | Formation of piled foundations through made ground | Minor adverse and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Standard mitigation, Remediation Strategy, piling risk assessment | No residual effects |
| **Drainage and Flood Risk** | Impacts on the River Irk | Moderate adverse<br><br>(significant) | • Following standard construction best practice relating to pollution prevention.<br><br>• Identifying additional mitigation for pollution prevention and potential impacts on hydromorphology where required for works within the river corridor.<br><br>• Maintaining drainage system to ensure runoff is treated and attenuated prior to discharge to site<br><br>• Identifying mitigation for flood event plus 40% in areas surrounding Union Bridge.<br><br>Emergency response procedures. | Slight adverse<br><br>(not significant) |
| | Impacts on the Drain (adjacent to Fairholme Caravan Site) | Neutral<br><br>(not significant) | | Neutral<br><br>(not significant) |
| | Impacts on Drain (Cheetham Hill Junction Drain) | Neutral<br><br>(not significant) | | Neutral<br><br>(not significant) |
| | Impacts on Residential and Commercial complex | Neutral<br><br>(not significant) | | Neutral<br><br>(not significant) |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| **Archaeology and Heritage** | Complete or partial removal of potential below ground archaeological deposits ranging from low to medium value | Minor to moderate permanent adverse effect | Geoarchaeological watching brief during ground investigations<br><br>Geoarchaeological deposit modelling<br><br>Programme of archaeological strip, map and sample investigation of the former Travis Mill site | Minor adverse effect |
| | Partial removal of or alterations to sections of historic river walls and retaining walls ranging from negligible to low value. | Neutral to minor permanent adverse effect | Level 2 historic building recording of river and retaining walls | Neutral effect |
| | Temporary change to the settings of built heritage assets ranging from negligible to high value as a result of demolition and construction activities. | Neutral to minor temporary adverse effect | Use of appropriate screening during demolition and construction | Neutral effect |
| **Transport and Access** | As per Assessment Scenario 1a | | | |
| **Air Quality and Dust** | Construction dust affecting receptors | Dust impacts at areas which would expect a high amenity value (homes, parks etc). High risk prediction on above areas without | Best practice mitigation measures to be included in a construction | **No significant effect** |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | appropriate mitigation implemented. | environmental management plan | |
| | Construction traffic affecting receptors | Not assessed. | n/a | n/a |
| **Noise and Vibration** | No additional effects can be identified from scenario 1a | | | |
| **Waste** | Occupation of remaining inert landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | Development of SWMPs<br><br>Demolition material reuse | Slight adverse environmental effect at a regional level. Non-significant. |
| | Occupation of remaining non-hazardous landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | Development of SWMPs<br><br>Excavated material reuse | Slight adverse environmental effect at a regional level. Non-significant. |
| | Occupation of remaining hazardous landfill void space | Slight adverse environmental effect at a national level. Non-significant. | Development of SWMPs | Slight adverse environmental effect at a national level. Non-significant. |
| **Health and Wellbeing** | Effects on access to employment, training, and education | Moderate beneficial | None proposed above standard mitigation measures | Moderate beneficial |
| | Effects on access to open space | Moderate adverse | | Moderate adverse |
| | Effects on air quality | Minor adverse | | Minor adverse |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Effects on noise | Minor adverse | | Minor adverse |
| | Effects on neighbourhood amenity | None | | None |
| | Effects on crime reduction and community safety | None | | None |
| **Socioeconomics** | Temporary direct, indirect and induced employment during the construction phase. | Moderate Beneficial (Significant) | Potential for added benefits through measures such as local employment and training schemes however no commitments have been made. | Moderate Beneficial (Significant) |
| | Potential Disruption through Changes to Environmental Quality | Negligible / Minor Adverse (Not Significant) | N/A | Negligible / Minor Adverse (Not Significant) |
| **Climate Change** | Emissions of greenhouse gases | Significant effect | Best practice measures implemented via a PEP | Significant effect |
| | Resilience to climate change | Not included (see scenario 1a for justification) | | |

*Table 18.3: Summary of Mitigation and Residual Effects – Scenario 1c – Impacts of the proposed development alongside Applications 1, 3 and 4, and the wider SRF during Demolition and Construction*

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| **Ecology and Trees** | Effects on Semi-Natural Woodland<br><br>(Regional Value) | No effects on semi-natural woodland habitat are anticipated to arise from Applications 3 or 4.<br><br>Applications 1 and 2 would have certain loss of semi-natural woodland.<br><br>It is anticipated there will be woodland losses in the wider SRF. | Commitment to achieve 10% BNG for the combined applications, losses arising from Applications 1 & 2 will be adequately mitigated or compensated.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | Minor Adverse changing to minor beneficial in the medium to long term. |
| | Effects on Plantation Woodland<br><br>(Regional Value) | No effects on plantation woodland habitat are anticipated to arise from Applications 1, 3 or 4.<br><br>Application 2 would have certain loss of plantation woodland.<br><br>It is anticipated there will be woodland losses in the wider SRF. | Commitment to achieve 10% BNG for the combined applications, losses arising from Application 2 will be adequately mitigated or compensated. This will be secured through a carefully worded planning condition.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | Minor Adverse changing to minor beneficial in the medium to long term. |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Effects on Scattered Trees<br><br>(Local Value) | No effects on scattered trees are anticipated to arise from Applications 1.<br><br>Application 2 would have certain loss of scattered trees.<br><br>Possible loss of small number of trees under Application 3 & 4.<br><br>It is anticipated there will be tree losses in the wider SRF. | Commitment to achieve 10% BNG for the combined applications, losses arising from Application 2 will be adequately mitigated or compensated.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | Minor Adverse changing to minor beneficial in the medium to long term. |
| | Effects on River Irk Corridor<br><br>(Local Value) | No effects on River Irk Corridor are anticipated to arise from Applications 1 or 4.<br><br>Direct impacts on River Irk Corridor under Applications 2 & 3.<br><br>It is anticipated there will be direct impacts on River Irk in the wider SRF. | Enhancement of reprofiled sections of River Irk through aquatic marginal planting.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | Minor adverse in the immediate term, changing to Minor beneficial in the short to medium term. |
| | Effects on Roosting Bats<br><br>(Local Value) | No effects on roosting are anticipated to arise from Applications 1.<br><br>Application 2 and 4 would result in the direct loss of confirmed/potential roosting habitat and potentially kill/injure/disturb roosting bats.<br><br>Application 2, 3 & 4 has the potential to | Implementation of RAMS during tree felling/ pruning.<br><br>Provision of alternative roost habitat.<br><br>Implementation of lighting strategy which would include bat | Negligible |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | indirectly disturb roosting bats through construction lighting.<br><br>It is anticipated there will be impacts on roosting bats in the wider SRF. | sensitive measures.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | |
| | Effects on Bat Foraging & Commuting<br><br>(Local Value) | Loss of available bat foraging & commuting habitat as a result of Applications 1, 2 and 3.<br><br>No loss of bat foraging or commuting habitat is anticipated as a result of Application 4.<br><br>It is anticipated there will be losses of bat commuting & foraging habitat in the wider SRF. | Commitment to achieve 10% BNG for the combined applications, losses of bat foraging and commuting habitat arising from Applications 1, 2 & 3 will be adequately mitigated or compensated.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | Negligible |
| | | Construction lighting impact on offsite retained commuting corridors and foraging habitat during all four Applications (1-4) and in wider SRF. | Implementation of lighting strategy which would include bat sensitive measures. | Negligible |
| | Effects on Breeding Birds<br><br>(Local Value) | Loss of available bird nesting habitat as a result of Applications 1, 2 and 3.<br><br>No loss of nesting bird habitat is | Commitment to achieve 10% BNG for the combined applications, losses of nesting bird habitat arising from | Negligible |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | anticipated as a result of Application 4.<br><br>It is anticipated there will be losses of nesting bird habitat in the wider SRF. | Applications 1, 2 & 3 will be adequately mitigated or compensated habitat.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated. | |
| | | Potential for killing or injuring birds/destroying active nests through vegetation clearance during Applications 1, 2, and 3.<br><br>Potential for killing or injuring birds/destroying active nests through vegetation clearance during is not anticipated as a result of Application 4.<br><br>It is anticipated there will be potential for killing or injuring birds/destroying active nests through vegetation clearance in the wider SRF. | Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined within PEP | Negligible |
| | Effects on Fish<br><br>(Local Value) | No effects on fish are anticipated to arise from Applications 1 or 4.<br><br>Direct impacts on fish under Applications 2 & 3 and wider SRF. | Restrictions on river works during spawning season (April -July for species encountered during surveys). Outlined within PEP.<br><br>Fish rescue/relocation during | Negligible |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | | dewatering and over-pumping. Outlined in PEP. | |
| **Townscape and Visual** | Change to Townscape Character due to extensive construction works across the SRF area | medium-term temporary large adverse effect at the local level (wider study area) which is moderately significant. | Best practice measures implemented via a PEP. | medium-term temporary large adverse effect at the local level (wider study area) which is moderately significant. |
| | Change to Urban Grain from extensive construction works across the SRF area | medium-term temporary medium adverse effect at the local level (wider study area) which has minor significance. | Best practice measures implemented via a PEP. | medium-term temporary medium adverse effect at the local level (wider study area) which has minor significance. |
| | Change to Land Use due to extensive construction works across the SRF area | medium-term temporary large adverse effect at the local level (wider study area) which is moderately significant. | Best practice measures implemented via a PEP. | medium-term temporary large adverse effect at the local level (wider study area) which is moderately significant. |
| | Change to Public Open Space and Woodland due to extensive construction works in green space / tree removal across the SRF area | medium-term temporary medium adverse effect at the local level (wider study area) which is moderately significant. | Best practice measures implemented via a PEP. | medium-term temporary medium adverse effect at the local level (wider study area) which is moderately significant. |
| | Change to Movement and Linkage – change to quality and character of local routes across the SRF area | medium-term temporary large adverse effect at the local level (wider study area) which is moderately significant. | Best practice measures implemented via a PEP. | medium-term temporary large adverse effect at the local level (wider study area) which is moderately significant. |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Change to Viewpoint 1: clear views of construction works across the view | medium-term temporary medium adverse effect at the local level (wider study area) which has minor significance. | Best practice measures implemented via a PEP. | medium-term temporary medium adverse effect at the local level (wider study area) which has minor significance. |
| | Change to Viewpoint 2: view of construction works within parkland | short-term temporary small adverse effect at the local level (wider study area) which is not significant. | Best practice measures implemented via a PEP. | short-term temporary small adverse effect at the local level (wider study area) which is not significant. |
| | Change to Viewpoint 3: views of construction works in parkland | short-term temporary small adverse effect at the local level (wider study area) which is not significant. | Best practice measures implemented via a PEP. | short-term temporary small adverse effect at the local level (wider study area) which is not significant. |
| | Change to Viewpoint 4. Clear open views of substantial construction works | short-term temporary medium adverse effect at the local level (wider study area) which is moderately significant. | Best practice measures implemented via a PEP. | short-term temporary medium adverse effect at the local level (wider study area) which is moderately significant. |
| | Change to Viewpoint 5. Clear open views of substantial construction works | medium-term temporary medium adverse effect at the local level (wider study area) which has minor significance. | Best practice measures implemented via a PEP. | medium-term temporary medium adverse effect at the local level (wider study area) which has minor significance. |
| | Change to Viewpoint 6. Clear open views of substantial construction works | medium-term temporary medium adverse effect at the local level (wider study area) which has minor | Best practice measures implemented via a PEP. | medium-term temporary medium adverse effect at the local level (wider study area) |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | significance. | | which has minor significance. |
| | Change to Viewpoint 7. Filtered views of substantial construction works | medium-term temporary large adverse effect at the local level (wider study area) which is moderately significant. | Best practice measures implemented via a PEP. | medium-term temporary large adverse effect at the local level (wider study area) which is moderately significant. |
| **Ground Conditions** | Risks to health of construction workers and adjacent site users from contaminated land | Negligible and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF), standard mitigation, PEP | No residual effects |
| | Risks to the quality of controlled waters as a result of exposure of contaminated soils (groundwater and River Irk) | Moderate adverse and significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF) and Remediation Strategy | No residual effects |
| | Risk to the quality of controlled waters as a result of temporary stockpiling | Minor adverse and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF), standard mitigation, PEP | No residual effects |
| | Existing contaminated groundwater impact on River Irk and Principal aquifer | Moderate adverse and significant (aquifer)<br><br>Minor adverse and not significant (river)<br><br>Significance of effects to be reviewed | Ground investigation (wider SRF) and Remediation Strategy | No residual effects |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | once detailed design is available | | |
| | Formation of piled foundations through made ground | Minor adverse and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Standard mitigation, ground investigation (wider SRF), remediation strategy, piling risk assessment | No residual effects |
| **Drainage and Flood Risk** | Impacts on the River Irk | Moderate adverse<br><br>(significant) | • Following standard construction best practice relating to pollution prevention.<br><br>• Identifying additional mitigation for pollution prevention and potential impacts on hydromorphology where required for works within the river corridor.<br><br>• Maintaining drainage system to ensure runoff is treated and attenuated prior to discharge to site<br><br>• Identifying mitigation for flood event plus 40% in areas surrounding Union Bridge. | Slight adverse<br><br>(not significant) |
| | Impacts on the Drain (adjacent to Fairholme Carvan Park) | Neutral<br><br>(not significant) | | Neutral<br><br>(not significant) |
| | Impacts on Drain (Cheetham Hill Junction Drain) | Neutral<br><br>(not significant) | | Neutral<br><br>(not significant) |
| | Impacts on Residential and Commercial complex | Neutral<br><br>(not significant) | | Neutral<br><br>(not significant) |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | | Emergency response procedures. | |
| **Archaeology and Heritage** | Complete or partial removal of potential below ground archaeological deposits ranging from low to medium value | Minor to moderate permanent adverse effect | Geoarchaeological watching brief during ground investigations<br><br>Geoarchaeological deposit modelling<br><br>Programme of archaeological strip, map and sample investigation of the former Travis Mill site | Minor adverse effect |
| | Partial removal of or alterations to sections of historic river walls and retaining walls ranging from negligible to low value. | Neutral to minor permanent adverse effect | Level 2 historic building recording of river and retaining walls | Neutral effect |
| | Temporary change to the settings of built heritage assets within the Site ranging from negligible to high value as a result of demolition and construction activities. | Neutral to minor temporary adverse effect | Use of appropriate screening during demolition and construction | Neutral effect |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| **Transport and Access** | As per Assessment Scenario 1a | | | |
| **Air Quality and Dust** | Construction dust affecting receptors | Dust impacts at areas which would expect a high amenity value (homes, parks etc). High risk prediction on above areas without appropriate mitigation implemented. | Best practice mitigation measures to be included in a construction environmental management plan | **No significant effect** |
| | Construction traffic affecting receptors | Not assessed | n/a | n/a |
| **Noise and Vibration** | No additional effects can be identified from scenario 1a | | | |
| **Waste** | Occupation of remaining inert landfill void space | Potential for moderate adverse environmental effect at a regional level. Significant. | Development of a SWMP | Slight adverse environmental effect at a regional level. Non-significant. |
| | Occupation of remaining non-hazardous landfill void space | Potential for moderate adverse environmental effect at a regional level. Significant. | | Slight adverse environmental effect at a regional level. Non-significant. |
| | Occupation of remaining hazardous landfill void space | Potential for moderate adverse environmental effect at a national level. Significant. | | Slight adverse environmental effect at a national level. Non-significant. |
| **Health and Wellbeing** | Effects on access to employment, training, and | Major beneficial | None proposed above standard | Major beneficial |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | education | | mitigation measures | |
| | Effects on access to open space | Major adverse | | Major adverse |
| | Effects on air quality | Minor adverse | | Minor adverse |
| | Effects on noise | Minor adverse | | Minor adverse |
| | Effects on neighbourhood amenity | None | | None |
| | Effects on crime reduction and community safety | None | | None |
| **Socioeconomics** | Temporary direct, indirect<br><br>and induced employment during the construction phase. | Major Beneficial (Significant) | Potential for added benefits through measures such as local employment and training schemes however no commitments have been made. | Major Beneficial (Significant) |
| | Potential Disruption through Changes to Environmental Quality | Negligible / Minor Adverse (Not Significant) | N/A | Negligible / Minor Adverse (Not Significant) |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| **Climate Change** | Emissions of greenhouse gases | Significant effect | Best practice measures implemented via a PEP. | Significant effect |
| | CCR Assessment | Not included (see scenario 1a above for justification) | | |

*Table 18.4: Summary of Mitigation and Residual Effects – Scenario 2a – Impacts of the proposed development only during Completed Development and Operation*

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| **Ecology and Trees** | Effects on Semi-Natural Woodland | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives is considered **not significant.** | A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora.<br><br>Appropriate woodland management (detailed in LEMP). | Neutral changing to minor beneficial in the medium to long term. |
| | Effects on Plantation Woodland<br><br>(Regional Value) | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives is considered **not significant.** | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora. | Neutral changing to minor beneficial in the medium to long term. |
| | Effects on Roosting Bats<br><br>(Local Value) | Potential lighting impact on potential roosting habitat is considered to be a **negative significant effect** at Local level. . | Operational lighting strategy will include bat sensitive measures. | Negligible |
| | Effects on Bat Foraging & Commuting<br><br>(Local Value) | Potential lighting impact on foraging/commuting routes is considered to be a **negative significant effect** at Local level. . | Operational lighting strategy will include bat sensitive measures. | Negligible |
| **Townscape and Visual** | Change to Townscape Character - new roads, | long-term small beneficial effect at the | Best practice measures | long-term small beneficial effect at the local level which has |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | green infrastructure and links | local level which has minor significance. | implemented via a PEP. | minor significance. |
| | Change to Urban Grain with basic context for development created | long-term negligible beneficial effect at the local level which is not significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term negligible beneficial effect at the local level which is not significant. |
| | Change to Land Use with new City River Park and associated facilities | long-term small beneficial effect at the local level which is not significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term small beneficial effect at the local level which is not significant. |
| | Change to Public Open Space and Woodland due creation of City River Park | long-term medium beneficial effect at the local level which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level which is moderately significant. |
| | Change to Movement and Linkage –with new footpaths, cycle routes and roadways | long-term medium beneficial effect at the local level which has minor significance. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level which has minor significance. |
| | Change to Site Character with new roadways, woodland management and City River Park | long-term medium beneficial effect at the local level which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level which is moderately significant. |
| | Change to Viewpoint 1: clear views of the proposed development hardstanding and river | long-term small beneficial effect at the local level which is not significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term small beneficial effect at the local level which is not significant. |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | frontage | | | |
| | Change to Viewpoint 2: view of new park infrastructure and bridge crossing | long-term medium beneficial effect at the local level which has minor significance. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level which has minor significance. |
| | Change to Viewpoint 3: with partial view to new park infrastructure | long-term negligible beneficial effect at the local level which is not significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term negligible beneficial effect at the local level which is not significant. |
| | Change to Viewpoint 4. Clear open views of hard standing and roads | long-term medium adverse effect at the local level which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium adverse effect at the local level which is moderately significant. |
| | Change to Viewpoint 5. Opening up of view and new roadway entrance | long-term negligible adverse effect at the local level which is not significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term negligible adverse effect at the local level which is not significant. |
| | Change to Viewpoint 6. With partial views of river and hillside works | long-term negligible beneficial effect at the local level which is not significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term negligible beneficial effect at the local level which is not significant. |
| | Change to Viewpoint 7. Filtered views of park infrastructure and hardstanding areas | long-term small beneficial effect at the local level which is not significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term small beneficial effect at the local level which is not significant. |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| **Ground Conditions** | Contamination remaining in exposed soils e.g. undeveloped plots in interim, areas of public open space | Minor adverse and not significant | Remediation Strategy | No residual effects |
| | Residual contamination and exposure of future maintenance workers | Negligible and not significant | Standard Mitigation, Remediation Strategy | No residual effects |
| | Temporary increase in infiltration on undeveloped plots causing impact on water quality | Minor to moderate adverse and significant for Principal aquifer | Remediation Strategy | No residual effects |
| | Impact of residual contamination on new green infrastructure | Negligible and not significant | Remediation Strategy | No residual effects |
| | Direct contact of new services with existing made ground/groundwater | Negligible and not significant | Standard Mitigation, Remediation Strategy | No residual effects |
| **Drainage and Flood Risk** | Water quality impacts from sediment and contaminant runoff: River | Moderate adverse<br><br>(significant) | Implementation of SuDS measures included in the scheme's design. | Neutral<br><br>(not significant) |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Irk | | | |
| | Water quality impacts from accidental spills: Drain (adjacent to Fairholme Caravan Site) | Slight adverse<br><br>(not significant) | | Neutral<br><br>(not significant) |
| | Water quality impacts from accidental spills: Drain (Cheetham Hill Junction Drain) | Moderate adverse<br><br>(significant) | | Neutral<br><br>(not significant) |
| | Hydromorphology impacts: River Irk | **Slight adverse**<br><br>**(not significant)** | None | **Slight adverse**<br><br>**(not significant)** |
| | Hydromorphology impacts: Drain (adjacent to Fairholme Caravan Site) | **Slight adverse**<br><br>**(not significant)** | | **Slight adverse**<br><br>**(not significant)** |
| | Hydromorphology impacts: Drain (Cheetham Hill Junction Drain) | **Slight adverse**<br><br>**(not significant)** | | **Slight adverse**<br><br>**(not significant)** |
| | Changing local drainage patterns to the River Irk | Moderate adverse | • Possible options to reduce flood risk downstream of Union | Neutral |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | (significant) | Bridge, which will be further developed as the design progresses) include:<br>o Constructing a bund, with the top level of the bund replicating the top level of the wall located at Union Bridge; or<br>o Create an overflow channel that would outskirt the bridge.<br>Implement proposed design in modelled and assessed in final FRA. | (not significant) |
| | Changing local drainage patterns to Drain (adjacent to Fairholme Caravan Site) | Slight adverse<br>(not significant) | | Neutral<br>(not significant) |
| | Changing local drainage patterns to Drain (Cheetham Hill Junction Drain) | Slight adverse<br>(not significant) | | Neutral<br>(not significant) |
| | Changing local drainage patterns: around Residential and Commercial complex | Moderate adverse<br>(not significant) | | Neutral<br>(not significant) |
| **Archaeology and Heritage** | There would be no operational impacts to archaeology. | Neutral effect | None proposed | Neutral effect |
| | Permanent beneficial change to the settings of built heritage assets within the Site ranging from negligible to high value as a result of the improvement to the built | Neutral to minor permanent beneficial effect. | None proposed | Neutral to minor permanent beneficial effect |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | realm of the Site. | | | |
| **Transport and Access** | No Assessment Required | | | |
| **Air Quality and Dust** | Operational phase traffic emissions | No significant impacts predicted. | No mitigation required | **No significant effect** |
| **Noise and Vibration** | Scoped out of EIA | | | |
| **Waste** | Occupation of remaining inert landfill void space | Neutral environmental effect. Non-significant. | None required | Neutral environmental effect. Non-significant |
| | Occupation of remaining non-hazardous landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | | Slight adverse environmental effect at a regional level. Non-significant. |
| | Occupation of remaining hazardous landfill void space | Neutral environmental effect. Non-significant | | Neutral environmental effect. Non-significant |
| **Health and Wellbeing** | No Assessment Required | | | |
| **Socioeconomics** | Provision of green infrastructure including the creation of green links and a new City River Park. | Major Beneficial (Significant) to local residents and employees<br><br>Minor Beneficial (Not significant) to visitors | N/A | Major Beneficial (Significant) to local residents and employees<br><br>Minor Beneficial (Not significant) to visitors |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | | | |
| **Climate Change** | Emissions of greenhouse gases | Significant effect | Use of mitigation hierarchy to influence design to decarbonise the project. | Significant effect |
| | Resilience of the development to climate change effects | Not significant effect | It is expected that most weather and climate-related resilience effects during operation will be mitigated through measures embedded in the design of the project as a result of meeting current planning, design and engineering practice and codes. The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is fully mitigated. Subject to this, it is expected that these practices and codes will provide effective resilience throughout the operational phase of the project | Not significant effect |

*Table 18.5: Summary of Mitigation and Residual Effects – Scenario 2b – Impacts of the proposed development alongside Applications 1, 3 and 4 during Completed Development and Operation.*

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| **Ecology and Trees** | Effects on Semi-Natural Woodland<br><br>(Regional Value) | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives associated with Applications 2 & 4 is considered **not significant**.<br><br>No operational impacts during Applications 1 & 3. | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora. | Neutral changing to minor beneficial in the medium to long term. |
| | Effects on Plantation Woodland<br><br>(Regional Value) | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives associated with Applications 2 & 4 is considered **not significant**.<br><br>No operational impacts during Applications 1 & 3. | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora. | Neutral changing to minor beneficial in the medium to long term. |
| | Effects on Roosting Bats<br><br>(Local Value) | Potential lighting impact on potential roosting habitat associate with Applications 2 & 4 is considered to be a **negative significant effect** at Local level.<br>.<br><br>No potential lighting impact on roosting bats associated with Applications 1 & 3. | Operational lighting strategy will include bat sensitive measures. | Negligible |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Effects on Bat Foraging & Commuting<br><br>(Local Value) | Potential lighting impact on foraging/commuting routes associated with Applications 2 & 4 is considered to be a **negative significant effect** at Local level. .<br><br>No potential lighting impact on foraging/commuting routes associated with Applications 1 & 3. | Operational lighting strategy will include bat sensitive measures. | Negligible |
| **Townscape and Visual** | Change to Townscape Character - due to substantial new development, uses, infrastructure and open spaces. | long-term medium beneficial effect at the local level (wider study area) which is moderately significant. | Best practice measures implemented via a PEP. | long-term medium beneficial effect at the local level (wider study area) which is moderately significant. |
| | Change to Urban Grain with positive/ legible new structure to the area. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. |
| | Change to Land Use with substantial new residential, commercial and retail uses | long-term medium beneficial effect at the local level (wider study area) which has minor significance. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. |
| | Change to Public Open Space and Woodland due creation of new City River | long-term medium beneficial effect at the local level (wider study area) which is | No additional mitigation/enhancement proposed | long-term medium beneficial effect at the local level (wider study area) which is moderately |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Park, and surrounding public realm links | moderately significant. | under this phase of development. | significant. |
| | Change to Movement and Linkage – with extensive new footpaths, cycle routes and roadways | long-term medium beneficial effect at the local level (wider study area) which has minor significance. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. |
| | Change to Viewpoint 1: clear views of new development blocks, public realm and river frontage | long-term large beneficial effect at the local level (wider study area) which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term large beneficial effect at the local level (wider study area) which is moderately significant. |
| | Change to Viewpoint 2: view of new park infrastructure and bridge crossing, clear view of development blocks above. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. |
| | Change to Viewpoint 3: new park infrastructure and bridge crossing, clear view of development blocks above. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. |
| | Change to Viewpoint 4. Substantial reduction to | long-term large adverse effect at the local level (wider study area) which is | No additional mitigation/enhancement proposed | long-term large adverse effect at the local level (wider study area) |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | openness, character and composition due to proximity of new development blocks. | moderately significant. | under this phase of development. | which is moderately significant. |
| | Change to Viewpoint 5. Due to reduction in openness, character and composition of view. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. |
| | Change to Viewpoint 6. Reduction in openness, character and composition due to proximity of new development blocks, roads and new public realm visible. | long-term large beneficial effect at the local level (wider study area) which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term large beneficial effect at the local level (wider study area) which is moderately significant. |
| | Change to Viewpoint 7. Filtered views of park infrastructure clear view of development above tree line. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. |
| **Ground Conditions** | Contamination remaining in exposed soils e.g. undeveloped plots in interim, areas of public | Minor adverse and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Remediation Strategy | No residual effects |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | open space | | | |
| | Impact of residual contamination on new green infrastructure | Negligible and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Remediation Strategy | No residual effects |
| | Direct contact of new services with existing made ground/groundwater | Negligible and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Standard Mitigation, Remediation Strategy | No residual effects |
| | Reduction in infiltration once development completed (Application 4) | Minor beneficial and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Remediation Strategy | No residual effects |
| **Drainage and Flood Risk** | Impacts on the River Irk | Moderate adverse<br><br>(significant) | • Design of works within river corridor to ensure off-site fluvial flood risk is not increased.<br><br>• Site wide drainage strategy includes separate systems for foul and surface water and should reduce runoff rates from the Site.<br><br>Works within the river corridor will aim to have a neutral or beneficial | Slight adverse<br><br>(not significant) |
| | Impacts on the Drain (adjacent to Fairholme Caravan Site) | Neutral<br><br>(not significant) | | Neutral<br><br>(not significant) |
| | Impacts on Drain (Cheetham Hill Junction Drain) | Neutral<br><br>(not significant) | | Neutral<br><br>(not significant) |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Impacts on Residential and Commercial complex | Moderate adverse<br><br>(significant) | impact on channel morphology, or off-site mitigation will be used to off-set impacts. | Slight adverse<br><br>(not significant) |
| **Archaeology and Heritage** | There would be no operational impacts to archaeology | Neutral effect | None proposed | Neutral effect |
| | Permanent change to the settings of built heritage assets within the Site ranging from negligible to high value as a result of the as a result of the improvement to the built realm of the Site | Neutral to minor permanent beneficial effect | None proposed | Neutral to minor permanent beneficial effect |
| | Permanent change to the settings of high value heritage assets within the study area as a result of the Proposed Development plus Applications 1, 3 and 4 | Permanent moderate adverse effects | None proposed | Permanent moderate adverse effects |
| **Transport and Access** | Driver Delay | Major adverse in the long-term at a local level | Travel Plan | Minor/Moderate adverse in the long-term at a local level |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Pedestrian Delay | Minor adverse in the long-term at a local level | | Minor adverse in the long-term at a local level |
| | Severance | Minor adverse in the long-term at a local level | | Minor adverse in the long-term at a local level |
| | Pedestrian Amenity | Minor adverse in the long-term at a local level | | Minor adverse in the long-term at a local level |
| | Fear and Intimidation | Minor adverse in the long-term at a local level | | Minor adverse in the long-term at a local level |
| | Accidents and Safety | Minor adverse in the long-term at a local level | | Minor adverse in the long-term at a local level |
| **Air Quality and Dust** | Operational phase traffic emissions | No significant impacts predicted. | No mitigation required | No significant effect |
| **Noise and Vibration** | Operational traffic noise | Not significant | None required | Not significant |
| **Waste** | Occupation of remaining inert landfill void space | Neutral environmental effect. Non-significant. | None required | Neutral environmental effect. Non-significant |
| | Occupation of remaining non-hazardous landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | | Slight adverse environmental effect at a regional level. Non-significant. |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Occupation of remaining hazardous landfill void space | Neutral environmental effect. Non-significant | | Neutral environmental effect. Non-significant |
| **Health and Wellbeing** | Effects on access to employment, training, and education | Minor beneficial | None proposed | Minor beneficial |
| | Effects on access to open space | Major beneficial | | Major beneficial |
| | Effects on air quality | Minor beneficial | | Minor beneficial |
| | Effects on noise | Not yet known | | Not yet known |
| | Effects on neighbourhood amenity | Major beneficial | | Major beneficial |
| | Effects on crime reduction and community safety | Not yet known | | Not yet known |
| **Socioeconomics** | New residents on local expenditure | Minor Beneficial (Not Significant) | N/A | Minor Beneficial (Not Significant) |
| | Change in housing and affordable housing | Major Beneficial (Significant) | N/A | Major Beneficial (Significant) |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | provision | | | |
| | Change in access to social and community infrastructure excluding open spaces and play spaces | Moderate Beneficial (Significant) | N/A | Moderate Beneficial (Significant) |
| | Change in access to open space | Major Beneficial (Significant) to local residents and employees<br><br>Minor Beneficial (Not significant) to visitors | N/A | Major Beneficial (Significant) to local residents and employees<br><br>Minor Beneficial (Not significant) to visitors |
| **Climate Change** | Greenhouse gas emissions | Significant effect | Use of mitigation hierarchy to influence design to decarbonise the project. | Significant effect |
| | Resilience to climate change effects | Significant effect | It is expected that most weather and climate-related resilience effects during operation will be mitigated through measures embedded in the design of the project as a result of meeting current planning, design and engineering practice and codes. The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented | Not significant effect |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | | fully and effectively, such that the climate risk is fully mitigated. Subject to this, it is expected that these practices and codes will provide effective resilience throughout the operational phase of the project. | |

*Table 18.6: Summary of Mitigation and Residual Effects – Scenario 2c – Impacts of the proposed development alongside Applications 1, 3 and 4, and the wider SRF during Completed Development and Operation*

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| **Ecology and Trees** | Effects on Semi-Natural Woodland<br><br>(Regional Value) | Potential increase in public pressure leading to effect on floral diversity and introduction of invasives associated with Applications 2 & 4 is considered not significant.<br><br>No operational impacts during Applications 1 & 3.<br><br>It is anticipated there will be an increase in public pressure entering woodlands in the wider SRF. | Appropriate woodland management (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure impacts from public pressure are mitigated. | Neutral changing to minor beneficial in the medium to long term. |
| | Effects on Plantation | Potential increase in public pressure leading | Appropriate woodland management | Neutral changing to minor |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Woodland<br><br>(Regional Value) | to effect on floral diversity and introduction of invasives associated with Applications 2 & 4 is considered not significant.<br><br>No operational impacts during Applications 1 & 3.<br><br>It is anticipated there will be an increase in public pressure entering woodlands in the wider SRF. | (detailed in LEMP).<br><br>A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure impacts from public pressure are mitigated. | beneficial in the medium to long term. |
| | Effects on Roosting Bats<br><br>(Local Value) | Potential lighting impact on potential roosting habitat associate with Applications 2 & 4 and the wider SRF.<br><br>No potential lighting impact on roosting bats associated with Applications 1 & 3. | Operational lighting strategy will include bat sensitive measures.<br><br>It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure impacts from artificial lighting on roosting bats are mitigated or compensated. | Negligible |
| | Effects on Bat Foraging & Commuting<br><br>(Local Value) | Potential lighting impact on foraging/commuting routes associated with Applications 2 & 4 and the wider SRF.<br><br>No potential lighting impact on foraging/commuting routes associated with Applications 1 & 3. | Operational lighting strategy will include bat sensitive measures. It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure impacts from artificial lighting on commuting/foraging bats are mitigated or compensated. | Negligible |
| **Townscape and Visual** | Change to Townscape | long-term large beneficial effect at the local | No additional | long-term large beneficial effect at |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Character - due to substantial new development, uses, infrastructure and open spaces. | level (wider SRF area) which is moderately significant. | mitigation/enhancement proposed under this phase of development. | the local level (wider SRF area) which is moderately significant. |
| | Change to Urban Grain with positive/ legible new structure to the SRF area. | long-term large beneficial effect at the local level (wider SRF area) which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term large beneficial effect at the local level (wider SRF area) which is moderately significant. |
| | Change to Land Use with substantial new residential, commercial and retail uses across the SRF area. | long-term large beneficial effect at the local level (wider SRF area) which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term large beneficial effect at the local level (wider SRF area) which is moderately significant. |
| | Change to Public Open Space and Woodland due creation of new City River Park, and surrounding public realm links across the SRF area. | long-term large beneficial effect at the local level (wider SRF area) which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term large beneficial effect at the local level (wider SRF area) which is moderately significant. |
| | Change to Movement and Linkage – with extensive new footpaths, cycle routes and roadways across the | long-term large beneficial effect at the local level (wider SRF area) which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term large beneficial effect at the local level (wider SRF area) which is moderately significant. |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | SRF area. | | | |
| | Change to Viewpoint 1: clear views of new development blocks, public realm and river frontage. No additional wider SRF effects. | long-term large beneficial effect at the local level (wider study area) which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term large beneficial effect at the local level (wider study area) which is moderately significant. |
| | Change to Viewpoint 2: view of new park infrastructure and bridge crossing, clear view of development blocks above. No additional wider SRF effects. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. |
| | Change to Viewpoint 3: new park infrastructure and bridge crossing, clear view of development blocks above. No additional wider SRF effects. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. | No additional mitigation/enhancement proposed under this phase of development. | long-term medium beneficial effect at the local level (wider study area) which has minor significance. |
| | Change to Viewpoint 4. Substantial reduction to openness, character and composition due to | long-term large adverse effect at the local level (wider study area) which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term large adverse effect at the local level (wider study area) which is moderately significant. |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | proximity of new development blocks. No additional wider SRF effects. | | | |
| | Change to Viewpoint 5. Due to reduction in openness, character and composition of view. Slight additional view of wider SRF effects. | long-term large beneficial effect at the local level (wider study area) which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term large beneficial effect at the local level (wider study area) which is moderately significant. |
| | Change to Viewpoint 6. Reduction in openness, character and composition due to proximity of new development blocks, roads and new public realm visible. No additional wider SRF effects. | long-term large beneficial effect at the local level (wider study area) which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term large beneficial effect at the local level (wider study area) which is moderately significant. |
| | Change to Viewpoint 7. Filtered views of park infrastructure clear view of development above tree line. Change to context of view within SRF proposals. | long-term large beneficial effect at the local level (wider study area) which is moderately significant. | No additional mitigation/enhancement proposed under this phase of development. | long-term large beneficial effect at the local level (wider study area) which is moderately significant. |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| **Ground Conditions** | Contamination remaining in exposed soils e.g. undeveloped plots in interim, areas of public open space | Minor adverse and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF), Remediation Strategy | No residual effects |
| | Impact of residual contamination on new green infrastructure | Negligible and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF), Remediation Strategy | No residual effects |
| | Direct contact of new services with existing made ground/groundwater | Negligible and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF), Standard Mitigation, Remediation Strategy | No residual effects |
| | Reduction in infiltration once development completed (Application 4) | Minor beneficial and not significant<br><br>Significance of effects to be reviewed once detailed design is available | Ground investigation (wider SRF) Remediation Strategy | No residual effects |
| **Drainage and Flood Risk** | Impacts on the River Irk | Moderate adverse<br><br>(significant) | • Design of works within river corridor to ensure off-site fluvial flood risk is not increased.<br><br>• Site wide drainage strategy includes separate systems for foul and surface water and | Slight adverse<br><br>(not significant) |
| | Impacts on the Drain (adjcanet to Fairholme Caravan Site) | Neutral<br><br>(not significant) | | Neutral<br><br>(not significant) |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | Impacts on the Drain (Cheetham Hill Junction Drain) | Neutral<br><br>(not significant) | should reduce runoff rates from the Site.<br><br>• Works within the river corridor will aim to have a neutral or beneficial impact on channel morphology, or off-site mitigation will be used to off-set impacts.<br><br>Following standard construction best practice relating to pollution prevention. | Neutral<br><br>(not significant) |
| | Impacts on the Residential and Commercial complex | Moderate adverse<br><br>(significant) | | Slight adverse<br><br>(not significant) |
| **Archaeology and Heritage** | *There would be no operational impacts to archaeology* | Neutral effect | None proposed | Neutral effect |
| | Permanent change to the settings of built heritage assets within the Site ranging from negligible to high value as a result of the improvement to the built realm of the Site | Neutral to minor permanent beneficial effect | None proposed | Neutral to minor permanent beneficial effect |
| | Permanent change to the settings of high value heritage assets within the study area as | Permanent moderate adverse effects | None proposed | Permanent moderate adverse effects |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | a result of the Proposed Development plus Applications 1, 3 and 4 | | | |
| **Transport and Access** | As Per Assessment Scenario 2b | | | |
| **Air Quality and Dust** | Operational phase traffic emissions | No significant impacts predicted. | No mitigation required | No significant effect |
| **Noise and Vibration** | Operational traffic noise | Not significant | None required | Not significant |
| **Waste** | Occupation of remaining inert landfill void space | Neutral environmental effect. Non-significant. | None required. | Neutral environmental effect. Non-significant |
| | Occupation of remaining non-hazardous landfill void space | Slight adverse environmental effect at a regional level. Non-significant. | | Slight adverse environmental effect at a regional level. Non-significant. |
| | Occupation of remaining hazardous landfill void space | Neutral environmental effect. Non-significant | | Neutral environmental effect. Non-significant |
| **Health and Wellbeing** | Effects on access to employment, training, and education | Minor beneficial | None proposed | Minor beneficial |
| | Effects on access to | Major beneficial | | Major beneficial |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | open space | | | |
| | Effects on air quality | Minor beneficial | | Minor beneficial |
| | Effects on noise | Not yet known | | Not yet known |
| | Effects on neighbourhood amenity | Major beneficial | | Major beneficial |
| | Effects on crime reduction and community safety | Not yet known | | Not yet known |
| **Socioeconomics** | Change in housing and affordable housing provision | Major Beneficial (significant) | N/A | Major Beneficial (significant) |
| | Economic Growth | Moderate Beneficial (Significant) | N/A | Moderate Beneficial (Significant) |
| **Climate Change** | GHG Assessment | Significant effect | Use of mitigation hierarchy to influence design to decarbonise the project. | Significant effect |
| | CCR Assessment | Significant effect | It is expected that most weather and climate-related resilience effects during operation will be mitigated through measures embedded in the design of the | Not significant effect |

| Category | Description of Effect | Description of Potential Effects Including Significance | Mitigation Measures | Residual Effect Including Significance |
|---|---|---|---|---|
| | | | project as a result of meeting current planning, design and engineering practice and codes. The assessment assumes that any required mitigation measures to reach these standards and address the climate risks, are implemented fully and effectively, such that the climate risk is fully mitigated. Subject to this, it is expected that these practices and codes will provide effective resilience throughout the operational phase of the project. | |

## Summary and Conclusions

18.4 An assessment of the potential effects of the demolition and construction, and operational phases of the Proposed Development has been undertaken as part of this EIA to establish the environmental changes associated with the proposals.

18.5 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 or the application of appropriate mitigation measures.

18.6 Residual effects during the demolition and construction stage are considered to be short term, temporary in nature, and are not significant in the main.

18.7 Removal of 1.51ha of young semi-natural woodland will be a permanent effect of the Proposed Development. However, retained semi-natural woodland habitat will be managed and enhanced, and compensation will be provided in the form of Biodiversity Net Gain. This will ensure that at least a 10% gain in habitat will be made. This commitment will be secured through planning conditions or obligations.

18.8 Significant effect relating to GHG emissions associated with the Proposed Development is expected, although this will be minimised as far as possible by the reuse of material on site and best practice measures implemented during the construction phase.

18.9 Such best practice measures will be implemented via an overarching PEP. In addition, a range of management plans are proposed to ensure any potential environmental effects as a result of the Proposed Development are minimised. These include, but are not limited to:

- Project Execution Plan (covering the Construction Phase Plan, Environmental Management Plan, and Quality Plan)
- Landscape Management Plan
- Site Waste Management Plan (SWMP).

18.10 Aside from Climate Change, where, in accordance with the IEMA guidance, any GHG emissions associated with the Proposed Development will be deemed significant no other significant adverse residual effects are expected as a result of the Proposed Development once completed.

18.11 The Proposed Development, considered in the context of the wider Development Project, will facilitate redevelopment of an existing poor-quality environment, and the delivery of the aspirations of the Northern Gateway SRF, and with it a range of beneficial impacts. An assessment of the Proposed Development in the context of the wider development project at Red Bank Neighbourhood, and considering the wider SRF, has been undertaken. In respect of ecology and trees, no new or increased adverse effects on the ecological features

identified during the assessment of the Proposed Development, wider development project and the wider SRF are predicted to arise. As previously noted, there is a commitment to achieve 10% BNG for the combined applications via both on and off-Site provision and a range of best practice ecological mitigation measures to manage the ecological enhancement proposed. There are likely to be temporary, moderately significant adverse effects during demolition and construction due to the extent of the works proposed. Once completed, there are predicted to be permanent beneficial effects for a range of topic areas. There are no significant adverse effects likely in respect of drainage and flood risk. There is the opportunity for beneficial effects during the operational phase of the wider development, for example through improved access to employment, training, education, and new green infrastructure. This will also have beneficial effects on neighbourhood amenity, both a socioeconomic and health benefit for the local population.

18.12 The Proposed Development constitutes sustainable development in accordance with the NPPF when taken as a whole. It is an essential area of regeneration to improve the area immediately adjacent to Manchester City Centre. Significant change and regeneration is planned for the surrounding area as presented in the Northern Gateway SRF and this planning application will facilitate an early start on site and clear a path for the main infrastructure, flood works and, ultimately, residential development proposed by associated successive prospective planning applications at the Site.

# Abbreviations

| | |
|---|---|
| **AADT** | Annual Average Daily Traffic |
| **AAWT** | Annual Average Weekday Traffic |
| **AIA** | Arboricultural Impact Assessment |
| **ADM** | Atmospheric Dispersion Model |
| **ADMS** | Atmospheric Dispersion Modelling System |
| **ADS** | Archaeology Data Service |
| **AOD** | Above Ordnance Datum |
| **AONB** | Area of Outstanding Natural Beauty |
| **APIS** | Air Pollution Information Service |
| **ATC** | Automatic Traffic Count |
| **AUN** | Automatic Urban Network |
| **AQAP** | Air Quality Action Plan |
| **AQMA** | Air Quality Management Area |
| **AQS** | Air Quality Strategy |
| **BAP** | Biodiversity Action Plan |
| **BCT** | Bat Conservation Trust |
| **bgl** | Below Ground Level |
| **BGS** | British Geological Survey |
| **BMP** | Biodiversity Management Plan |
| **BNG** | Biodiversity Net Gain |
| **BoCC** | Birds of Conservation Concern |
| **BPM** | Best Practicable Means |
| **BQE** | Biological Quality Elements |
| **BRE** | Building Research Establishment |
| **BREEAM** | Building Research Establishment Environmental Assessment Methods |
| **BS** | British Standards |
| **BTO** | British Trust for Ornithology |
| **Clean Air Zone** | Clean Air Zone |
| **CBC** | Common Birds Census |
| **CBD** | Convention on Biological Diversity |
| **CDA** | Critical Drainage Area |
| **CEDA** | Centre for Environmental Data Analysis |
| **CEMP** | Construction Environmental Management Plan |
| **CIA** | Cumulative Impact Assessment |
| **CIBSE** | Chartered Institute of Building Services Engineers |
| **CIEEM** | Chartered Institute of Ecology and Environmental Management |
| **$CO_2$** | Carbon Dioxide |
| **CTMP** | Construction Traffic Management Plan |
| **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 |
| **DMRB** | Design Manual for Roads and Bridges |
| **EA** | Environment Agency |
| **EC** | European Commission |
| **EFT** | Emissions Factor Toolkit |
| **EIA** | Environmental Impact Assessment |
| **EcIA** | Ecological Impact Assessment |
| **ELC** | European Landscape Convention |
| **EPA** | Environmental Protection Act |

| | |
|---|---|
| **EPUK** | Environmental Protection UK |
| **EQS** | Environmental Quality Standards |
| **ES** | Environmental Statement |
| **EU** | European Union |
| **FEC** | Far East Consortium |
| **FISC** | Field Identification Skills Certificate |
| **FRA** | Flood Risk Assessment |
| **FWMA** | Flood and Water Management Act |
| **GAC** | Generic Assessment Criteria |
| **GEA** | Gross External Area |
| **GHG** | Greenhouse Gas |
| **GIR** | Ground Investigation Interpretative Report |
| **GLVIA** | Guidelines for Landscape and Visual Impact Assessment |
| **GMAAS** | Greater Manchester Archaeological Advisory Service |
| **GMBAP** | Greater Manchester Biodiversity Action Plan |
| **GMEU** | Greater Manchester Ecology Unit |
| **GMHER** | Greater Manchester Historic Environment Records |
| **HA** | Highways Agency |
| **HDV** | Heavy Duty Vehicle |
| **HER** | Historic Environment Record |
| **HGV** | Heavy Goods Vehicle |
| **HIF** | Housing Infrastructure Fund |
| **HLC** | Historic Landscape Characterisation |
| **HMSO** | Her Majesty's Stationery Office |
| **HMWB** | Heavily Modified Water Body |
| **HRA** | Habitats Regulations Assessment |
| **HV** | High Voltage |
| **Hz** | Hertz |
| **IAQM** | Institute of Air Quality Management |
| **ICA** | In-Combination Assessment |
| **IEEM** | Institute of Ecology and Environmental Management |
| **IEMA** | Institute of Environmental Management and Assessment |
| **IRZ** | Invasive Non-Native Species |
| **INNS** | Impact Risk Zone |
| **ISMS** | Invasive Species Method Statement |
| **ISO** | International Standard O |
| **JNCC** | Joint Nature Conservation Committee |
| **JV** | Joint Venture |
| **km** | Kilometre |
| **km/h** | Kilometres per hour |
| **LAQM** | Local Air Quality Management |
| **LCA** | Landscape Character Area |
| **LCT** | Landscape Character Type |
| **LEMP** | Landscape Environmental Management Plan |
| **LEP** | Local Enterprise Partnership |
| **LFRMS** | Local Flood Risk Management Strategy |
| **LHN** | Local Highways Network |
| **LLFA** | Lead Local Flood Authority |
| **LNR** | Local Nature Reserve |
| **LPA** | Local Planning Authority |
| **LV** | Low Voltage |
| **LVIA** | Landscape and Visual Impact Assessment |
| **LWS** | Local Wildlife Site |

| | |
|---|---|
| **MAGIC** | Multi-Agency Geographic Information for the Countryside |
| **MCC** | Manchester City Council |
| **MHCLG** | Ministry of Housing, Communities and Local Government |
| **MMP** | Materials Management Plan |
| **mm/s** | Millimetres per second |
| **MNR** | Marine Nature Reserves |
| **NE** | Natural England |
| **NERC** | Natural Environment and Rural Communities Act |
| **NHLE** | National Heritage for England |
| **NNR** | National Nature Reserve |
| **$NO_2$** | Nitrogen Dioxide |
| **$NO_x$** | Nitrogen Oxides |
| **NPPF** | National Planning Policy Framework |
| **NPPG** | National Planning Practice Guidance |
| **NRMM** | Non-Road Mobile Machinery |
| **NTS** | Non Technical Summary |
| **NVC** | National Vegetation Classification |
| **NVZ** | Nitrative Vulnerable Zone |
| **$O_2$** | Oxygen |
| **OS** | Ordnance Survey |
| **PEA** | Preliminary Ecological Appraisal |
| **PEP** | Project Execution Plan |
| **$PM_{2.5}$** | Particulate Matter with an aerodynamic diameter of less than 2.5µm |
| **$PM_{10}$** | Particulate matter with a mean aerodynamic diameter of 10µm |
| **PPE** | Personal Protective Equipment |
| **PPG** | Pollution Prevention Guidelines |
| **PPG** | Planning Policy Guidance |
| **ppm** | Parts per million |
| **PPS** | Planning Policy Statement |
| **PRF** | Potential Roosting Feature |
| **PROW** | Public Rights of Way |
| **RAMMS** | Reasonable Avoidance Measures Method Statement |
| **RBMP** | River Basin Management Plan |
| **SAC** | Special Area of Conservation |
| **SBI** | Site of Biological Importance |
| **SCC** | Salford City Council |
| **SFRA** | Strategic Flood Risk Assessment |
| **SIP** | Site Improvement Plan |
| **SOAEL** | Significant Observed Adverse Effect Level |
| **$SO_2$** | Sulphur dioxide |
| **SOM** | Soil Organic Matter |
| **SPA** | Special Protection Area |
| **SPD** | Supplementary Planning Document |
| **SPG** | Supplementary Planning Guidance |
| **SPR** | Source Pathway Receptors |
| **SPS** | Supporting Planning Statement |
| **SPZ** | Source Protection Zone |
| **SRF** | Strategic Regeneration Framework |
| **SSSI** | Site of Special Scientific Interest |
| **SuDS** | Sustainable Drainage System |
| **SWMP** | Site Waste Management Plan |
| **TA** | Transport Assessment |
| **TfGM** | Transport for Greater Manchester |
| **TPO** | Tree Preservation Order |
| **TP** | Travel Plan |

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| **WFD** | Water Framework Directive |
| **WHO** | World Health Organisation |
| **WRA** | Water Resources Act 1991 |
| **UNFCC** | United Nations Framework Convention on Climate Change |
| **UU** | United Utilities |
| **UXO** | Unexploded Ordnance |
| **ZTV** | Zone of Theoretical Visibility |

# Glossary

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| **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 Impacts** | Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions. |

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| **Daughter Directive** | A daughter directive is a sub-set of legislation specifying in more detail the requirements of a European Commission (EC) Directive. |
| **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). |
| **Displacement** | An estimate of economic factors that may have reasonably been attained by other competitors in the absence of the development. |
| **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. |

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| **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. |
| **Landscape Character Type** | A landscape unit with a distinct, consistent and recognisable character. |

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| **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. |
| **Mixed-use development** | Urban development comprising a mix of uses which can include residential, retail, commercial, open space and community facilities. |
| **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. |
| **Noise Exposure Category** | Recommended noise levels introduced in PPG24 for residential development near transport-related noised sources. |
| **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. |

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| **Pile** | A timber, steel or concrete post that is driven, jacked or cast (bored) into the ground to carry vertical or horizontal loads. |
| **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. |

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| **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. |
| **Trial pits** | Intrusive investigation positions excavated by a mechanical excavator. |
| **24 hour mean concentration** | The average (mean) of the hourly pollutant concentrations measured or predicted for 24 consecutive hours in one day |