



# Jackson's Brickworks Redevelopment

## Environmental Statement: Volume 1

May 2022



Important notice: This Environmental Statement has been prepared by Deloitte, with technical input from Wardell Armstrong, Alan Johnson Partnership (AJP), Vectos, Ekosgen and Planit-IE "the Consultants". Chapter 1, Volume 1 of this Environmental Statement sets out the parties responsible for preparing each Chapter and associated figures and appendices.

Although we have read the Consultants' reports for consistency and provide our observations based on our knowledge and experience, we accept no liability or responsibility for the Consultant's Reports and will not be responsible for the technical content of Chapters 7-15, Volume 1, nor Volume 2, nor the technical content of the associated separate Non-Technical Summary.

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# 1. Introduction

- 1.1. This Environmental Statement ('ES') accompanies a Hybrid (part detailed, part outline) Planning Application for the proposed comprehensive redevelopment of the land at the former Jackson's Brickworks, Ten Acres Lane situated in Newton Heath, East Manchester (the 'Site').
- 1.2. The application is submitted to Manchester City Council ('MCC') on behalf of Nuvu Development Ltd ('the Applicant'). Nuvu Development Ltd is a subsidiary of Your Housing Group (YHG).
- 1.3. The proposals it considers ('the Proposed Development') will come forward in phases as follows:
  - An initial phase submitted in full for 378 residential units, a community hub building (with commercial floorspace at the ground floor level), public realm and landscaping, car parking and cycle storage provision, serving and access arrangements, highways improvements and associated works.
  - Subsequent phases submitted in outline with all matters reserved, except for the main points of access, including: a secondary school and associated sports facilities, including playing field provision, and, a further phase of residential development comprising up to 338 residential units, with public realm and landscaping, cycle and car parking provision, and associated works.
- 1.4. In summary, the Proposed Development includes the following:
  - Up to 716 homes (Use Class C3) in total, providing a mix of 1 bed, 2 bed and 3 bed, 4 bed houses and apartments.
  - 617 sq. m commercial floorspace (Use Classes E, F 1 and F2) within the community hub building.
  - A new secondary school (Use Class F2), with up to 1,050 school places.
  - 1.4 ha (approximately) of green infrastructure / public realm, as part of Phase 1, including a new 0.62 ha community park
  - Further provision of public space, landscaping and public realm enhancements, including children's play facilities, Sustainable Urban Drainage Systems (SUDS) and improvements to pedestrian and cycling connectivity across the masterplan. A minimum of 0.8 ha of open space is proposed as part of the subsequent phase of residential development
  - 100% provision of secure cycle storage for residents and cycle parking provision visitors, including 14 cycle parking spaces for visitors (with 7 Sheffield Stands proposed) as part of Phase 1.
  - Car parking provision for residents and visitors, including a total of 512 car parking spaces (including 15 visitor car parking spaces) as part of Phase 1, and further provision as part of the subsequent (outline) phases.
- 1.5. The Site extends to 19.1 hectares and is bound by the Rochdale Canal to the north, Newton Heath Resource Centre to the east, residential areas to the south and derelict industrial sites to the west. It was formerly occupied by Jackson's Brickworks for industrial uses and subsequently used as a landfill Site. The Site has been vacant and unmanaged since the 1990s. Prior to the commencement of recent site clearance and remediation works (secured under Planning Permission ref. 129197/FO/2021 – see paragraph 1.8), it became overgrown with self-seeded trees and shrubbery. Evidence of the former brickworks is present at the Site in the form of rubble piles and concrete bases which remain from former buildings.
- 1.6. The Site has been identified for regeneration for over 25 years, within Policy EM5 Central Park of the UDP (1995), with Central Park being identified for regeneration over the ten-year plan period (from 1995 to 2005), whilst recognising the opportunity to redevelop the Site. The Proposed Development therefore presents a valuable opportunity to address and deliver a longstanding regeneration priority site.
- 1.7. The Proposed Description of Development is as follows:

“Hybrid planning application, pursuant to planning application ref: 129197/FO/2021, for the comprehensive redevelopment of the site to create up to 716 dwellings and a new secondary school, comprising of:

- Phase 1: Full planning permission for erection of new homes (Use Class C3) and a new community building with ground floor commercial floorspace (Use Classes E, F1 and F2), all with associated car parking, highways, landscaping and new public realm creation, and other associated works.
- Subsequent phases of development submitted in outline (with all matters reserved except for the main points of access) for:
  - a new secondary school (Use Class F1), with associated car parking, highways arrangements, landscaping and other associated works.
  - the erection of new homes (Use Class C3), with associated car parking, highways, landscaping and new public realm creation, and other associated works."

1.8. It should be noted that Full Planning Permission was granted on 29 October 2021 for remediation works to the Site (application reference: 129197/FO/2021) ("Remediation Planning Permission"). The description of development for application 129197/FO/2021 is as follows:

"Site remediation works including removal of existing vegetation, ground works and other associated works."

1.9. This ES sets out the findings of an Environmental Impact Assessment ("EIA") carried out in respect of the Proposed Development of the Site.

## Requirements for EIA

- 1.10. The EIA process is the mechanism by which development proposals are appraised in terms of their likely environmental effects, in addition to engineering and technical considerations.
- 1.11. The purpose of the EIA is to establish the nature of the Proposed Development and the environment in which it is likely to take place, during both construction and operational phases, so as to identify the likely significant effects on the environment. The assessment compares the existing situation at the start of the work (baseline) with the situation during demolition and construction, and when the Proposed Development is operational.
- 1.12. The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the "EIA Regulations") require that any Proposed Development falling within the description of a 'Schedule 2 development' (as defined within the meaning of the EIA Regulations), will be subject to an EIA where such development is likely to have 'significant' effects on the environment by virtue of such factors as its nature, size or location (Regulation 2(b)).
- 1.13. The Proposed Development is considered likely to fall under the category of "urban development projects" (Schedule 2, 10, (b)) where:
- The development includes more than 1 hectare of urban development which is not dwelling house development; or
  - The development includes more than 150 dwellings; or
  - The overall area of the development exceeds 5 hectares.
- 1.14. A formal EIA scoping request was submitted to Manchester City Council on 11 February 2021 requesting formal confirmation as to the proposed scope of the Environmental Impact Assessment required in respect of the Proposed Development. A formal scoping opinion was received on 9 April 2021. The technical Chapters are based on a scope of assessment that has been agreed with the relevant statutory consultees where possible. A copy of the scoping report and the scoping opinion is included in **Appendix 2.1**.
- 1.15. In accordance with the EIA Regulations, this ES sets out the following information:
- A description of the Proposed Development comprising information on the Site, design, size and other relevant features of the development;
  - A description of the likely significant effects of the Proposed Development on the environment;

- A description of any features of the Proposed Development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;
- A description of the reasonable alternatives studied by the developer, which are relevant to the Proposed Development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;
- A non-technical summary of the information, of the information specified above; and
- Any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected.

## Project Team

- 1.16. Deloitte has significant experience and expertise in managing the EIA process and hold the IEMA EIA Quality Mark. Deloitte has managed the EIA process and the production of the ES for the Jackson's Brickworks remediation application and has received technical input from a range of suitably qualified and experienced technical consultees. Details of the EIA Technical Team and qualifications are set out in Table 1.1 below.

Table 1.1: EIA Technical Team

| Organisation                   | Expertise                                | Qualifications                                                                                                                                                                                                                                                                                                                      |
|--------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nuvu Development Ltd           | The Applicant                            | N/A                                                                                                                                                                                                                                                                                                                                 |
| Deloitte                       | Town Planning, EIA Coordination          | MRTPI, MRICS, IEMA EIA Quality Mark, MPlan, MSc, BA(Hons)                                                                                                                                                                                                                                                                           |
| Planit-IE                      | Townscape and Visual Impact              | Landscape Institute                                                                                                                                                                                                                                                                                                                 |
| Vectos                         | Traffic and Transport                    | BSc (Hons), MSc, MCIHT                                                                                                                                                                                                                                                                                                              |
| Wardell Armstrong              | Noise and Vibration                      | Institute of Acoustics, Association of Noise Consultants                                                                                                                                                                                                                                                                            |
| Wardell Armstrong              | Air Quality                              | BSc, MSc, Chartered Institute of Environmental Health,                                                                                                                                                                                                                                                                              |
| Wardell Armstrong              | Ground Conditions                        | MSc BSc(Hons)                                                                                                                                                                                                                                                                                                                       |
| Alan Johnson Partnership (AJP) | Water Resources, Flood Risk and Drainage | Over 12 years' experience in the water industry specialising in Hydrology Environmental Statements for EIA and associated Flood Risk Assessments                                                                                                                                                                                    |
| Wardell Armstrong              | Ecology                                  | BSC MCIEEM                                                                                                                                                                                                                                                                                                                          |
| Ekosgen                        | Socio-Economics                          | Economic, social and regeneration specialists, with significant experience conducting socio-economic impact assessments, profiling local economies and sectors and assessing the impacts to be secured as a result of a variety of investment proposals, including schemes designed to unlock both residential and employment sites |

## EIA Scenarios

- 1.17. The EIA scenarios for each discipline are set out in **Appendix 1.1**, which were all agreed as part of the EIA scoping exercise.

## Organisation of the Environmental Statement

- 1.18. This ES comprises 15 Chapters and is supported by figures (located at the back of each Chapter within Volume 1) and technical appendices (within a separate Volume 2). A Non-Technical Summary (NTS) of the full ES is provided as a separate standalone document.
- 1.19. Figures have been referenced using the Chapter number as a prefix followed by the number of the figure within a given Chapter. Appendices have been referenced in the same way but due to their size they are contained separately in Volume 2. Table 1.2 sets out the structure of the ES.

Table 1.2: Structure of this Environmental Statement

| Chapter No.     | Chapter Title                            | Description                                                                                                                                |
|-----------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>VOLUME 1</b> |                                          | <b>Following Chapters</b>                                                                                                                  |
| <b>1</b>        | Introduction                             | Introduction to the ES, EIA requirements, details of the project team, ES organisation and availability.                                   |
| <b>2</b>        | EIA Methodology                          | Methods used to prepare each Chapter, description of ES structure and content, generic significance criteria, scoping and consultation.    |
| <b>3</b>        | Alternatives and Design Evolution        | Outline of the main alternatives considered by the Applicant.                                                                              |
| <b>4</b>        | Site and Development Description         | Site description and details of the Proposed Development.<br>Summary of effects with respect to climate change, energy and sustainability. |
| <b>5</b>        | Construction Phasing and Methodology     | Details of anticipated programme for development and construction methodology are also included.                                           |
| <b>6</b>        | Townscape and Visual Impact              | To assess the likely significant effects of removing the vegetation on Site on townscape.                                                  |
| <b>7</b>        | Traffic and Transport                    | To assess the likely significant effects of the Proposed Development in relation to traffic and transport.                                 |
| <b>8</b>        | Noise and Vibration                      | To assess the likely significant effects of the Proposed Development in relation to noise and vibration.                                   |
| <b>9</b>        | Air Quality                              | To assess the likely significant effects of the Proposed Development in relation to air quality.                                           |
| <b>10</b>       | Ground Conditions                        | To assess the likely significant effects of the Proposed Development in relation to ground conditions.                                     |
| <b>11</b>       | Water Resources, Flood Risk and Drainage | To assess the likely significant effects of the Proposed Development in relation to flood risk and drainage.                               |
| <b>12</b>       | Ecology                                  | To assess the likely significant effects of the Proposed Development in relation to ecology.                                               |

| Chapter No. | Chapter Title               | Description                                                                                                                       |
|-------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 13          | Socio-Economics             | To assess the likely significant effects of the Proposed Development in relation to socio-economics.                              |
| 14          | Type 1 Cumulative Effects   | Review of inter project effects, which are combined effects arising from the Proposed Development on defined sensitive receptors. |
| 15          | Summary of Residual Effects | Summary of the effects that remain after mitigation.                                                                              |
| VOLUME 2    | Technical Appendices        | Technical data and reports to support the Chapters in Volume 1.                                                                   |
|             | Non-Technical Summary       | Summary of the ES in non-technical language.                                                                                      |

## Other Documents

- 1.20. Together with this ES, the following documents will be submitted to Manchester City Council in support of the planning application. These include:

Table 1.3: Planning Application Supporting Documents

|                                                                                       | Prepared by                          |
|---------------------------------------------------------------------------------------|--------------------------------------|
| Application Form and Certificates                                                     | Deloitte                             |
| Site Location Plan                                                                    | Planit-IE                            |
| Existing Site Plan                                                                    | Planit-IE                            |
| Phasing Plan and Parameter Plans                                                      | Planit-IE                            |
| Proposed Plans, Sections and Elevations                                               | Barton Willmore                      |
| Illustrative Masterplan                                                               | Planit-IE                            |
| Landscaping Plans                                                                     | Planit-IE                            |
| Design and Access Statement                                                           | Barton Willmore & Planit-IE          |
| Statement of Consultation                                                             | Lexington with input from Deloitte   |
| Ventilation Strategy                                                                  | ECS                                  |
| Landscaping / Public Realm Strategy                                                   | Planit-IE                            |
| Archaeological Desktop Report (2014)                                                  | Salford Archaeology                  |
| Energy Strategy                                                                       | ECS                                  |
| Crime Impact Statement                                                                | GMP                                  |
| Travel Plan Framework                                                                 | Vectos                               |
| Servicing and Site Waste Management Strategy (incl. within the DAS – Refuse Strategy) | Barton Willmore                      |
| Sustainability Report and Environmental Standards Statement                           | SLR                                  |
| Education Facilities Note (incl. within this Planning Statement)                      | Chilton Estates / Your Housing Group |

| Prepared by            |                                      |
|------------------------|--------------------------------------|
| Local Labour Agreement | Chilton Estates / Your Housing Group |

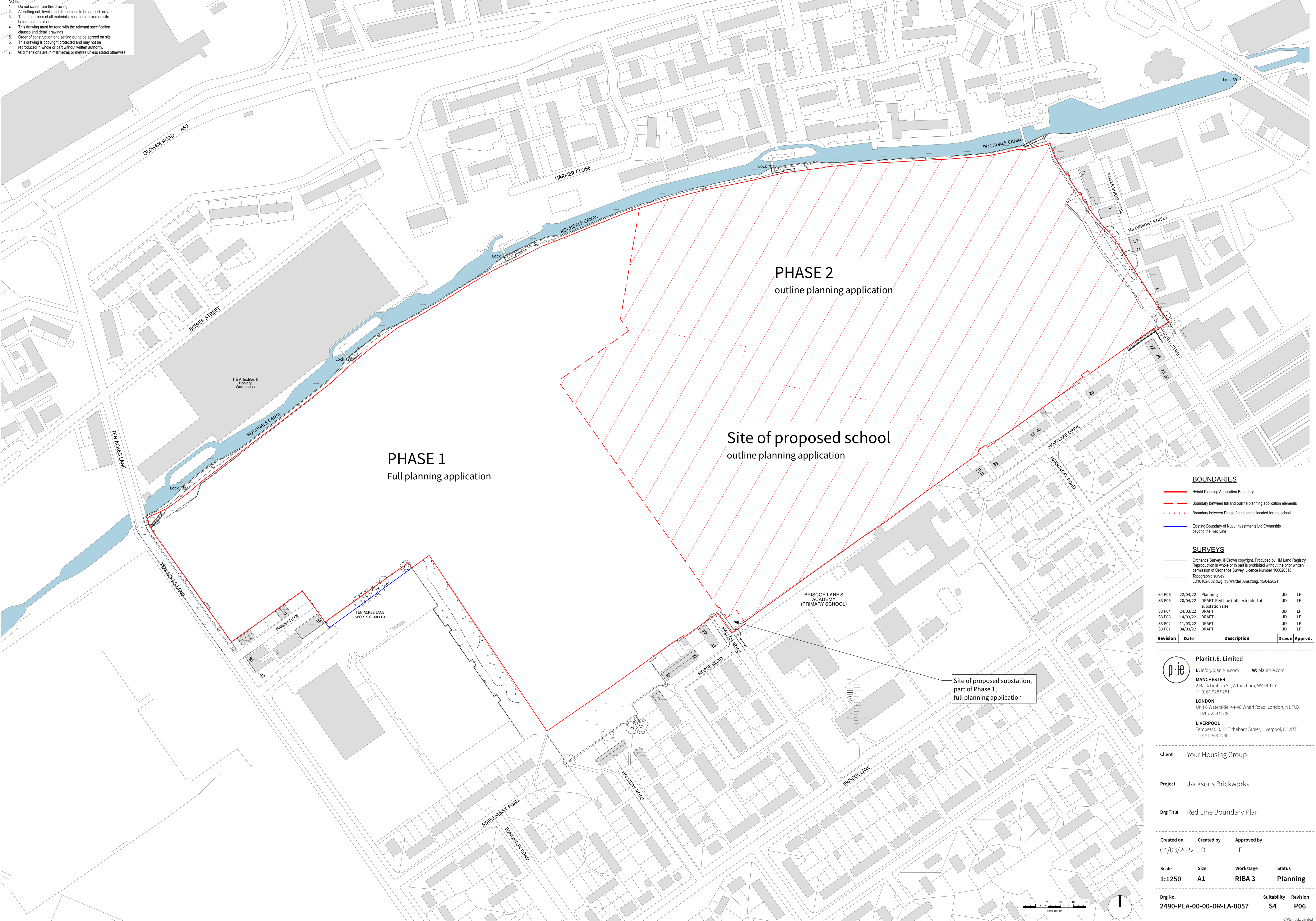
### Environmental Statement Availability

- 1.21. The ES is available for public viewing on Manchester City Council's Public Access website at the following address:  
<http://pa.manchester.gov.uk/online-applications/> once the application has been submitted and validated.
- 1.22. The ES may be purchased in volumes, the costs for which are set out below:
- Volume 1: ES Main Text and Figures - £150.
  - Volume 2: ES Appendices - £150.
  - Volume 3: Non-Technical Summary (NTS) - £15
  - Full Copy (Volumes 1, and 2 and NTS) of the ES on CD - £15.
- 1.23. For copies of any of the above, please contact the Manchester Planning Team at Deloitte.

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# Figure 1.1 Site Location Plan

NOTE:  
1. Do not scale from this drawing  
2. All setting out, levels and dimensions to be agreed on site  
3. The dimensions of all materials must be checked on site before being laid out.  
4. This drawing must be read with the relevant specification clauses and detail drawings  
5. Order of construction and setting out to be agreed on site.  
6. This drawing is copyright protected and may not be reproduced in whole or part without written authority.  
7. All dimensions are in millimetres or metres unless stated otherwise.



**BOUNDARIES**

- Hybrid Planning Application Boundary
- Boundary between full and outline planning application elements
- Boundary between Phase 2 and land allocated for the school
- Existing Boundary of Nuvo Investments Ltd Ownership beyond the Red Line

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Topographic survey LD10162-002.dwg, by Wardell Armstrong, 15/04/2021

|        |          |                                                    |    |    |
|--------|----------|----------------------------------------------------|----|----|
| S4 P06 | 22/04/22 | Planning                                           | JD | LF |
| S3 P05 | 20/04/22 | DRAFT: Red line (full) extended at substation site | JD | LF |
| S3 P04 | 24/03/22 | DRAFT                                              | JD | LF |
| S3 P03 | 14/03/22 | DRAFT                                              | JD | LF |
| S3 P02 | 11/03/22 | DRAFT                                              | JD | LF |
| S3 P01 | 04/03/22 | DRAFT                                              | JD | LF |

| Revision | Date | Description | Drawn | Apprvd. |
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Client Your Housing Group

Project Jacksons Brickworks

Drg Title Red Line Boundary Plan

|            |            |             |
|------------|------------|-------------|
| Created on | Created by | Approved by |
| 04/03/2022 | JD         | LF          |

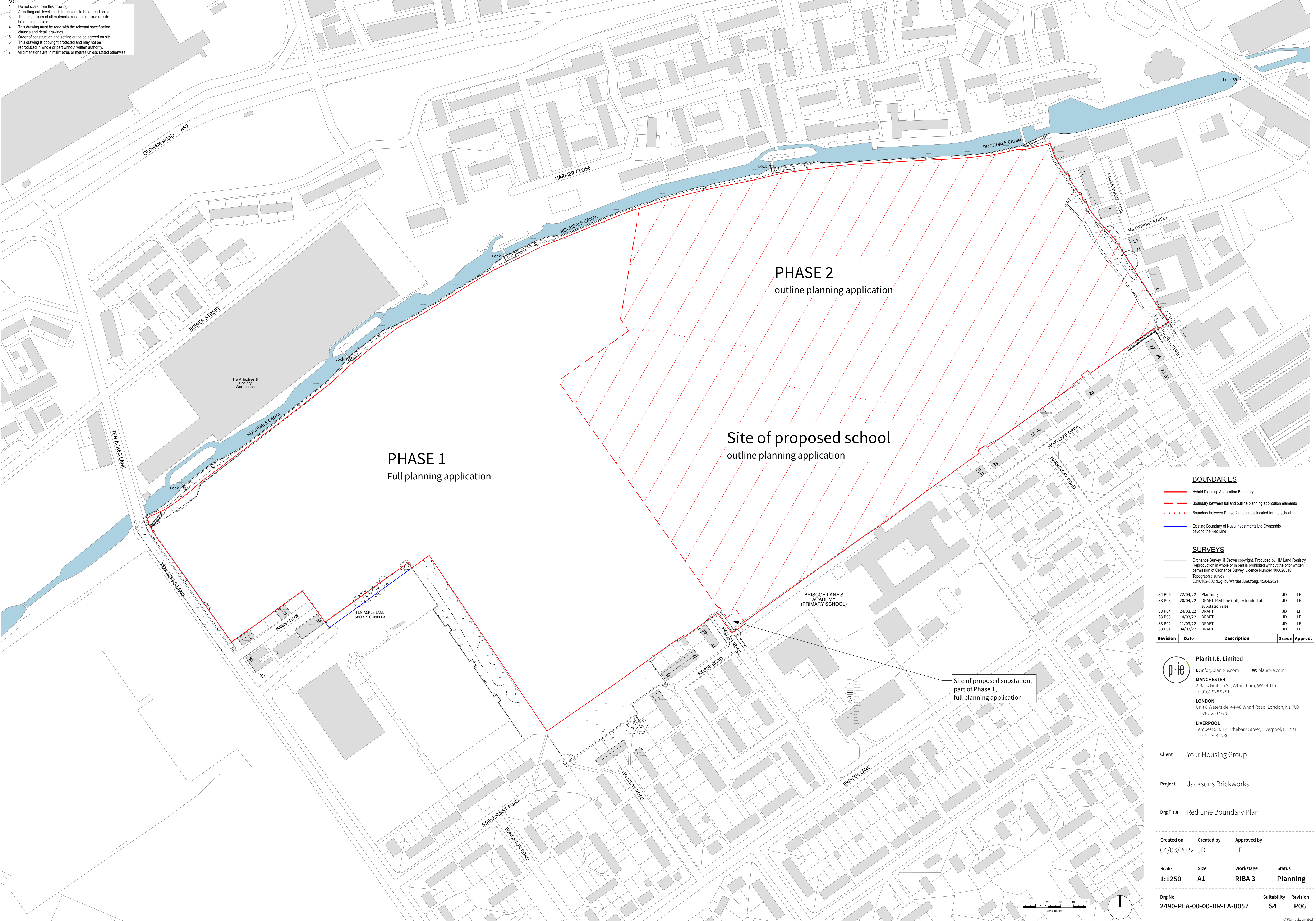
|        |      |           |          |
|--------|------|-----------|----------|
| Scale  | Size | Workstage | Status   |
| 1:1250 | A1   | RIBA 3    | Planning |

|                           |             |          |
|---------------------------|-------------|----------|
| Drg No.                   | Suitability | Revision |
| 2490-PLA-00-00-DR-LA-0057 | S4          | P06      |

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## Figure 1.2 Existing Site Plan

NOTE:  
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2. All setting out, levels and dimensions to be agreed on site  
3. The dimensions of all materials must be checked on site before being laid out.  
4. This drawing must be read with the relevant specification clauses and detail drawings  
5. Order of construction and setting out to be agreed on site.  
6. This drawing is copyright protected and may not be reproduced in whole or part without written authority.  
7. All dimensions are in millimetres or metres unless stated otherwise.



PHASE 1  
Full planning application

PHASE 2  
outline planning application

Site of proposed school  
outline planning application

Site of proposed substation,  
part of Phase 1,  
full planning application

**BOUNDARIES**

- Hybrid Planning Application Boundary
- Boundary between full and outline planning application elements
- Boundary between Phase 2 and land allocated for the school
- Existing Boundary of Nuvo Investments Ltd Ownership beyond the Red Line

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Topographic survey  
LD10162-002.dwg, by Wardell Armstrong, 15/04/2021

|        |          |                                                    |    |    |
|--------|----------|----------------------------------------------------|----|----|
| S4 P06 | 22/04/22 | Planning                                           | JD | LF |
| S3 P05 | 20/04/22 | DRAFT: Red line (full) extended at substation site | JD | LF |
| S3 P04 | 24/03/22 | DRAFT                                              | JD | LF |
| S3 P03 | 14/03/22 | DRAFT                                              | JD | LF |
| S3 P02 | 11/03/22 | DRAFT                                              | JD | LF |
| S3 P01 | 04/03/22 | DRAFT                                              | JD | LF |

| Revision | Date | Description | Drawn | Apprvd. |
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Client Your Housing Group

Project Jacksons Brickworks

Drg Title Red Line Boundary Plan

|            |            |             |
|------------|------------|-------------|
| Created on | Created by | Approved by |
| 04/03/2022 | JD         | LF          |

|        |      |           |          |
|--------|------|-----------|----------|
| Scale  | Size | Workstage | Status   |
| 1:1250 | A1   | RIBA 3    | Planning |

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| 2490-PLA-00-00-DR-LA-0057 | S4          | P06      |

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## 2. EIA Methodology

### Introduction

- 2.1. This Chapter sets out the methodology used to prepare each Chapter of the ES and describes its structure and content. In particular, it sets out the process of identifying and assessing the likely significant effects of the Proposed Development on the environment as defined in Chapter 1 and described in detail in Chapter 4.

### Legislation and Guidance

- 2.2. The ES has been prepared to comply with EIA Regulations, which implement European Council Directive No. 85/337/EEC as amended by Directive 2014/52/EU and entered into force on 17 May 2017. The EU legislation as it applied to the UK on 31 December 2020 is now a part of UK domestic legislation, under the control of the UK's Parliaments and Assemblies. The European Union (Withdrawal) Act 2018 introduced "retained EU law" which provides that EU-derived domestic legislation continues to have effect.
- 2.3. Reference has also been made to currently available good practice guidance in EIA including:
- Circular 02/99: Environmental Impact Assessment
  - The European Commission's numerous EIA guidance documents available here: <http://ec.europa.eu/environment/eia/eia-support.html>
  - Guidance on EIA Scoping, European Commission, June 2001
  - Guidance on Transport Assessment, DCLG and DfT, March 2007
  - National Planning Practice Guidance – Department for Communities and Local Government (March 2014 and continuously updated as a 'live' resource)
- 2.4. Reference has been made to the Institute of Environmental Management and Assessment (IEMA) publications, including:
- IEMA ES Review Criteria
  - IEMA Guidelines for Environmental Impact Assessment (2004)
  - IEMA Special Report into the State of Environmental Impact Assessment Practice in the UK (2011)
  - IEMA Shaping Quality Development (2015)
  - IEMA Delivering Quality Development (2016)
  - IEMA Delivering a Proportionate EIA (2017)
- 2.5. The ES has also had regard to the National Planning Policy Framework 2021 (NPPF). The NPPF sets out the Government's economic, environmental and social planning policies for England, articulating the Government's aspiration for sustainable development. The NPPF has been considered where it is relevant to EIA.
- 2.6. As relevant to the ES technical chapter's scope, methodology and assessment of effects, key local planning policy and guidance documents have been considered. These include:
- Manchester City Council Core Strategy (2012)
  - Saved Unitary Development Plan Policies (1995)

- 2.7. Any additional planning policy or guidance documents considered relevant have been identified within the relevant technical chapters.

## Screening and Scoping

- 2.8. A formal EIA screening and scoping request was submitted to Manchester City Council on 11 February 2021 (**Appendix 2.1**) requesting formal screening opinion and confirmation as to the proposed scope of the Environmental Impact Assessment required in respect of the Proposed Development. A formal scoping opinion was received on 9 April 2021 (**Appendix 2.1**). The following chapters have been scoped into the EIA:

- Townscape and Visual Impact
- Traffic and Transport
- Noise and Vibration
- Air Quality
- Ground Conditions
- Water Resources, Flood Risk and Drainage
- Ecology
- Socio-Economics

- 2.9. The results of the scoping exercise have determined the subject areas of the EIA, set out in Table 1.2 above.

## Consultation

- 2.10. The Proposed Development has been prepared in consultation with Manchester City Council and a range of technical stakeholders (refer to Table 2.1).

Table 2.1: Scope of Stakeholder Consultation

| Stakeholder Consultation                              |
|-------------------------------------------------------|
| Manchester City Council Planning Authority            |
| Manchester City Council Highways                      |
| Greater Manchester Archaeological Advisory Service    |
| Manchester City Council Environmental Health Officers |
| Environment Agency                                    |
| Greater Manchester Ecology Unit (GMEU)                |

## Public Consultation

- 2.11. The proposals have been subject to pre-application engagement with a wide range of stakeholders including Manchester City Council Planning Officers, Environmental Health Officers, Greater Manchester Ecology Unit and a range of technical stakeholders. Further details are provided in the Statement of Consultation which accompanies application.
- 2.12. An initial phase of consultation with local residents and businesses took place online from 4 December 2020 to 4 January 2021 as part of the remediation application. This exercise provided an overview of the emerging proposals and the key considerations which would be addressed, as well as the vision for the Site and initial ideas on how it could be masterplanned.

- 2.13. Following this, a further pre-application consultation exercise was undertaken with local residents and businesses, in the form of a consultation website which launched on 1 December 2021, initially running until 15 December 2021 and subsequently extended until 4 January 2022. The website set out the vision for the Site, the design development process and specific details on the following:
- Site history and context;
  - Site analysis;
  - Design principles;
  - Proposals;
  - Project timeline;
  - An opportunity to 'Have your say' on the proposals; and
  - Latest news.
- 2.14. Following the conclusion of the initial consultation, the Applicant took on board feedback received and updated the plans for Jackson's Brickworks. The main focus of the changes related to vehicular access arrangements throughout the Site, primarily in relation to Hallam Road and Mitchell Street.
- 2.15. An additional extended period of public consultation took place from 26 February until 6 March 2022 for local residents and stakeholders to view and comment on the revised proposals.
- 2.16. A meeting also took place with the Applicant and Councillor Gavin White on 8 March 2022 to discuss the updated proposals. The discussion focused on the changes made to the proposed masterplan regarding access routes to encourage residents and pupils of the proposed school to use public transport and cycling.
- 2.17. The client team have engaged with the local ward members via email/post, telephone, and in person – including an onsite meeting which took place on 29 March 2022. The design development process has also been informed by discussions, including comments and concerns raised by MCC officers and local Ward Councillors, raised as part of the pre-application engagement process.
- 2.18. The key matters and discussion points raised by Local Ward Councillors are summarised below:
- School location (given ground conditions reasons and from a masterplan / urban design perspective).
  - Through-route east to west.
  - School drop off area.
  - Closing off of Hallam Road.
- 2.19. The key matters and discussion points raised by MCC Planning Officers are summarised below:
- School location.
  - School drop-off.
  - Through route.
  - Hallam Road access.
  - Biodiversity net gain.
  - House types.

- Car parking strategy.
- Highways works.
- Canal towpath accessibility.
- Affordable housing.

2.20. For further details on the pre-application consultation please refer to the Statement of Community Involvement prepared by Lexington and submitted as part of this Application, as well as Chapter 4 of this Statement (for details on the design development/ evolution).

## Non-Significant Effects

2.21. It is considered that the following disciplines will not give rise to likely significant effects on the environment and therefore do not require inclusion in the Environmental Statement. An explanation for each discipline is provided in the EIA Scoping Report in **Appendix 2.1**, which was confirmed by the scoping opinion received by MCC on 9 April 2021.

- Agricultural Circumstances.
- Aviation.
- Archaeology.
- Arboriculture.
- Human Health and Climate Change.
- Electronic Interference.
- Heritage.
- Solar Glare.
- Daylight, Sunlight and Overshadowing.
- Wind Microclimate.

## Approach to Technical Studies

- 2.22. Various technical studies were commenced at an early stage in the process. The findings of the baseline environmental studies played an important role in the design of the Proposed Development by defining the environmental sensitivities, constraints and opportunities associated with the Site.
- 2.23. Project team reviews, attended by members of the project team, were held throughout the pre-application process. These reviews provided a valuable forum for the exchange of information and ensured that the project team was fully aware of the environmental constraints and opportunities and of the interactions between disciplines. Pre-application engagement was also undertaken with Manchester City Council as the Local Planning and Highway Authority.
- 2.24. The technical studies have been undertaken in accordance with current best practice. Specific guidance used is referenced within each of the respective assessment Chapters.
- 2.25. The majority of assessments involved consultations with statutory and non-statutory bodies, desk-based research, Site inspections and surveys, impact prediction and mitigation.
- 2.26. The assessment and conclusions of the ES are based on the description of the Proposed Development provided in Chapter 4.

## Structure of Technical Chapters

2.27. Each technical Chapter of the ES (Chapters 6-13) has been set out broadly in line with Table 2.2.

Table 2.2: Structure of ES Technical Chapters

| Technical Chapter Structure                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Introduction</b>                                       | Each of the technical Chapters begins with an introduction providing context to the EIA completed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Policy Context</b>                                     | This section includes a summary of legislation and of national and local policies relevant to the environmental discipline and explains its purpose in the context of the Proposed Development and the ES.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Assessment Methodology &amp; Significance Criteria</b> | This section describes the method or approach employed in the assessment of impacts, the criteria against which the significance of effects has been evaluated, the sources of information used and any technical difficulties encountered. Relevant legislation is also identified.                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Baseline Conditions</b>                                | This section describes and evaluates the baseline environmental conditions i.e. the current situation and anticipated changes over time assuming the Site remains unchanged. This is a critical part of the EIA process as it provides a measure against which potential environmental effects can be assessed.                                                                                                                                                                                                                                                                                                                                                      |
| <b>Identification and Evaluation of Key Impacts</b>       | <p>This section identifies the likely significant effects on the environment resulting from the Proposed Development. A description of the likely effects of the Proposed Development and an assessment of their predicted significance is provided.</p> <p>The assessment of effect significance has been undertaken using appropriate national and international quality standards. Where no such standards exist, the judgments that underpin the attribution of significance are described. The guidelines, methods and techniques used in the process of determining significance of effects are contained within each of the technical Chapters presented.</p> |
| <b>Mitigation Measures</b>                                | <p>One of the main aims of the EIA process is to develop suitable mitigation measures to avoid, reduce or compensate for any significant adverse effects of a project.</p> <p>This section of each technical Chapter describes the measures which would be implemented to mitigate potential adverse effects. Where possible, enhancement measures have also been proposed.</p>                                                                                                                                                                                                                                                                                      |
| <b>Cumulative Effects</b>                                 | <p>This section considers the cumulative effects of the Proposed Development identified within the vicinity of the Site. Any likely significant effects on the environment arising in this respect are set out in this section.</p> <p>There are two distinct types of cumulative effects:</p> <p>Type 1 - Cumulative effects are the interactions between effects of the Proposed Development on a single receptor.</p> <p>Type 2 - Cumulative effects are those that arise from incremental changes caused by other consented or reasonably foreseeable activities ('committed developments') together with the Proposed Development.</p>                          |
| <b>Residual Effects</b>                                   | <p>The residual effects, i.e. the remaining effects of the Proposed Development assuming implementation of the proposed mitigation measures, have been estimated and presented.</p> <p>The methods used to make these estimates are described and proposed methods of treatment for any residual effects have been identified and quantified where possible.</p>                                                                                                                                                                                                                                                                                                     |
| <b>Summary</b>                                            | Each technical Chapter concludes with a brief summary outlining the potential residual effects of the Proposed Development.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

2.28. Chapter 5 provides information to allow the construction phase of the Proposed Development to be assessed by the disciplines set out in Chapters 6-13.

## Magnitude

2.29. The methodology for determining the scale, or magnitude, of effect is set out in Table 2.3.

Table 2.3: Methodology for Assessing Magnitude

| Magnitude of Impact | Criteria for Assessing Effect                                                                                                                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Major</b>        | Total loss or major/substantial alteration to key elements/features of the baseline conditions such that the post development character/composition/attributes will be fundamentally changed.                                                                                       |
| <b>Moderate</b>     | Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.                                                                                          |
| <b>Minor</b>        | A minor 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. |
| <b>Negligible</b>   | Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.                                                                                                                                                               |

### Sensitivity

2.30. The sensitivity of a receptor is based upon the relative importance of the receptor using the scale in Table 2.4.

Table 2.4: Methodology for Assessing Sensitivity

| Sensitivity   | Examples of Receptor                                                                                                                                           |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>High</b>   | The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance. |
| <b>Medium</b> | The receptor/resource has moderate capacity to absorb change without significantly altering its present character, or is of high importance.                   |
| <b>Low</b>    | The receptor/resource is tolerant of change without detriment to its character, is of low or local importance.                                                 |

### Significance

2.31. The significance of an environmental effect is determined by the interaction of magnitude and sensitivity, whereby the impacts can be positive or negative. Table 2.5 below shows how magnitude and sensitivity interact to derive effect significance.

Table 2.5: Methodology for Assessing Significance

| Magnitude         | Sensitivity                         |                                     |                                     |
|-------------------|-------------------------------------|-------------------------------------|-------------------------------------|
|                   | High                                | Medium                              | Low                                 |
| <b>Major</b>      | Major Adverse/Beneficial            | Major - Moderate Adverse/Beneficial | Moderate - Minor Adverse/Beneficial |
| <b>Moderate</b>   | Major - Moderate Adverse/Beneficial | Moderate - Minor Adverse/Beneficial | Minor Adverse/Beneficial            |
| <b>Minor</b>      | Moderate - Minor Adverse/Beneficial | Minor Adverse/Beneficial            | Minor - Negligible                  |
| <b>Negligible</b> | Negligible                          | Negligible                          | Negligible                          |

2.32. The above magnitude and significance criteria have been provided as a guide for technical specialists to assess impact significance. Where discipline specific methodology has been applied that differs from the generic criteria

above, this has been clearly explained within the given Chapter under the heading of 'Assessment Methodology and Significance Criteria'.

- 2.33. For the purposes of this Environmental Statement, an effect will be considered to be 'significant' if it is classed as either 'moderate' or 'major'.

### Baseline Conditions

- 2.34. Each technical Chapter includes a section which describes and evaluates the baseline environmental conditions (i.e. the current situation and anticipated changes over time assuming the Site remains unchanged). Baseline data has been obtained from a variety of sources, including published documents, maps, historical information and Site survey data. Given the complex nature of the Site and surroundings, each technical Chapter (Chapters 6 to 13) includes a clear description of what is assumed as the baseline against which the assessment is being made.
- 2.35. The method used to obtain baseline information, where relevant and possible, has been clearly identified within each technical Chapter and agreed in advance with statutory consultees.

### Mitigation

- 2.36. Any adverse environmental effects have been considered for mitigation at the design stage and, where practicable, specific measures have been put forward. Measures have been considered based on the following hierarchy of mitigation:
- Avoidance.
  - Reduction.
  - Compensation.
  - Remediation.
  - Enhancement.
- 2.37. Where the effectiveness of the mitigation proposed has been considered uncertain, or where it depends upon assumptions of operating procedures, data and/or professional judgement has been introduced to support these assumptions.
- 2.38. Mitigation recommended during the construction phase would be set out in the Construction Management Plan (CMP) to be agreed with MCC prior to the commencement of work and implemented throughout the duration of the works. Outline mitigation measures to be included in a future CMP are set out in Chapter 5: Construction Methodology and Programme.
- 2.39. Mitigation to be implemented during the operational phase would be secured through planning conditions and obligations.

### Residual Effects

- 2.40. The likely significant effects on the environment, assuming the successful implementation of mitigation measures proposed, have been estimated within each Chapter. These are termed 'residual effects' and are considered in Chapter 14 of this Statement.

### Cumulative Effects

- 2.41. The ES considers the potential for likely significant effects on the environment resulting from consented or reasonably foreseeable activities or developments in the area, which could lead to potentially significant cumulative effects in conjunction with the Proposed Development ('Committed Developments').
- 2.42. A search of Manchester City Council's planning applications database and knowledge of the area has identified a number of schemes for which cumulative effects are considered more likely. A full list, as of 10th December 2020, is contained within the Scoping Report at **Appendix 2.1**, for which agreement was sought from the Local Planning Authority as part of the Scoping Opinion process. Given the time which has passed since the submission of the

Scoping Report and receipt of the Scoping Opinion, to ensure a robust assessment the team has reviewed the committed developments and updated as contained within **Appendix 2.2**. The updated list of committed developments has been considered by all technical disciplines and included within the assessments.

- 2.43. Each technical Chapter (Chapters 6-13) has assessed the potential for likely significant effects on the environment, as a result of the above committed developments, together with the Proposed Development.
- 2.44. In addition, Chapter 15 assesses the Type 1 Cumulative effects.

### Assumptions and Limitations

- 2.45. The principal assumptions that have been made and any limitations that have been identified in preparing the ES are set out in each technical Chapter. General assumptions include the following:
- All of the principal land uses adjoining the Site remain. Where redevelopment proposals have been granted Planning Permission, the effect of those proposals are considered as part of the Cumulative Impacts;
  - Baseline conditions have been established in 2021 and 2020 from a variety of sources, including historical data, but due to the dynamic nature of certain aspects of the environment, conditions will change during the Proposed Development. Where required consultation has taken place with relevant statutory consultees (e.g. MCC Highways) to seek agreement on the reliability of baseline and monitoring data, in order to suitably account for the effects of COVID-19 – where applicable, each Chapter provides further details.
  - Information received from third parties is complete and up to date;
  - The various stages of the Proposed Development will satisfy minimum environmental standards, consistent with contemporary legislation, practice and knowledge;
  - Assessments are based upon, and conclude, the “worst case” effects that would arise from the application as defined by the description of development set out in Chapter 4, Site Surroundings and Description of the proposals;
  - Construction and demolition methods and phasing will follow the timetable and methods set out in Chapter 5, Construction Management.
  - Conditions will be attached to the Planning Permission that will control disturbance during the Proposed Development; and
  - Necessary off-site services infrastructure for the Proposed Development will be provided by statutory undertakers.

### Objectivity

- 2.46. The technical studies undertaken within the ES have been progressed in a transparent, impartial and unbiased way with equal weight attached, as appropriate, to beneficial and adverse effects. Where possible, this has been based upon quantitative and accepted criteria together with the use of value judgements and expert interpretations.
- 2.47. The assessment has been explicit in recognising areas of limitation within the ES and any difficulties that have been encountered, including assumptions upon which the assessments are based. Where appropriate, the assessment of significance has been given confidence levels.

# 3. Alternatives and Design Solution

## Introduction

- 3.1. Regulation 18(3) and Paragraph 2 of Schedule 4 of the EIA Regulations requires the Applicant to provide an outline of the main alternatives studied and an indication of the main reasons for the choice made, taking into account the environmental effects.
- 3.2. The form of the Proposed Development has been influenced by a range of factors, including location, surrounding land use and input from Manchester City Council, Statutory and Non-Statutory Consultees and other stakeholders.
- 3.3. This Chapter reviews the principal land use and siting options explored and the reasoning for the selection of the current design for the Proposed Development which forms the subject of assessment within the ES.
- 3.4. This Chapter considers the following four options in the context of the existing Development Brief:
  - The 'do nothing' alternative where the Proposed Development is not progressed.
  - Alternative locations for the Proposed Development.
  - Alternative uses for the Site.
  - Alternative design/layout for the Proposed Development in the context of the design evolution.

## The "do nothing" Alternative

- 3.5. The "do nothing" scenario refers to the option of leaving the Site in its current state. This scenario would result in the continued vacancy of a Site which has approval for remediation works and which has been identified for redevelopment for over 25 years, as evidenced in Manchester City Council's Unitary Development Plan (UDP) (1995) and the East Manchester Strategic Regeneration Framework (SRF) (2008-2018).
- 3.6. The Site currently has significant levels of ground contamination relating to its previous uses as a brickworks and waste tip. Given the Site has been left vacant for several decades, this has attracted antisocial behaviour, further contamination through fly-tipping and also allowed the extensive growth of invasive species including Japanese Knotweed.
- 3.7. The "do nothing" scenario has been discounted due to the established need for the regeneration of the Site and the benefits it will bring. The Site is considered suitable for residential-led development given its highly accessible location within Newton Heath. The Site is considered suitable for residential use in terms of its urban location, close proximity to established neighbourhoods, transport links and connections with various locations, including Newton Heath District Centre.

## Consideration of Alternative Locations

- 3.8. The Site is situated within Newton Heath in East Manchester. It was formerly occupied by Jackson's Brickworks for industrial uses however is currently vacant.
- 3.9. The Site has been identified for regeneration for over 25 years, as evidenced in Manchester City Council's Unitary Development Plan (UDP) (1995) and the East Manchester Strategic Regeneration Framework (SRF) (2008-2018). Despite being identified for regeneration for a substantial period, the Site is highly contaminated due to its former uses as a brickworks and waste tip. As such there are extensive contamination issues that require remediation before any re-development can take place. Given the condition of the Site, it is extremely costly and difficult to regenerate which is arguably evidenced through the number of historic planning permissions for the Site which have not come forward.
- 3.10. It should be noted that the approved remediation works are predicated upon the redevelopment of the Site coming forward. The Applicant's commitment to remediate the Site. This is demonstrated by condition 16 attached to

Planning Permission 129197/FO/2021 for remediation works, with reference being made to 'construction works for the redevelopment of the site':

Condition 16

*"A wildflower meadow is to be implemented on site if construction works for the redevelopment of the site have not commenced within 12 months of the completion and validation of the remediation works. Details of the soft landscaping scheme to form the wildflower meadow shall be submitted to and approved in writing by the Local Planning Authority. The approved wildflower meadow shall then be implemented, within 3 months of the approval of the scheme."*

- 3.11. Condition 16 attached to Planning Permission 129197/FO/2021 demonstrates the Applicant's understanding that there is a need to cover the scenario whereby due to unforeseen circumstances, timescales for the redevelopment of the Site are delayed. As such, the Applicant demonstrated its willingness to commit, following the grant of planning permission for remediation works, to introducing planting, in the form of wildflower meadow seed planting, across the Site if construction works for the redevelopment of the Site have not commenced within 1 year of the completion of the remediation works.
- 3.12. It should be noted that the necessary remediation works are a major and costly undertaking and it is anticipated that the works will take between 18 and 24 months to complete. Given the length of these lead in times, it is important from an overall project viability point of view that the works can commence as soon as possible. The approach of securing a planning permission in advance of this main redevelopment application, has afforded greater time for the redevelopment proposals to go through a rigorous design and consultation process to ensure that the high quality redevelopment and associated benefits envisaged by the Applicant are maximised.
- 3.13. Following the consent of the remediation works, the Applicant has since begun tree removal which is expected to complete by the end of May 2022. This will greatly improve the safety of the area and assist in the management of the anti-social behaviour experienced on the Site.
- 3.14. Within this context, alternative locations have been discounted given that works have started on Site in order to facilitate the approved remediation works and subsequent redevelopment of the Site.

### Consideration of Alternative Uses

- 3.15. The Site's proposed use is for residential led development. The Site is located within the Regional Centre, as defined by Policy EC3 of MCC's Core Strategy (2012) and Site also falls within East Manchester, as defined by Policy H4 of the Manchester Core Strategy (2012). The Site's planning history includes residential development proposals approved in the 1980s and 1990s, and most recently an approval for residential development in 2014. Whilst the Site has a history of residential applications, no redevelopment has been delivered on Site with all previous applications disbanded.
- 3.16. Other reasonable alternative uses for the Site, considering its location, have been discussed below:
- **Retail** - The Site falls outside Manchester City Centre's Primary Shopping Area and a large-scale standalone retail development on this Site would require extensive justification as planning policy seeks to focus these uses within existing centres under the 'town centres first' approach. Delivering a retail development on the Site has therefore been discounted.
  - **Hotel** – The size of the Site would present challenges in terms of the scale of demand for hotels and therefore ultimately the viability of securing delivery. In addition, the Site is located in close proximity to a number of established residential communities. Therefore, given the Site's context and location a hotel development on the Site has been discounted.
  - **Office** - The Site falls outside the boundary of the Central Park Strategic Employment Location which is defined by Policy EC6 of the Core Strategy. Furthermore, it is located within a part of Manchester that has an established residential character and is unlikely to be attractive to investors or occupiers for commercial development. As such, office use would also fail to underpin the costs of remediation and would fail to support the viable redevelopment of the site.

- 3.17. Both the East Manchester Regeneration Framework (2008-2018) and the MCC Unitary Development Plan (UDP-1995) identify the Site for future development. The East Manchester Regeneration Framework identifies a number of principles to consider when redeveloping the Site, and also identifies the Site as one of three strategic target areas for larger family housing.
- 3.18. The principle of development in this area of Manchester is established through planning policy. More specifically, MCC Core Strategy Policy EC3 and Policy H4 both support residential development on the Site.
- 3.19. *Core Strategy Policy EC3 Regional Centre* states that housing is an appropriate use within the Regional Centre, although should complement the development of mixed-use employment areas.
- 3.20. *Core Strategy Policy H4 East Manchester* states that East Manchester will accommodate around 30% of new residential development over the lifetime of the Core Strategy. Priority will be given to family housing and high value, high quality development where this can be sustained. High density housing will be permitted within the parts of East Manchester that fall within the Regional Centre which are adjacent to the City Centre – including Newton Heath.
- 3.21. For the reasons outlined above, alternative uses have been discounted. The principle of a residential led development this location is consistent with planning policy and both the East Manchester Regeneration Framework (2008-2018) and the MCC Unitary Development Plan (UDP- 1995). The residential use will complement the existing residential character of the area and support Manchester City Council's regeneration ambitions for the Site.

## Design Evolution

- 3.22. The Design and Access Statement which accompanies this planning application addresses the design evolution of the Proposed Development in detail.
- 3.23. A wide range of specialist consultants and other stakeholders have provided valuable input into the scheme, informing the design process and assisting the team in arriving at an appropriate solution of the Site. The design has evolved in terms of the layout of the residential layout, height, mass and orientation including the connection and interface with the canal; as well as the school location. The evolution of the scheme and the final design is discussed in detail within section 6 of the accompanying Design and Access Statement (please refer to Appendix 3.1). The access points have also evolved, originally with no through route west to east and vehicular access from Hallam Road to the site. This has evolved to the final scheme including a through route from Ten Acres Lane to Mitchell Street and restricted vehicular access for emergency vehicles only via Hallam Road.
- 3.24. The Proposed Development also seeks to consider the principles set out in the East Manchester SRF as part of the masterplanning and design development process.
- 3.25. For further details please refer to Section 6 of the Design and Access Statement prepared by Planit-ie and the 'Design Development' section contained within Chapter 4 of the Planning Statement, prepared by Deloitte.

## Summary

- 3.26. Where possible, alternative options have been considered throughout the design process. The above has set out why the Site is considered suitable for the Proposed Development. This process has been informed by the viability, and the desire to create a positive relationship with the surrounding developments. The Proposed Development has been influenced by pre-application consultation with key stakeholders, as well as with MCC. On this basis, Regulation 18(3) and Paragraph 2 of Schedule 4 of the EIA Regulations has been considered.

## 4. Site, Surroundings and Description of Proposals

- 4.1. This Chapter includes a description of the Site, its surrounding context, a more detailed description of the Proposed Development.

### Site Description

- 4.2. The Site is situated within Newton Heath in East Manchester. It extends to 19.1 hectares and was formerly occupied by Jackson's Brickworks for industrial uses and subsequently used as a landfill Site. The Site has been vacant since the 1990s.
- 4.3. The Site is bound by the Rochdale Canal to the north, Newton Heath Resource Centre to the east, residential areas to the south and derelict industrial Sites to the west. As the Site is currently vacant and unmanaged, it is overgrown with self-seeded trees and shrubbery. Evidence of the former brickworks is present at the Site in the form of rubble piles and concrete bases which remain from former buildings.
- 4.4. The Site's topography dips towards the west with a slight dome and high point found to the east side within the Site's boundaries. The height ranges between 76m AOD and 86m AOD with the lowest areas found along the Site boundary.
- 4.5. The existing brickworks Site is highly contaminated due to its former uses as a waste tip and brickworks. As such there are extensive contamination issues that require remediation before any redevelopment can take place. An application for full planning permission to facilitate remediation works on the Site was approved by MCC on 28 October 2021, under planning application reference: 129197/FO/2021.
- 4.6. Prior to the remediation works (ref. 129197/FO/2021) being undertaken, the surface cover consists of variable semi mature vegetation, the invasive non-native species Japanese Knotweed and Rhododendron are present on the Site and other invasive non-native species are present in the adjacent canal. No protected plant species were identified on the Site or in the adjacent canal – identified as part of the Ecology Survey, undertaken by TEP.
- 4.7. Due to the Site's large size and historic unused, overgrown nature, there has been little natural surveillance into or from within the Site. This has resulted in anti-social behaviours and illegal activities taking place within the Site's boundaries and has had a generally negative impact on the amenity value of the surrounding area.

### Site Context

- 4.8. Newton Heath is located approximately three miles north east of Manchester City Centre and contains a mix of residential and commercial uses. Newton Heath District Centre is located north east of the Site, beyond Mitchell Street. District Centres are a key focus for Manchester's communities, which act as a hub for activity and provide access to essential retail facilities for residents.
- 4.9. The area to the south of the Site is predominantly in residential use. Residential properties accessed from Briscoe Lane, are located at the Site's southern boundary alongside a number of sensitive uses, namely Briscoe Lane Academy and Brighter Beginnings Day Nursery. Ten Acres Lane Sports Centre is located immediately to the south east of the Site.
- 4.10. Mitchell Street bounds the Site to the east, with residential properties and the Newton Heath Resource Centre. Beyond the residential properties lies part of Newton Heath District Centre along Old Church Street including a retail offer, located approximately 300 metres to the east of the Site.
- 4.11. Rochdale Canal is separated from the Site by a towpath and runs across the Site's northern boundary at a lower level. To the north east of the Site, beyond the canal, is an area of residential properties while a partly derelict textile mill building is located to the north west of the Site.

## Accessibility

- 4.12. The Site is in a sustainable and accessible location to the east of Manchester City Centre. The Site is well connected to various destinations including Newton Heath District Centre.
- 4.13. The Site is highly accessible via the road network and pedestrian routes, at both a local and regional scale. The Site is located on Ten Acres Lane and is in close proximity to Briscoe Lane, with both forming key local routes. The Site is positioned south of Oldham Road which is a key arterial route that provides road connectivity into Manchester City Centre, Alan Turing Way (A6010) and Manchester Outer Ring Road (M60).
- 4.14. The Site is located in close proximity to numerous bus stops, with the nearest being Wellpark Walk on Briscoe Lane – located 190m to the Site's south east. There are 14 further stops located along Droylsden Road and Old Church Street, offering regular services into the city centre and across north Manchester.
- 4.15. The Site's nearest tram stops are Central Park which is 480m to its northwest, and Newton Heath & Moston which is 390m to its north east. Both stops are located on the East Didsbury – Rochdale line which also passes through Deansgate-Castlefield, Exchange Square and Victoria.
- 4.16. The nearest main train station is Manchester Victoria which is located 3.4km to the Site's south west, Manchester Victoria Station is a major regional interchange serving destinations to the north and east of Manchester, including direct rail services to Liverpool (with a fast service at 36 minutes journey time) and Leeds (approximately 49 minutes journey time).
- 4.17. Further railway services are:
- Manchester Oxford Road Train Station – 4.2km
  - Manchester Piccadilly Train Station – 3.5km
  - Manchester Deansgate Station – 4.7km
- 4.18. Manchester Oxford Road Railway Station, the second busiest train station in Manchester serves the southern part of the City Centre on a line which moves westwards towards Warrington, Chester, Liverpool, Preston and Blackpool, and eastwards through to Manchester Piccadilly.
- 4.19. Manchester Piccadilly is the rail hub for the North West with frequent and rapid services between Manchester and to a wide range of locations in the UK. Destinations include London with an average journey time of only 2 hours 10 minutes. High Speed Rail 2 (HS2) is due to open at Piccadilly Station 2035 -2040 and will further increase Manchester's connectivity to other major population areas and reduce journey times. The Transpennine Express line at Manchester Piccadilly links all major cities in the North of England (and Scotland) including Newcastle, Liverpool and Hull. For instance, there are 46 services to Liverpool and 62 services to Leeds every day. Trains to Birmingham run every half hour and Manchester Airport benefits from up to 8-9 services an hour, with services operating 24 hours a day.

## Site Specific Designations

### Environmental Designations

- 4.20. The Site is located in Flood Zone 1 and is therefore at low risk of flooding.
- 4.21. There are no habitats of principal importance, as defined under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006, within the Site.
- 4.22. It should also be noted that the Rochdale Canal Special Area of Conservation (SAC)/ Site of Special Scientific Interest (SSSI) is approximately 1.5 km from the Site. A non-designated stretch of this canal borders the Site to the north.
- 4.23. The Site is located within the Site of Special Scientific Interest (SSSI) Impact Risk Zone (IRZ) for Rochdale Canal SSSI. The IRZ covers the interest features and sensitivities of European Sites, which are underpinned by the SSSI designation.

- 4.24. Natural England's inventory of habitats of principal importance (comprising habitats listed under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006), records Lowland Mixed Deciduous Woodland within the Site, although reliability for this description is recorded as low. The inventory also records the S41 habitat Open Mosaic Habitats on Previously Developed Land within the Site but again with low reliability.
- 4.25. The Ecological desk study, prepared by TEP, identifies the potential presence of the S41 habitats Lowland Mixed Woodland and Open Mosaic Habitats on Previously Developed Land (OMH) on Site, although the reliability of interpretation for both of these classifications is recorded as low.

### Conservation and Heritage

- 4.26. The Site is not located within a conservation area, or any Sites of special scientific interest.
- 4.27. The nearest Conservation Area is the Newton Heath Conservation area which is c. 1km to the south east of the Site.
- 4.28. There are a number of Listed Buildings within the wider area, including:
- Church of St Wilfrid and St Ann, Oldham Road - Grade II – approximately 200m north of the Site, beyond the Rochdale Canal
  - Newton Silk Mill, Hollyoak Street – Grade II – approximately 400m to the north east of the Site.
  - Railings and Gateways to Churchyard of Church of All Saints, Culcheth Lane – Grade II – approximately 400m to the east of the Site.

### Local Plan Allocations – MCC Core Strategy (2012)

- 4.29. The Site is located within the Regional Centre, as defined by Policy EC3 of MCC's Core Strategy (2012). Policy EC 3 of the Core Strategy notes that housing will be an appropriate use within the Regional Centre, although this should complement the development of mixed use employment areas. Subject to Site and location details, the Regional Centre will generally be a location where higher density residential development is appropriate.
- 4.30. The Site falls within East Manchester, as defined by Policy H4 of the Manchester Core Strategy (2012). The Core Strategy states that East Manchester will accommodate around 30% of new residential development over the lifetime of the Core Strategy. Priority will be given to family housing and high value, high quality development where this can be sustained. High density housing will be permitted within the parts of East Manchester that fall within the Regional Centre which are adjacent to the City Centre – including Newton Heath.
- 4.31. The Site falls is adjacent to the Central Park Strategic Employment Location, falling just outside the boundary, which is defined by Policy EC6 of the Core Strategy.

### Planning History

- 4.32. An application for full planning permission to facilitate remediation works on the Site was submitted by the Applicant and approved by MCC on 28 October 2021, under planning application reference: 129197/FO/2021. The description of development is as follows:
- "Site remediation works including removal of existing vegetation, ground works and other associated works."*
- 4.33. The Site's planning history includes residential development proposals approved in the 1980s and 1990s, and most recently an application for residential and commercial development received a resolution to grant planning permission from the Planning Committee in 2014. Whilst the Site has a history of residential applications, no redevelopment has been delivered on Site with all previous applications disbanded.
- 4.34. The Site was identified for regeneration for over 25 years, within Policy EM5 Central Park of the UDP (1995). UDP Policy EM5 identifies Central Park as an area for regeneration over the ten-year plan period (from 1995 to 2005) and recognises the opportunity to redevelop the Site - with the creation of a "focal point" at the "meeting point of the Rochdale Canal and Ten Acres" being permitted.

- 4.35. The Site was formerly occupied by Jackson's Brickworks for industrial uses and subsequently used as a landfill site. The Site has been vacant and unmanaged since the 1990s. Prior to the commencement of recent site clearance and remediation works secured under Planning Permission ref. 129197/FO/2021, it became overgrown with self-seeded trees and shrubbery. Evidence of the former brickworks is present at the Site in the form of rubble piles and concrete bases which remain from former buildings. The Proposed Development therefore presents a window of opportunity to address the Site's general negative impact on visual amenity, whilst delivering a longstanding regeneration priority site.
- 4.36. The Site is subsequently identified for redevelopment in the East Manchester Strategic Regeneration Framework (RF) (2008-2018), which makes specific reference to the 'Jackson's Brickworks Site'. The SRF sets out a number of principles and opportunities for the redevelopment of the Site.
- 4.37. An Outline Planning Application (Application Ref: 098689/OO/2012/N1) received a resolution to grant from the planning committee on 16 October 2014 for:
- "Outline planning permission for development comprising up to 500 residential dwellings and 3,500 sq m of floorspace for B1(a) use (Business), incorporating new vehicular and pedestrian access from Ten Acres Lane, Hallam Road and Mitchell Street, Open space, landscaping and public realm with access to be considered and all other matters reserved."*
- 4.38. The approval of the outline planning permission was subject to the signing of a Section 106 Agreement. It is understood that the applicant went into administration, and as such the Section 106 was never signed.
- 4.39. A summary of the Site's older planning history is identified in Table 2.1 below:

Table 4.1: Older Planning History

| Application Ref     | Description of Development                                                                     | Decision             | Decision Date |
|---------------------|------------------------------------------------------------------------------------------------|----------------------|---------------|
| 055319/FO/NORTH2/98 | Erection of 126 dwellings with access and ancillary works.                                     | Approved.            | 22/04/1999    |
| 047076/OO/NORTH2/95 | Mixed development of 800 dwellings, associated retail, commercial, leisure and community uses. | Not progressed with. | 28/05/1996    |
| 23105               | Residential development.                                                                       | Approved.            | 13/03/1985    |

- 4.40. Full planning permission was granted by MCC in October 2021 to facilitate remediation works on the Site. For further details please refer to paragraphs 1.8 and 4.5-4.6 of this Statement..

## Proposed Development

- 4.41. This section provides a summary description of the key elements of the Proposed Development.
- 4.42. The Proposed Development seeks to bring forward a high-quality residential led scheme comprising up to 716 new homes, a community hub with ground floor commercial floorspace, and a new secondary school.
- 4.43. A Hybrid Planning Application is submitted, which comprises:
- Full Planning Permission (with no Reserved Matters) is sought for Phase 1, comprising:
    - 378 residential units, a community hub building (commercial floorspace at the ground floor level), public realm and landscaping, car parking and cycle storage provision, serving and access arrangements, highways improvements and associated works.
  - Outline Planning Permission with all matters reserved, except main access, is sought for subsequent phases (Phase 2) which comprises an education facility and a further phase of housing led development:
    - Education Facility: A Secondary school.

- Residential-Led Phase of Development: Up to 338 residential units, public realm and landscaping, cycle and car parking provision, and associated works.

4.44. For a summary of the Proposed Development please refer to paragraph 1.4 of this Statement, and for further details please refer to Chapter 4 of the Planning Statement (please refer to Appendix 4.1), prepared by Deloitte and the Design and Access Statement (please refer to Appendix 3.1) prepared by Barton Willmore and Planit-ie.

4.45. For completeness the Planning Application is split into phases. Within this Statement and the supporting planning documentation the 'phases' refer to the following aspects of the proposals:

- Phase 1 and subsequent phases – with 'Phase 1' referring to the western part of the site seeking consent for residential development and community hub; and 'subsequent phases' referring to the eastern part of the site seeking consent for further residential development and the school which will be taken forward by separate developers. The 'subsequent phases' can be brought forward together or separately in no particular order i.e., school then residential or residential then the school.

Or;

- Phase 1 and Phase 2 – where 'Phase 1' includes the proposals as noted in the bullet above, and 'Phase 2' refers to the same elements as 'subsequent phases' and can be brought forward in several parts. The terminology 'Phase 2' and 'subsequent phases' are used interchangeably.

# 5. Construction Methodology and Programme

## Introduction

- 5.1. This chapter describes the proposed construction programme and key activities in relation to the approved remediation of the Site (as set out within Chapter 1 of this Statement) and the subsequent construction of residential properties. Detailed consideration of the potential impacts and resulting effects during the remediation works and construction phase and any necessary mitigation measures are provided in the technical chapters (Chapters 6 to 13) where relevant.
- 5.2. The primary aim throughout the proposed remediation and construction works will be to minimise the impact of the works on the surrounding environment (including neighbours, neighbouring buildings, local infrastructure etc).
- 5.3. This chapter has been prepared prior to the appointment of a remediation contractor and construction contractor. The information outlined is therefore outline / preliminary and is based on the details provided in the Construction & Environmental Management Plan (October 2021) included at Appendix 5.1. Where information is not available the chapter has been based on current understanding of the Site conditions and what would likely need to be considered for a Site of this nature.
- 5.4. This Chapter is accompanied by the following technical appendices:
- Appendix 5.1 - Construction & Environmental Management Plan (October 2021)
  - Appendix 5.2 – Phasing Plan

## Programme

- 5.5. The approximate build programme is anticipated to be split into at least two phases. The current indicative programme and sequencing is as follows:
- Form access route into the Site from Ten Acres Lane.
  - Commence remediation to Phase 1 area.
  - Construct initial spine road to Phase 1.
  - Commence plot construction in area 1 accessing the Site from Ten Acres Lane.
  - Continue with remediation works to Phase 2.
  - Complete areas 1 to 4 that form Phase 1.
  - Continue plot construction to Phase 2.
  - Complete all POS areas.
- 5.6. It should be noted that it is intended that the secondary school and further residential led phase of development, comprising Phase 2 will be progressed through separate future Reserved Matters applications. This approach is proposed on the basis that the detailed proposals for the secondary school and further residential phase of development will be developed and delivered by different developers / bodies. On this basis the above sequencing and programme is indicative.

## Construction Methodology

- 5.7. The following section of the chapter describes the methodology to be adopted during the remediation of the former Jackson's Brickworks Site in Newton Heath, followed by the construction of residential properties. Where information is not provided in the Construction & Environmental Management Plan (October 2021) the section looks to detail the likely measures necessary during the remediation and construction.

### General Site Management

- 5.8. The developer / main contractor should be responsible for the management and implementation of the following:

#### Site Working Hours

- 5.9. For noisy works that are audible beyond the Site boundaries the developer / main contractor should adhere to those locally adopted hours that would apply to construction works (to be confirmed once planning is granted). The normal working hours in line with Manchester City Council Guidance are 07.30 to 18:00 Monday to Friday and 08:00 to 14:00 on Saturdays. In addition, access to the Site is usually permitted 30 minutes prior to the working day commencing with noise being kept to a minimum for the first half and hour of the day. Working hours will be secured by planning condition.
- 5.10. All sub-contractors including suppliers should be made aware of the permitted working hours as the restrictions also apply to deliveries.

#### Compound Layout and Parking

- 5.11. Parking for operatives and visitors will be provided on Site in a safe access area adjacent to the Site welfare and offices. This will remove the need to park on adjacent roads and to minimise impact to surrounding residents and businesses. It is proposed that this provision of parking be operational during the entire build sequence.
- 5.12. Where necessary visitors may be asked to move their vehicle from the car park. Should this occur, they should be relocated to a suitable alternative area which, if possible, does not impact upon surrounding residents and businesses.
- 5.13. Control measures will be put in place to ensure access to existing properties located on Makkah Close are not blocked.
- 5.14. Site parking should be physically separated from the areas where mobile plant and lorries are operating by temporary fencing and all plant prohibited from entering the Site car park.
- 5.15. The use of Site vehicles should be restricted to designated areas.

#### Security and Fencing

- 5.16. The Site will be securely hoarded throughout the project duration for security and to segregate work activities. The hoarding will be either be of a powder coated mesh fence to public areas or timber hoarding with designated access gates. This hoarding will be erected prior to commencement. Access to the Site will remain closed and locked at all times.
- 5.17. Internal fencing will also be implemented acting as segregation. This fencing should ensure that all work areas are fenced off, so the Site is secure and designated vehicle / pedestrian entrances are clearly delineated (if required).
- 5.18. Secure fencing should also be erected around any treatment areas, as well as specific task fencing around any individual hotspot excavations, encompassing all working plant and exposed material. Warning signs should be attached to fencing to communicate the potential dangers associated with specific Site areas.
- 5.19. Consideration should also be given to the use of full-time security at the Site to guard personnel, plant and equipment and to deter any form of criminal activity or antisocial behaviour for the full duration of the works.

#### Site Offices and Cabins

- 5.20. Appropriate Site offices and cabins will be installed on Site and should have the means to be moved, if necessary. It is currently anticipated that these will be located in the centre of the Site in a safe access area. The Site will be

identified with a sign providing instructions on how the Site manager may be contacted if the office is unattended. The condition of Site offices will be maintained to ensure they are clean, tidy and free from mud and dust.

- 5.21. The Site offices should be designed to reduce resource use where possible. Staff should be informed of energy conservation methods and should attempt to apply these practices at all times.

#### Welfare

- 5.22. Specific details of on-site welfare will be provided as part of the Construction Phase Plan (CPP) produced by the main contractor. On-site welfare facilities should include toilets, offices, canteen / mess facility, drying room, hot and cold water, drinking water and facilities to heat meals.
- 5.23. The condition of welfare facilities should be maintained to ensure they are clean, tidy and free from mud and dust.
- 5.24. If required, all drainage from sinks, showers and lavatories should be connected to a septic tank during the works.

#### Storage

- 5.25. All plant and materials will be securely stored on Site. The main contractor should be responsible for the management of plant and materials on Site and for delivery of materials. There should be no excessive build-up of materials to a point whereby storage issues on Site affects day to day operations.
- 5.26. The main contractor should as per the Control of Substances Hazardous to Health Regulations (COSHH) ensure that hazardous materials and substances are accompanied by an appropriate COSHH Assessment prior to the commencement of works. All substances will be stored in bunded fuel containers and should be stored in a secure compound. Drip trays will be used on all generators.
- 5.27. Suitable storage facilities for hazardous materials and substances used during the works will also be provided. Any hazardous liquids, lubricants or large volumes of cleaning products should be stored in suitable locked cabinets. Two spill kits will be available on site, one at the refuelling point and one at the Site office.
- 5.28. It is proposed that the locations for material storage will be organic and will be relocated around the Site as the build sequence develops to reduce the distances for material handling. Each location should ensure it meets/ implements the measures outlined above.
- 5.29. To reduce the risk of emission to land, fuels should be stored in a double skinned tank away from sources of heat and flame.

#### Site Access and Vehicle Movements

- 5.30. The Site is bound by Ten Acres Lane in the west, Mitchell Street in the east and the Rochdale Canal to the north. Footpaths are present along each of these boundaries. There are no official footpaths within the Site, but tracks and paths are present that are used by dog walkers etc.
- 5.31. Access to the Site will be located off Ten Acres Lane with deliveries predominately from Oldham Road. Two secondary access points are proposed off Hallam Road and Mitchel Street however these will be avoided, during the build sequence, where possible to avoid impacts upon the existing residential areas. The two secondary access points will only be utilised where necessary once the specific cells are becoming occupied.
- 5.32. Prior to commencement of work a traffic management plan (TMP) will be developed to manage deliveries and construction traffic to ensure the safety of the general public. This TMP will take into consideration local residents, businesses, schools and such like. The TMP will indicate measures such as Site working hours; on Site speed limits; and best practice to be adopted. Further details can be found in the Construction & Environmental Management Plan (October 2021).
- 5.33. Throughout the works, plant should be limited to within the Site boundary with the exception of occasional unavoidable movement on and off site. To minimise the impact on the local businesses and community, the following mitigation measures will be indicated in the TMP and implemented by the main contractor.
- The access points outlined above will be utilised during the construction phase and deliveries will follow permitted routes

- Lay down areas for deliveries (within the safety of the Site and using the existing hardstanding or new roads)
- Parking will be discussed during Site inductions and under no circumstance will operative cars be permitted to park in designated resident parking spaces.
- All suppliers will be sent the TMP and detailed instructions for drivers so they are aware of the arrangements prior to arriving at the Site. All deliveries will be pre-arranged.
- Site working hours will be restricted to 7.30am until 6pm Monday to Friday and 8.00am to 2pm Saturday. Working outside of these hours will only occur when prior agreement has been made with the Local Authority, client and residents with a minimum of 4 weeks' notice, (except in an emergency).
- Due to the residential area, when possible deliveries will avoid the times when pupils are most likely to be arriving and leaving school and passing the Site by car or on foot.
- The surrounding estate roads will be swept as required and delivery vehicles restricted to clean haul roads or tarmac. The TMP has been designed to ensure that there will be minimal need for the cleaning of vehicles. When necessary, wheel washing will be provided by a local high pressure jet wash. There will also be regular road sweeping as required.
- Although forklifts will be used to distribute materials around the Site, they will not be permitted on the roads except for access to completed properties when they will be provided with a banksman if necessary. The banksman will be responsible for ensuring that the access road is cleaned using a fork lift mounted road brush.
- A speed limit of 9 mph will be adopted on the Site.
- Deliveries will be made in small loads to accommodate the small estate roads and in consideration of local residents and their safety.
- All project stakeholders will be informed in writing in advance of any works outside the Site boundary, including temporary works to the highways and drainage.
- Best practice will be adopted, in particular adhering to BSI Code of Practice BS5228- 1 2009 for noise and vibration control on construction and open sites
- As part of their Site induction operatives will be given the following instructions relating to the minimisation of noise.

5.34. In addition to the above the following measures should also be implemented by the main contractor.

- Any required footpath / road closures should be lodged by the main contractor (when appointed) with Manchester City Council and subject to their approval. A Site logistics plan for the construction phase should also be provided.
- There may be specific vehicle movements to / from the Site requiring special arrangements – for example where large plant equipment is being delivered to site. The main contractor would be responsible for any temporary road closures, escort vehicles or similar.
- Vehicle movements should be timed to avoid rush hour / busy periods.
- No vehicles should be allowed to wait on surrounding streets before attending Site to avoid traffic build up / blockages.
- Suppliers should be made aware of transport routes to and from the Site and all deliveries should be pre-booked for a certain delivery time.
- Monitoring of the vehicle routes and traffic movement throughout the day should also be undertaken.

- Where possible, a running surface should be employed to ensure that minimal amounts of dust will be generated through vehicle movement on site.
- Site vehicles should be restricted to hardstanding where possible.
- A Site speed limit employed to further reduce the potential for dust generation.
- Road going vehicles leaving the Site should be covered where required and be inspected for mud on their tyres and bodywork prior to entering the public highway.
- Wheel washing facilities and the use of water assisted dust sweepers may also be required.
- Ensuring all vehicles switch off engines when stationary.
- A construction logistics plan should be produced to manage the sustainable delivery of goods and materials.
- Pedestrians and vehicles should be effectively segregated at all times. No unauthorised reversing.
- Pedestrian visitors accessing the Site during Phase 1 should be asked to call the Site and ask for directions to the compound area.

#### Road Cleanliness

- 5.35. Daily vehicle movement on and off the Site should not create the potential for mud and debris to be deposited on the local highways as they leave the Site area, creating an unsuitable environmental impact.
- 5.36. It is proposed that the new estate roads will be constructed early in the development to provide a hard running area for Site vehicles. Conditions on Site will be monitored by the Site manager and control measures should dust pollution become a problem will include:
- Road Sweeping, either by specialist vehicle or forklift attachment. The forklift sweep attachment available on Site at all times
  - Damping down using a water bowser.
  - Localised mist systems using a fine spray of water from a perforated hosepipe.
- 5.37. Throughout Site works, monitoring of the condition of public roads, namely the transport route, should be also undertaken to ensure no significant deposit of mud or debris. Plant movement across the public road should be limited to prevent the possibility of depositing mud on the road.

#### Waste Management

- 5.38. Prior to the start of construction, the construction team will develop and implement a Site specific Site Waste Management Plan (SWMP). The SWMP will record any design decisions made to reduce waste and forecasts should take into account subcontractor waste forecasts determined during a pre-order meeting. The project estimator will provide waste forecasts on the SWMP during the tender stage. The SWMP should consider, but not be limited, to the following:
- Packaging reduction methods
  - Mitigation of the amount of waste generated.
  - Re-use of materials where possible.
  - Segregation of wastes and recycling of materials where possible.
  - Efficiency of working methods.
  - Waste management at induction.

- Waste minimisation on co-ordination meeting agendas.
- Ensuring materials are not delivered damaged or unsuitable (organise collection for damaged goods)
- Reviewing the SWMP comparing forecasted amounts with actuals at monthly management reviews.
- Introducing incentives and where necessary discipline measures on site.
- Providing toolbox talks.
- Removal of wastes to appropriately licensed facilities.
- Recording of all waste movements.
- The use of Duty of Care Consignment notes.
- Works managed by means of a Materials Management Plan (MMP).

5.39. The main contractor should be responsible for managing wastes arising from all activities to prevent pollution and meet or exceed legal requirements. The Site will monitor all waste using the SWMP in accordance with the appointed contractor's waste management strategy. The SWMP will minimise all construction waste and recycle/reuse materials whenever possible. The main contractor will also enforce best practice when managing waste on Site by encouraging measures such as:

- Clear labelling of skip, drums or other appropriate containers identifying the type of waste that can be disposed of into each.
- Waste containers must be strong enough to hold waste securely, prevent loss or leaks Waste containers must be located a minimum of 10 m from any drainage or water course wherever possible, kept in designated areas and away from vehicle traffic to avoid damage.
- Waste containers must not be overfilled and waste areas must not become littered
- Where possible skips should be covered when not in use to prevent theft and loss of materials due to wind
- Waste must not be burned on site.

5.40. It is expected that waste generated on Site will fall into three categories and these will be dealt with as follows;

1. Soil and Excavated Waste – this will be removed directly to a designated tip in 20 tonne vehicles loaded using excavator plant.
2. General waste – this will be collected using tipping skips attached to a forklift and deposited in a general waste skip for removal.
3. Waste that can be reused or recycled – This will be stored in the Site compound or a designated area and will be either reused on site, recycled or taken to other sites using the correct certification. Waste for recycling off site, such as timber, will be placed in a designated skip and removed through our skip provider. The waste carrier will provide details of all waste and identify the percentage of recycled material.

5.41. Waste management will be inspected by the health, safety and environmental teams as part of the inspection regime and will be subject to LIMS auditing both internally and on occasion, by an external accrediting body.

5.42. Where required, additional waste management mitigating measures will also be employed, and these will include the following:

- Site perimeter fencing to prevent windblown rubbish reaching the site.
- Closed construction will reduce the likelihood of insulation getting blown around the site.

### Hazardous Waste disposal

- 5.43. During the works all hazardous waste will be segregated from non-hazardous waste, the mixing of different types of waste should be avoided and the mixing of hazardous waste with non-hazardous waste to dilute the materials below the threshold concentration will be banned.
- 5.44. Where waste is generated by a subcontractor for excavation or demolition, the subcontractor will provide data on the waste movements in a format as agreed with the appointed contractor. Waste information will be reported to the national Sustainability Co-Ordinator as part of a duty under the appointed contractor's Sustainability Policy Framework and Carbon Reduction Commitment (CRC).
- 5.45. Where chemicals and hazardous are delivered to Site a 'Safety Data Sheet (SDS)' should be provided by the supplier, or manufacturer. Should the chemical received not have a SDS, the supplier will be contacted to find out whether or not they have to provide one. Where a SDS is provided the instructions will be followed carefully. A responsible person will be designated to control the issuing of chemicals and hazardous materials.

### Waste re-use and disposal

- 5.46. To ensure duty of care when disposing of waste, waste transfer notes will be completed for inert and non-hazardous waste. These will be maintained for two years as required. Should the transfer of hazardous waste occur this will be supported by a consignment note and maintained for three years with a waste transfer notes, schedule of carrier forms and details of the site's registration with the Environment Agency. The appointed contractor will ensure all waste transfer/consignment notes are correctly completed by the waste carrier. Copies of the notes will be kept onsite.
- 5.47. If it is found that any haulier/subcontractor/disposer is not complying with the duty of care requirements, the Site management shall cease transferring waste via the associated company and notify line management.

### Pest Control

- 5.48. The risk of infestation by pests or vermin should be reduced by implementing appropriate storage and regular collection of putrescible waste. If infestation is found, removal and prevention measures should be implemented promptly in consultation with the Ecological Clerk of Works (ECOW).
- 5.49. Any pest infestation of the construction Site will be notified to the Local Authority as soon as is practicable.

### Falls from Height

- 5.50. Should there be a risk of falls from height during the build sequence, such as access onto a vehicle, the haulier should provide information on how falls will be prevented, or the risk reduced.

### Use of Lifting Equipment

- 5.51. Where hauliers use their own lifting equipment (i.e. HIAB/Moffett) a suitable lifting plan/risk assessment should be completed prior to commencing the lift.

### Damage to Existing Roads

- 5.52. Prior to the commence of works a professional photographer will undertake a full photographic dilapidation survey of the surrounding roads and footpaths to ensure damage to existing infrastructure is minimised.

### Air Quality (Including Dust and Odours)

- 5.53. The main contractor should be responsible for minimising emissions of dust and other pollutants to avoid effects on air quality. This should be done via the management of air quality and particulate matter (dust) generally in accordance with an Air Quality Statement, a suitable Dust Management Plan (DMP) and by employing good housekeeping and proactive management on site.
- 5.54. To prevent contamination of the local roads, all materials and plant are to be off loaded onto hard-core areas adjacent to the Site compound. This area will act as a break area; delivery vehicles will remain on the clean hardstanding and materials will be distributed by a forklift that will remain on site.

- 5.55. Due to the use of haul roads and the permanent estate roads it is considered unnecessary to provide a dedicated wheel wash. Should vehicles need to access the Site (e.g. concrete deliveries) their wheels will be inspected by the banksman for mud etc. and be washed down with a jet wash if required before being allowed onto the public highway.
- 5.56. The roads surrounding the Site will also be monitored and road sweeping provided where required.
- 5.57. Each work activity should be reviewed for dust risk prior to the works commencing. Subsequently, suitable controls and mitigation should be implemented as necessary to reduce dust risk accordingly. These controls could include:
- Keeping surfaces swept and damp down with water at regular intervals.
  - Minimising drop heights into haulage vehicles.
  - Ensuring cutting and grinding operations are adequately shielded or wetted.
  - Sheeting lorries carrying dry materials off site.
  - Keeping to Site speed limits to minimise dust generation.
  - Implementing wheel washes, for appropriate vehicles, where appropriate.
  - Storing fine, dry materials within buildings or provide adequate protection from the wind.
  - Positioning silos and stockpiles away from residential areas or watercourses.
  - Cleaning up or damping down any spillage of dry dusty materials.

#### Excavations and De-watering

- 5.58. Where the works require permission to extract and/or dewater on site, permission to discharge anything to surface waters or groundwater control measures the Environment Agency will be contacted to obtain the required permit and consent.
- 5.59. During excavation works, monitoring should be undertaken and if required mitigation measures should be implemented. These measures should include but are not limited to the following:
- Checking that the point of discharge is to the correct location.
  - Check that all couplings and other pipework fittings are secure.
  - Periodically check that any treatment systems are working and that water being finally discharged is clear of silt or solids that may give rise to pollution, and is not causing damage to the bed or banks of any watercourse.
  - The line manager should immediately be notified if pollution (muddy water, oils etc.) occurs, the discharge causing flooding, any pipework is damaged or connections have broken or are leaking.
  - Avoid leaving pumping operations unattended for long periods unless authorised to do so.
  - Avoiding over pumping if the receiving sewer or pipeline cannot cope with the capacity.
  - Avoid tampering with pipework or discharge points
  - Site wide excavations will be required and to minimise air and dust emissions works should be confined to small sections of the Site at the time.
  - Where practicable, windbreak netting / screening should be positioned around excavations to provide a physical barrier between the Site and its surroundings.

- Suspending works during windy and adverse weather conditions.
- The use of water sprays to suppress dust and odour.

### Soil Stockpiles

5.60. Mitigation measures should include but are not limited to the following:

- Ensure delivery times to Site are defined and communicate these to suppliers. Make sure these delivery times are suitable for neighbours, i.e. after 9am.
- Ensure that all material deliveries are well supervised.
- Stockpiles should be placed in specific areas of the Site to prevent the release of dust and other fugitive emissions.
- Stockpiles should be located away from Site boundaries and / or receptors (e.g. watercourses and drains).
- Unless it is required for a specific purpose, stockpiles should be prevented from drying out by using covers and / or the use of a towable water bowser or similar to damped down the stockpiles.
- Implement stockpile maintenance / management.
- Removal of dusty materials from Site as soon as practicably possible.
- Stockpile surface areas should be minimised where possible.
- Where practicable, windbreak netting / screening should be positioned around material stockpiles to provide a physical barrier between the Site and its surroundings

### Noise and Vibrations

5.61. To control noise escaping the Site boundary, best practice will be adopted, in particular adhering to BSI Code of Practice BS5228- 1 2009 for noise and vibration control on construction and open sites. The main contractor should be responsible for avoiding, minimising or compensating for the adverse effects of noise and vibration.

5.62. Prior to commencing work likely to generate excessive noise at the Site boundary will be assessed and the potential impact on both construction operatives and the local environment considered with mitigation employed as required.

5.63. During construction, noise and vibration control measures will be implemented, as required, in line with those suggested Section 8 of BS 5228-1:2009. This will include noise and vibration control at the source which should include, but is not limited to, the following:

- The selection of quiet and low vibration equipment.
- Plant being well maintained and fitted with silencers.
- The use of low noise working techniques.
- No equipment shall operate other than at the manufacturers' rated working levels.
- Operatives shall not 'rev' equipment unnecessarily.
- Shutting down plant when not in use. Where this is not practicable, equipment shall be set to idle in the quietest manner to minimise noise emissions.
- Site operations being undertaken with agreed Site hours.
- The use of temporary acoustic barriers / screens possibly including acoustic enclosures.

- The use of less intrusive alarming systems.
- Noisy works taking place at prearranged times and away from receptors.
- Regular plant maintenance to keep plant in good working condition and reduce noise from machinery.
- Careful phasing of the proposed operations.
- Resilient materials should be used where possible to reduce impact noise where materials are being moved or dropped e.g., lining chutes and dumpers.
- Materials should be lowered whenever practicable and otherwise drop heights should be kept to a minimum.

5.64. In regard to reduction the impact of mobile plant the following noise reduction measures should be implemented:

- The movement of plant onto and around the Site should have regard to the normal operating hours of the Site and the location of any noise sensitive receptors.
- Audible reversing alarms should be of a type, which whilst ensuring that they give proper warning, have a minimum noise impact external to the Site.
- Internal haul routes should be well maintained and avoid steep gradients.
- Earth moving plant should be fitted with efficient sound reduction equipment and manufacturers' enclosure panels should be kept closed.
- Careful phasing of the works to aid in minimising their impact.
- Locating the Site compound as far away as possible from noise sensitive locations to assist in minimising sources likely to generate nuisance.

5.65. It is anticipated that the noisiest activity is likely to be the provision of piles for foundations. Prior to commencement of piling residents of neighbouring properties will be contacted to explain the process. Control measures should be implemented to reduce the impact of piling operations. This may include:

- Vibration and noise monitoring at the Site boundary
- Noise monitoring at the work area and Site boundary.
- Orientating piling rig the away from neighbouring properties
- Shrouding the drop hammer.
- Pile positions can be pre-bored in areas where the ground near the surface is more compact or dense.

5.66. A noise and vibration monitoring protocol should be implemented with monitoring being undertaken as required and where noise and vibration levels exceed the agreed limits appropriate action should be taken.

5.67. The developer / main contractor should liaise with the Local Council to obtain the appropriate consents and liaise with any parties likely to be affected by noise. They should also be engaged to cooperate with affected parties and to accommodate requirements as far as reasonably possible without delaying the process of works on site.

## **Water Management and Contaminated Waters**

5.68. Water management should include adequate prevention measures to protect identified controlled water receptors with suitable measures to deal with any contaminated waters. Mitigation measures could include but are not limited to the following:

- Identify all watercourses, gullies and drains prior to commencing work.

- Site access points being regularly cleaned to prevent the build-up of dust and mud.
- The control of earth movement to reduce the risk of silt combining with the Site run-off.
- Properly contained wheel wash facilities (where required) to isolate sediment rich run-off.
- The installation of cut-off ditches and / or geotextile silt-fences around excavations and stockpiles to prevent the uncontrolled release of sediments from the site.
- The use of sediment traps.
- Localised dewatering or the placement of flow barriers to manage perched groundwater in the Made Ground.
- The treatment and suitable disposal of any contaminated waters, if required.
- The installation of a lined and bunded water treatment area, settlement tanks or silt busters to facilitate the treatment of any surface water and its subsequent discharge to the existing foul sewer drains (subject to obtaining the appropriate discharge consent).
- If sewer capacity is limited, then silty water could be stored on-site and disposed of at a suitably licensed location.
- A leachate collection system for any areas where shallow contaminated waters are indicated to be present.
- Mitigation measures to prevent any oil and chemical spillages (see fuelling and hazardous liquids section)
- Decommissioning of any deep boreholes that could act as pathways for sensitive receptors.
- Should pollutant enter a drain, immediately stop the pollution with a physical block, stop the activity causing the pollution, then notify the EA for surface water drains or the local sewerage provider for foul water drains.

5.69. Control measures will be implemented where cement, concrete and grouts are used on site. These will ensure the following measures should be implemented to reduce the risk of pollution to watercourses and ground:

- Surplus dry concrete, cement and grout should be re-used on Site if possible, or as inert rubble.
- Equipment, such as chutes, portable mixers, barrows, pump lines, shovels, should be washed out in a designated area that has been specifically designed to contain wet concrete/wash water e.g. designated skip.
- Concrete mixing and delivery lorries should return to the batching plant for washout.
- Excess concrete should be sent back to the batching plant, where possible.
- Ensure all cement bags are sealed after use, stored appropriately to prevent leaks or dust.
- Avoid over-ordering materials.
- Consider timing of deliveries.
- Store bulk and bagged cement and concrete additives at least 10 metres away from watercourses, gullies and drains.
- Undertake mixing/batching well away from watercourses and drains.
- Use only designated areas for concrete washout.
- Where necessary protect nearby drains against washout and water running into them.
- Concrete spillages or concrete washout should be reported immediately.

- Avoid hosing down spills of concrete or cement into surface water drains.
- Avoid allowing ready-mix trucks to washout anywhere other than in areas designated for the purpose.
- Avoid washing off any tools or plant in watercourses.
- Avoid allowing mortar wash out to be tipped directly onto the ground or allowing to set and remove to Site skip.

#### Silty Water

5.70. To avoid the production of silt and subsequent pollution the following should be implemented on site:

- Use of cut-off trenches, vegetation corridors adjacent to waterways to act as 'buffer strips' and reduce the amount of exposed ground for runoff.
- Plant, wheel and boot washing Run-off should be collected in a sump, with settled solids removed regularly and water recycled and reused where possible.
- Any excess water should be discharged to foul sewer with prior permission from the local sewerage provider or tankered off Site for authorised disposal.
- Avoid strip all Site of vegetation when not building in that area, limiting the amount of run off.

#### Fuelling and Hazardous Liquids

5.71. In order to mitigate the risk of causing pollution through refuelling and the improper storage of hazardous liquids the following mitigation measures could include, but are not limited to the following:

- All fuelling activities and the storage of fuel should take place in one identified area, avoiding high risk areas. These areas should be located on hardstanding or a lined area and tanks should be in accordance with current legislation and be suitably bunded with drip trays and secure lids. Emergency spill kits including absorbent granules and pads will be kept in case of accidental release.
- Fuel should not be stored in areas where there is risk of damage by impact or collision.
- Avoid storing or using oil in areas at risk from flooding.
- Take all necessary security measures to prevent theft, or unauthorised use, by providing suitable locks, lockable containers and/ or lockable valves where necessary. Make sure the locks are used when oil storage facilities are not in use.
- Where possible, plant and machinery should have drip trays beneath oil tanks, engines, gearboxes etc. and these should be checked and emptied regularly and correctly disposed of.
- The production of a Pollution Incident Control Plan (PCIP) that includes response to spillages of oil. Provisions should be made to contain a serious spill or leak through the use of spill kits, booms, bunding and absorbent material.
- Personnel should be trained on the use of spill kits, where applicable.
- The storage of hazardous liquids greater than 10m from any surface waters or surface water gullies.

#### Ecology /Biodiversity

5.72. The developer / main contractor should be responsible for avoiding, reducing or compensating for any adverse biological effects. It should be noted that proposals as approved under the remediation application and subsequent tree removal which is now ongoing has been undertaken in the presence of a suitable licenced ecologist.

- 5.73. During the construction of the main works, mitigating measures could include, but should not be limited to the following:
- A method statement and tool-box talk should be prepared that would include details of pre-construction verification surveys for bats, describing the approach that would be followed to avoid contravening the WCA 1981. Lighting of Site during remediation works to avoid Rochdale Canal corridor.
  - Method statement and toolbox talks in regard to reptiles should be prepared to avoid contravening the WCA 1981. Removal of suitable habitat should be designed to avoid the risk of injury to reptiles, through measures such as timing ground works to avoid the reptile hibernation period and the gradual removal of habitat. Pre-habitat clearance capture and translocation of slow worms to off-site receptor location with ongoing management / monitoring (in accordance with an approved ecological method statement).
  - Noise control and vibration measures to mitigate damage to ecological receptors are outlined above in the noise and vibrations section above.
  - The main contractor should include measures to reduce or limit air dust effects during the remediation works. Dust control measures to mitigate damage to ecological receptors are outlined above in the air quality section and should largely be controlled through the use of a DMP.
  - The main contractor should include measures to reduce or limit air quality effects during the remediation works. Air quality measures to mitigate damage to ecological receptors are outlined above in the air quality section.
  - Construction practices should comply with the EA's Pollution Prevention Guidelines with a view to preventing the pollution of ground and surface water. Pollution prevention control measures are outlined for waters, noise and dust etc. above. In particular no contamination should be allowed to enter the Rochdale Canal.

### Land Contamination and Soil Quality

- 5.74. The management of any land contamination or quality issues by ensuring the works are undertaken in accordance with relevant CDM 2015 regulations, which incorporates those findings from intrusive investigations that have been undertaken at the site.
- 5.75. For Site workers and visitors, the potential for exposure to contaminants should be mitigated through good construction practices that could include the following:
- The use of COSHH Regulations 2002.
  - The Management of Health and Safety at Work Regulations 1999.
  - Site inductions.
  - Good hygiene practices.
  - The use of Personal Protective Equipment (PPE) suitable to prevent exposure.
  - Restricted access for personnel for higher risk activities.
  - A watching brief should be undertaken in the event of any unrecorded contamination.

Those measures outlined above to reduce dust, limit air quality effects, deal with any unexploded ordnance and the control spillages of oils and other chemicals.

- 5.76. The Site is situated within Newton Heath in East Manchester. The Site was formerly occupied by Jackson's Brickworks for industrial uses and subsequently used as a landfill Site. The Site has been vacant since the 1990s. As the Site is currently vacant and unmanaged, it is overgrown with self-seeded trees and shrubbery. Tree and vegetation removal began in November 2021 is due to be complete in April 2022. Evidence of the former brickworks is present at the Site in the form of rubble piles and concrete bases which remain from former buildings. The Site

will be subject to a defined remediation strategy (approved, as set out within Chapter 4 of this Statement). Any soil that can be retained for reuse will be subject to testing and if suitable shall be stockpiled onsite for use in either gardens or public areas.

## Visual Amenity

5.77. Environmental measures will need to be implemented so that adverse effects on landscape and visual amenity are avoided, reduced or compensated and these could include, but should not be limited to the following:

- The avoidance of unnecessary vegetation removal and the protection of trees or vegetation that are to be retained.
- The retention or provision of screening vegetation along the Site boundaries. Where possible this should be undertaken prior to construction.
- Localised bunding to offer further visual screening.
- Materials and machinery should be stored tidily during the works in order to minimise impacts on views;
- Lighting of compounds and working areas should be restricted to agreed working hours and those which are necessary for security or other requirements.
- Public roads providing access to the construction Site should be maintained free of dust and mud.
- Keep clear and clean all working areas and accesses as work proceeds and when no longer required for the works.
- On completion of the project, remove all structures, equipment, surplus soil and materials, waste, notice boards and temporary fences used during the construction with minimum damage to the surrounding area.

## Invasive Species Management

5.78. The developer / main contractor should ensure that the works do not result in a contravention of the legislation relating to invasive species management. Prior to the commencement of the build schedule any invasive species on Site will be identified (by the contractor and if required by a competent expert).

5.79. Should invasive species be identified the following should be adhered to:

- Stop work and contact Site management
- Avoid carrying out any works within 7 metres of the suspect plant and engage specialists for instructions.
- Do not excavate or move any soil from within 7 metres of a Japanese Knotweed plant without instruction.
- Do not track plant or vehicles over the area.
- Do not stockpile potentially contaminated material within 10 metres of a watercourse or drain.
- Do not carry out any works in the immediate area and engage specialists for instructions.
- Do not disturb the seedpods.
- Do not move soil that may contain seeds or other plant material without specific instructions.
- Do not carry out any works in the immediate area and engage specialists for instructions.
- Wear protective clothing before touching the plant.
- Do not handle the plant until further advice is taken.

- Do not move soil that may contain seeds without specific instructions.
- Contact the EA if we propose to use herbicides to manage invasive plants in or near watercourse.
- Contact the EA should advice on how to dispose of invasive plants be needed.
- Consult an expert advisor.
- Provide staff training.
- Should an individual come into contact with a sap they will seek medical advice immediately.

### **Unexploded Ordnance (UXO)**

- 5.80. While a UXO Risk assessments have previously been undertaken for the Site and a low UXO hazard level has been identified, this was strictly related to the Site investigation works and some limited bulk excavations for parts of the site. An updated risk assessment should be undertaken prior to the commencement of the remediation works to ascertain and / or outline what mitigation may be required.
- 5.81. An Emergency Response Plan for unexploded ordnance should be prepared by the contractors and be followed to respond to the discovery of unexploded ordnance. This will include notifications to the relevant local authorities, emergency services, residents and businesses.

### **Cultural Heritage and Archaeology**

- 5.82. In the event that an archaeological find is discovered the works within the area should stop immediately, the Site manager contacted, the area fenced off and advice sought from archaeological specialists.

### **Community / Client Liaison**

- 5.83. The Client should interact with the local community and follow the guidance of the UKCG Good Neighbour Site Guide. They should also liaise with relevant parties.
- 5.84. Prior to the commencement of works and at frequent intervals the Site manager will develop and issue a newsletter. This newsletter will inform the surrounding residents of what to expect over the coming weeks, the stage of build and anything that may be unusual such as crane lifts. Any unusual activities will be communicated to local business and residents via the newsletter and a contact number will be provided for people to address any concerns or complaints.

### **Emergency and Incident Preparedness**

- 5.85. It should be the developer / main contractors' responsibility to undertake the proposed works whilst minimising the potential for accidents and disasters to arise. This will largely be mitigated by ensuring that the works are undertaken in accordance with relevant CDM 2015 regulations, which incorporates those findings from intrusive investigations that have been undertaken at the site.
- 5.86. A Site board, which will provide the contact number for the Site manager and an out of hours emergency number, will be located in a publicly accessible area adjacent to the welfare area. There will also be contact details for the security displayed on the Site hoarding at regular intervals.
- 5.87. Other mitigating measures could include, but should not be limited, to the following:
- An emergency plan that incorporates major accidents and disasters and their responses arrangements.
  - The production of a PICP to manage any pollution incidents, limit adverse effects on the receiving environment and incident response procedures.
  - Implementation of those mitigation measures outlined above in previous sections.
  - Ensuring that the Site is secure.

- 5.88. To minimise the risk of a pollution event Site staff will be trained, via methods such as toolbox talks, on how to use equipment such as spill kits. Incident planning will occur daily and all pollution events will be reported to Site management or the EA as soon as possible.

### Monitoring and Compliance

- 5.89. Monitoring and compliance will be undertaken by the developer / main contractor to ensure compliance with the CMP /CEMP. Site management will undertake weekly recorded inspections to ensure relevant environmental control measures are appropriate, and controls are being complied with.
- 5.90. Site environmental performance will also be monitored regularly by a health, safety and environment team. The inspection report will be discussed with Site management and any recommendations will be actioned as necessary.
- 5.91. Further measure could include, but should not be limited to the following:
- Daily inspections and assessment of environmental performance.
  - Checks on equipment to reduce the risk of incidents occurring.
  - Sensible monitoring inspections to ensure that daily checks are being undertaken.
  - Monthly Environmental Reporting detailing performance and any non-compliance.
  - Environmental training and on-going communication methods such as inductions, risk assessment briefings, environmental toolbox talks, environmental briefings, job specification training and project specific information.
  - Communication of any audits or inspections, environmental incidents or near misses, any pending or current enforcement action and statistics.
  - All activities on-site being subject to a risk assessment.
  - Monthly test of the emergency procedures and incident response.

### Summary

- 5.92. The Construction Design and Management Regulations 2015 will apply to this project and all appropriate controls and systems will be in place to comply with the standards of the Regulations and associated guidance.
- 5.93. Every stage of the project will be pre-risk assessed and appropriate controls applied, subcontractors will be pre vetted and will be subject to extensive pre-contract requirements of information transfer and risk assessment.
- 5.94. The developer / main contractor will at the earliest possible stage of the project enter into dialogue with all relevant parties including neighbours to ensure there is effective coordination throughout all stages of construction.

# 6. Townscape and Visual Impact

## Introduction

- 6.1. This Chapter of the ES has been prepared by Planit-IE and assesses the likely townscape and visual impacts of the Proposed Development upon the Site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.
- 6.2. This Chapter is accompanied by four technical appendices: Townscape and Landscape Baseline and Assessment Table (**Appendix 6.1**), and a Visual Baseline and Effects (**Appendix 6.2**), Figures (**Appendix 6.3**), and Viewpoints and Photography (**Appendix 6.4**).
- 6.3. Planit-IE is a registered practice of the Landscape Institute with considerable experience in townscape and visual impact assessment.

## Limitations and Assumptions

- 6.4. The methodology described below provides a robust and transparent process for assessment of townscape and visual effects. The TVIA process is based on the GLVIA guidelines, and the assessment has been presented in a tabular format in **Appendices 6.1 and 6.2**. The assessment has been carried out by a team of assessors to provide scrutiny where professional judgement is relied upon.
- 6.5. The assessment considers the impact of the Proposed Development on the Site. The effects have been assessed using a combination of key viewpoint photography in conjunction with details of the proposed scheme extracted from planning drawings and the Design and Access Statement. The assessment considers Phases 1 and 2 and the new school.
- 6.6. 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 mapping information are all up to date.
- 6.7. The assessment considers construction phase impacts. The precise details of the construction works are unknown at this stage, but reasonable assumptions have been made in order to assume 'worst-case scenario' in accordance with the Guidelines.
- 6.8. Following consultation with the Council, the baseline conditions for this assessment have been assumed to be before any remediation works have taken place on site.
- 6.9. A total of 15 short and medium-range viewpoints have been assessed, considering the visual impact of works to the residential areas to the north and south, and along the Rochdale Canal corridor.
- 6.10. All views have been surveyed in order to produce verified photomontage views. However, viewpoint 10 was not surveyed so is an unverified photomontage. However, LI guidance on the production of photomontages has been followed, and photomontage view 10 has been produced with a high degree of accuracy and forms a robust representation of the Proposed Development.

## Legislative and Policy Context

### Legislation

- 6.11. The European Landscape Convention (ELC, 2000) provides a foundation for closer co-operation on landscape issues across Europe and was ratified in the UK on the 21 November 2006, and became binding on 1 March 2007. The convention identifies the need to recognise landscape in law, to develop and promote landscape policies dedicated to the protection, management and creation of landscapes, and to establish procedures for the participation of the general public and other stakeholders in the evolution and implementation of landscape policies. It also encourages the integration of landscape into all relevant areas of policy, including cultural, economic and social policies.

- 6.12. 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'. It recognises that landscape has important cultural, ecological, environmental and social dimensions and is a key element of achieving sustainable development. In this context the use of the word 'landscape' is more appropriately termed 'townscape' though the constituent factors remain consistent.

## National Planning Policy

- 6.13. The National Planning Policy Framework was updated in July 2021 and sets out the government's planning policies for England and how these are expected to be applied.
- 6.14. The purpose of the planning system is to contribute to the achievement of sustainable development through three overarching objectives:
- An economic objective - to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
  - A social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and,
  - An environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.
- 6.15. The environmental objective is of particular relevance to the purpose of townscape and visual impact assessment.
- 6.16. 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 buildings and places is fundamental to what the planning and development process should achieve. Good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities."
- 6.17. Paragraph 130 of the NPPF 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;
  - 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.
- 6.18. Section 16 of the NPPF concerns conserving and enhancing the historic environment. Paragraph 189 states that heritage assets are, "an irreplaceable resource, and should be conserved in a manner appropriate to their

significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations”.

- 6.19. Whilst the Site is not located in a Conservation Area and does not contain listed buildings, heritage is an intrinsic part of townscape assessment and potential views from Conservation Areas listed buildings have been 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.

## Guidance

- 6.20. The following guidance has been used in the assessment:
- Guidelines for Landscape & Visual Impact Assessment, 3rd Edition, 2013;
  - Planning Practice Guidance; and
  - IEMA Environmental Impact Assessment Guide to Shaping Quality Development, 2015.

## Local Planning Policy - Manchester's Local Development Framework, Core Strategy Development Plan Document (2012)

- 6.21. Manchester's Core Strategy was adopted in July 2012. Relevant policies from the Strategy for the purposes of this chapter are outlined below.

### Policy EN1 Design Principles and Strategic Character Areas

- 6.22. All development in Manchester will be expected to follow the seven principles of urban design, as identified in national planning guidance 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.

### Policy EN3 Heritage

- 6.23. “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”
- 6.24. 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.
- 6.25. Proposals which enable the re-use of heritage assets will be encouraged where they are considered consistent with the significance of the heritage asset.

### Policy EN9 Green Infrastructure

- 6.26. 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.
- 6.27. The continued development of a network of green spaces, water bodies, canals, paths and cycleways, with priority given to those parts of the City where there is an identified existing lack of open space. The Council will seek to protect existing street trees and promote new planting, particularly where this can enhance green links in the urban area.
- 6.28. The provision of new, and improvements to the quality and accessibility of existing green infrastructure assets, to mitigate for any loss of green infrastructure.

- 6.29. The encouragement of green roofs, green walls, tree planting and other forms of green infrastructure to allow for the adaption to climate change in heavily urbanised areas. New green infrastructure provision should be an exemplar of best practice and innovation in terms of both its design and management.

## Assessment Methodology and Significance Criteria

- 6.30. This assessment has been carried out with reference to the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, 2013 (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.
- 6.31. A three-stage assessment process has been adopted. Firstly, the nature of receptors (sensitivity) has been assessed, and secondly, the nature of effects (magnitude) likely to result from the Proposed Development has been assessment. From this, the overall significance of the identified effects on receptors have been assessed.
- 6.32. 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 9.1 and 9.2 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.
- 6.33. Following discussions with the Council and given the sensitivities of the Site, it was advised that the baseline for the purposes of the assessment should be prior to any remediation works taking place, in order to assess 'worst-case scenario'.
- 6.34. The assessment of impacts is supplemented by a cumulative assessment of committed developments, in order to understand if any further potential significant environmental effects are likely to arise. Cumulative effects are defined as impacts that result from additional changes to the townscape or visual amenity caused by the Proposed Development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.
- 6.35. Desk based studies were carried out to collate and map baseline townscape information and carry out a review of policy and guidance to inform the assessment.
- 6.36. Potential viewpoints were initially identified through a process of desktop and onsite survey before being checked on site. Viewpoints were excluded where there was likely to be no significant impact beyond that which was already identified within the selected views.
- 6.37. Photographs for the selected viewpoints were taken by a professional photographer on the 26th February 2021.
- 6.38. In order to provide the most comprehensive, rounded and objective view of the Townscape and Visual Impacts of the Proposed Development, assessed effects have been agreed following round-table review by a team of individual assessors.

## Baseline Townscape Value

- 6.39. 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 6.1 below. However, the value attached to undesignated townscapes also needs to be assessed and this is considered in Table 6.2.
- 6.40. Table 6.1 sets out the relative importance of generic townscape designations and descriptions.

Table 6.1: 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, AONB, National Parks, Grade I and Grade II* Listed buildings or Registered Parks and Gardens. |

| Value  | Description                                                                                                                                                                                                                                                                                                                                                                             |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Medium | Sites, features or areas of local or regional importance with intact character such as Grade II* and Grade II Listed Buildings or Registered Parks and Gardens, Conservation Areas, Scheduled Monuments, local nature site, long distance recreational routes. Tree Preservation Orders (TPO) and local designations that exhibit wider geographic, cultural or townscape significance. |
| Low    | Areas or features of local importance such as Tree Preservation Orders (TPO), Public Right of Way (PROW) and locally listed buildings.                                                                                                                                                                                                                                                  |

- 6.41. 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 townscape, are set out in Table 6.2 below. The criteria are taken from the Planning Practice Guidance that supports the National Planning Policy Framework.

Table 6.2: 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 of 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.                                                                                                                                                                                                         |
| 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.                                                                                                                       |

- 6.42. An overall assessment of value has been made for each townscape receptors (refer to **Appendix 6.1**), based on an overview of the assessments made using each of the above criteria, in terms of high, medium and low value. The assessment of the value of a non-designated townscape is based on professional judgement. The assessment of a 'high' value would be given where a non-designated townscape is assessed as clearly displaying the criteria described above. A 'medium' assessment would be given where a non-designated townscape displays the criteria to a moderate extent, and an assessment of 'low' would be given where a non-designated townscape displays the above criteria to only a minor or negligible extent.

### Baseline Susceptibility of Townscape Receptors to Change

- 6.43. Susceptibility of townscape receptors to change has been assessed using the criteria identified in Table 6.3, with reference to the baseline conditions.

Table 6.3: Townscape Receptor Susceptibility to Change

| Susceptibility | Criteria                                                                        |
|----------------|---------------------------------------------------------------------------------|
| High           | Little ability to accommodate the Proposed Development without undue harm.      |
| Susceptibility | Criteria                                                                        |
| Low            | Substantial ability to accommodate the Proposed Development without undue harm. |

### Overall Sensitivity of Townscape Receptors

- 6.44. 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 6.1**.

### Criteria for Determining Sensitivity of Visual Receptors

#### Type of View and Number of Viewers

- 6.45. 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

- 6.46. 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.
- 6.47. The assessment of the value of views is summarised in Table 6.4 below, in terms of High, Medium and Low value. These criteria are provided for guidance only and are not intended to be absolute.

Table 6.4: Value Attached to Views

| Value         | Criteria                                                                                                                                                                                          |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>High</b>   | 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. |
| <b>Medium</b> | 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.      |
| <b>Low</b>    | 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

- 6.48. 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.

6.49. 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 6.5 as a starting point for the assessment.

Table 6.5: Visual Receptor Susceptibility to Change

| Susceptibility |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High           | <ul style="list-style-type: none"> <li>• 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;</li> <li>• Visitors to heritage assets or other attractions where views of the surroundings are an important part of the experience;</li> <li>• Communities where views contribute to the townscape setting enjoyed by residents; and,</li> <li>• Travellers on scenic routes.</li> </ul> |
| Medium         | <ul style="list-style-type: none"> <li>• Travellers on road, rail or other transport routes, where the view is moderately important to the quality of the journey; and,</li> <li>• Users of public space, where the view is a part of the wider experience of the place.</li> </ul>                                                                                                                                                                                                   |
| Low            | <ul style="list-style-type: none"> <li>• People at their place of work, where the setting is not important to the quality of working life;</li> <li>• Travellers on road, rail or other transport routes, where the view is fleeting and incidental to the journey; and,</li> <li>• People engaged in outdoor sport or recreation, or users of a public space, which does not involve appreciation of views.</li> </ul>                                                               |

6.50. 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

6.51. 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 in **Appendix 6.2**.

#### Predicted Townscape and Visual Impact Criteria

6.52. The predicted townscape and visual impacts of the Proposed Development are set out in **Appendix 6.1** and **Appendix 6.2** respectively.

#### Size and Scale of Effects

6.53. 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

6.54. The geographical extent of effects relates to:

- the area over which townscape effects are likely to be experienced, i.e. this could be at the Site level, the immediate locality, across a neighbourhood or across a series of neighbourhoods (city-wide);
- the area over which the changes are likely to be visible, i.e. viewpoint within the site, viewpoint within the immediate locality, viewpoint across/ through a neighbourhood or a vista or vantage point across neighbourhoods or the city skyline (city-wide).

## Duration/Reversibility

6.55. 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.

6.56. 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.

## Magnitude of Townscape Effects

6.57. The magnitude of a townscape effect 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 townscape element.

6.58. 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.

Table 6.6: Magnitude of Townscape Effects

| Category                                 | Criteria                                                                                                                                                                                                                                                                                                          |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Major adverse townscape effect</b>    | The proposals will result in a total change in the key characteristics of townscape character; will introduce elements totally uncharacteristic to the attributes of the receiving townscape; and/or will result in a substantial or total loss, alteration or addition of key elements/features/characteristics. |
| <b>Moderate adverse townscape effect</b> | 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.            |
| <b>Minor adverse townscape effect</b>    | The proposals will result in a small change in the key characteristics of townscape 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.               |

| Category                                   | Criteria                                                                                                                                                                                         |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Negligible adverse townscape effect</b> | The proposals will result in a just discernible change to townscape character/elements/features/characteristics.                                                                                 |
| <b>Negligible townscape benefit</b>        | The proposals will result in a just discernible improvement to the townscape character/elements/features/characteristics.                                                                        |
| <b>Minor townscape benefit</b>             | 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.         |
| <b>Moderate townscape benefit</b>          | 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.                   |
| <b>Major townscape benefit</b>             | 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. |
| <b>No Change</b>                           | The proposals will not cause any change to the townscape character/ elements/ features/ characteristics.                                                                                         |

### Magnitude of Visual Effects

- 6.59. The magnitude of a visual effect 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.
- 6.60. 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.
- 6.61. The criteria identified in Table 6.7 are used to assess the magnitude of visual effects, based on the degree of change to the view or composition.

Table 6.7: Visual Effects - Magnitude

| Category                                              | Criteria                                                                                                                                                                                                                                           |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Major adverse or beneficial visual effect</b>      | 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.                                 |
| <b>Moderate adverse or beneficial visual effect</b>   | 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. |
| <b>Minor adverse or beneficial visual effect</b>      | 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.                                                                                      |
| <b>Negligible adverse or beneficial visual effect</b> | 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.                                                                                              |
| <b>No change</b>                                      | The proposals will cause no change to the view.                                                                                                                                                                                                    |

### Nature of Effects

- 6.62. The nature of effects may be positive or negative (beneficial or adverse), or neutral. Neutral effects recognise that there will be a change to the receptors, however this change is in keeping with the existing characteristics of the receptor.

- 6.63. Effects may also be direct or indirect. Direct effects are those that result directly from a development itself, whereas indirect effects may arise as a consequential change resulting from development.

### Significance of Effects

- 6.64. The scale shown in Table 6.8 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 6.8: Assessment of Townscape or Visual Significance

| Sensitivity of Receptor | Magnitude of Effect    |                        |                        |                    |                   |
|-------------------------|------------------------|------------------------|------------------------|--------------------|-------------------|
|                         | Large Effect           | Medium Effect          | Small Effect           | Negligible Effect  | Neutral/No Change |
| High                    | Significant            | Moderately Significant | Moderately Significant | Minor Significance | Not Significant   |
| Medium                  | Moderately Significant | Moderately Significant | Minor Significance     | Not Significant    | Not Significant   |
| Low                     | Moderately Significant | Minor Significance     | Not Significant        | Not Significant    | Not Significant   |

- 6.65. The table has regard to guidance in the Guidelines for Landscape and Visual Impact Assessment, Third Edition, 2013, at paragraph 5.56, page 92 (significance of landscape effects) and paragraph 6.44, page 116 (significance of visual effects). This matrix is used as a guide to determine significance, along with professional judgement.
- 6.66. For the purposes of this Townscape and Visual Impact Assessment, only effects deemed Moderately Significant and Significant are considered to be Significant in the meaning of EIA Regulations (2017).

### Consultation

- 6.67. The principal viewpoints were identified through a process of desktop study and on-site survey, and were then agreed with Local Planning Authority officers through pre-application discussions as part of the scoping exercise. As a result of the consultation process, an additional view (viewpoint 7) was added at the end of Millwright Street where it joins the Site. The email request was received from MCC Planning on 11th December 2020. this approach was subsequently agreed and confirmed by MCC via the formal EIA scoping opinion (dated 9 April 2021 – included at Appendix 2.1). For further details please refer to **Appendix 2.1**.
- 6.68. Following discussions with the Council in December 2021, and given the sensitivities of the Site, it was advised that the baseline for the purposes of the assessment should be prior to any remediation works taking place, in order to assess 'worst-case scenario'.

### Baseline Conditions

#### Site Location

- 6.69. The location of the Site is presented in **Figure 6.1**, in **Appendix 6.3**. The Site is located on the boundary of Miles Platting and Newton Heath, within a residential area approximately 390m from the Newton Heath and Moston Metrolink stop and 480m from the Central Park metrolink stop. The local centre of Newton Heath on Old Church Street lies approximately 200m to the east of the site.
- 6.70. The Site abuts the Rochdale Canal between locks 69 and 74 to the northern edge, with locks 70-73 adjoining the site; to the west the Site abuts Ten Acres Lane and the Ten Acres Lane Sports Complex, as well as residential

properties at Makkah Close; Mitchell Street adjoins the eastern boundary; a residential area and Briscoe Lane Academy abut the southern edge of the Site.

- 6.71. To the west lies an industrial area composed of a mixture of post-industrial vacant land, and active light industrial uses.
- 6.72. Heritage designations and the historical development of the Site are illustrated in **Figures 6.2 and 6.3 of Appendix 6.3**.

### Site and Surrounding Character

- 6.73. Site character is illustrated in **Figures 6.5-6.11 in Appendix 6.3**. The Site is heavily vegetated through natural succession/self-seeding following the closure of the brickworks and the intervening decades of vacant use. This vegetation has become well-established and creates a prominent natural character which can be experienced from a number of short-range viewpoints locally. This has a varied influence upon the streets and spaces surrounding the Site, with both glimpsed and direct views of established trees and vegetation.
- 6.74. The Site is enclosed on all sides by built form. The surrounding mixed character of fine urban grain residential and coarse urban grain industrial defines the local area of Newton Heath and Miles Platting, though the surrounding residential character and that of the Rochdale Canal corridor most strongly influence the site.
- 6.75. The Rochdale Canal is a public right of way and forms part of National Cycle Network Route 66. It has been confirmed as Bee Network Infrastructure proposed for canal towpath widening in the coming years.
- 6.76. The Site contributes positively to the 'green' character of the canal corridor. A Tree Survey was carried out as part of this application, which recorded 14 category B trees along this boundary. The majority of tree groups within the Site are Category C 'low value' trees.
- 6.77. Due to the contaminated nature of the Site, it will need to be extensively remediated prior to development and an application for a remediation strategy has been given consent. Remediation works will require removal of all vegetation from the Site, which will change the existing character and existing views of the Site considerably. For the purposes of this assessment, it is assumed that no remediation works have taken place.
- 6.78. The residential areas surrounding the Site are broadly characterised by a 2-storey height datum, with a handful of predominantly former industrial buildings reaching above this. To the south of the Site, high-rise residential towers at Dobson Court are increasing the height datum of the wider area.
- 6.79. Whilst the surrounding area has little variation in topography, the Site sits at a low point within its wider topographical context. Its location in close proximity to the River Medlock mean it sits within the dip of the valley, as ground levels fall towards the river.
- 6.80. There are no environmental designations covering the Site. There is no designated public open space within the Site.

### Site Visibility and Views

- 6.81. Key views are illustrated in **Figures 6.1 and 6.2 of Appendix 6.4**. The Site is well enclosed by proximate built form on all sides, and in combination with little topographical variation locally, the Site is therefore relatively well contained and concealed and only subject to localised short-range views, with few long and mid-range views possible. There are no prominent publicly accessible elevated vantage points from which the Site is visible in surrounding residential areas or public spaces. The Site may be visible from privately owned taller buildings in the vicinity.
- 6.82. The Site is visually exposed along its northern border to views from the Rochdale Canal corridor and its adjoining residential streets and spaces.
- 6.83. The upper canopy of the Site is visible from the residential area to the north of the Rochdale Canal, and is experienced as glimpsed views from surrounding streets, including the A62/Oldham Road. The heavily vegetated Site creates a greater impression upon spaces with greater proximity to the Rochdale Canal.
- 6.84. Views towards the interior of the Site are possible with varying degrees of openness along this edge, which are characterised by layered clusters of vegetation and tree canopy. This green character is experienced along the

length of the canal towpath from Ten Acres Lane bridge to Old Church Street bridge. These views of the Site are also possible from atop the bridge approaching the local centre of Newton Heath.

- 6.85. Glimpsed views of the upper canopy of the Site are possible from the east, and the Site is visible along Millwright Street.
- 6.86. The Site is visible from the south, where on-Site vegetation forms a backdrop to the existing townscape, being visible above the roof line and between built forms. The green character of the Site terminates the view along Hallam Street, and characterises the view along Mitchell Street.
- 6.87. To the west the Site is visible at various points along Ten Acres Lane, including semi-open views across Ten Acres Lane Sports Complex. Tree canopies terminate the view along Makkah Close. The Site boundary abutting Ten Acres Lane is characterised by unmanaged vegetation, which also provides fleeting and incidental views from the canal bridge for travellers moving south.

## Site History

- 6.88. Site history is illustrated in **Figure 6.3** in **Appendix 6.3**. The site's historic land-use is dominated by two former brickworks originating in the second half of the 19th century. Associated with the brickworks were two large areas of clay extraction. There was also a rectangular reservoir alongside the canal of uncertain purpose. A rapid study of historic mapping indicates that a strip of land may have survived undisturbed between the clay quarries. This land has the potential to provide evidence for the character of the original Newton Heath. The Site has not been redeveloped since the abandonment of the brickworks and some foundations are still apparent on recent aerial photographs.

## Site Use

- 6.89. Site character is illustrated in **Figure 6.11** of **Appendix 6.3**. Due to the exposed edges and lack of active management of the Site for several decades, there is a precedent of unregulated informal access to the Site over time. There is on-site evidence of the Site being used informally for recreational uses locally, including a network of footpaths crossing the site, dog fouling, extensive littering, and evidence of fires. It can be concluded that the Site provides an informal amenity locally, but that the quality of this provision is extremely poor. The lack of overlooking or activation of the Site creates an unsafe environment and attracts antisocial behaviour, including arson evidenced by several burnt-out vehicles on the Site. There is a lack of facilities or formal infrastructure for the enjoyment of the space, and access is taken via poor quality entrances including gaps cut into fencing.

## Identification and Evaluation of Significant Effects

### Potential Construction Phase Effects

- 6.90. A detailed assessment of the significant construction phase effects for landscape and views is set out in **Appendices 6.1** and **6.2**.
- 6.91. Sources of townscape and visual construction effects include:
- Site setup and Site compound (visual effects).
  - Site/boundary fencing (visual effects).
  - Site clearance, removal and disposal of existing trees, vegetation and scrub as defined within the proposals (landscape and visual effects).
  - Ground Works including Site remediation, levelling & preparation (topography – townscape effects, and visual effects).
  - Highways alterations, Site access taken from Ten Acres Lane (movement and linkages – townscape effects).
  - Contractor parking, plant and equipment (visual effects).

## Potential Operational Phase Townscape Effects

- 6.92. The components of the townscape which may potentially be affected by the Proposed Development are known as the townscape receptors. These include the characteristics and character of the townscape, and the character and quality (or special qualities) of designated areas.
- 6.93. Likely townscape effects have been identified with reference to interactions between the Proposed Development and townscape receptors. The likely significant effects (highlighted below) are assessed in more detail in **Appendix 6.1**.

Table 6.9: Potential Townscape Effects

| Townscape Element                                  | Construction                                                                                                                  | Operation                                                                                                                     |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>Townscape Character</b>                         | Direct effect/neighbourhood-wide extent of effect within the 'Central Park' character area, as defined within the local plan. | Direct effect/neighbourhood-wide extent of effect within the 'Central Park' character area, as defined within the local plan. |
| <b>Urban Grain</b>                                 | Direct effect/neighbourhood-wide extent of effect within the 'Central Park' character area, as defined within the local plan. | Direct effect/neighbourhood-wide extent of effect within the 'Central Park' character area, as defined within the local plan. |
| <b>Land Use</b>                                    | Direct effect/neighbourhood-wide extent of effect within the 'Central Park' character area, as defined within the local plan. | Direct effect/neighbourhood-wide extent of effect within the 'Central Park' character area, as defined within the local plan. |
| <b>Building Heights</b>                            | Direct effect/neighbourhood-wide extent of effect within the 'Central Park' character area, as defined within the local plan. | Direct effect/neighbourhood-wide extent of effect within the 'Central Park' character area, as defined within the local plan. |
| <b>Movement and Linkages</b>                       | Direct effect/neighbourhood-wide extent of effect within the 'Central Park' character area, as defined within the local plan. | Direct effect/neighbourhood-wide extent of effect within the 'Central Park' character area, as defined within the local plan. |
| <b>Environmental Designations and Public Space</b> | Direct effect/neighbourhood-wide extent of effect within the 'Central Park' character area, as defined within the local plan. | Direct effect/neighbourhood-wide extent of effect within the 'Central Park' character area, as defined within the local plan. |
| <b>Site/Landscape Character</b>                    | Direct effect/local-level extent of effect.                                                                                   | Direct effect/site-level extent of effect.                                                                                    |

## Potential Operational Phase Visual Effects

- 6.94. Likely visual effects have been identified with reference to interactions between the Proposed Development and visual receptors. The potential significant effects (highlighted below) are assessed in more detail in **Appendix 6.2**.

Table 6.10: Potential Visual Receptors

| Viewpoint Location and No.                                                                  | Construction                                                                                                                                                                                                                                                         | Operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. View west along the Rochdale Canal from the footpath of Old Church Street bridge.</b> | The extent of construction works at the slightly elevated position of the view is likely to cause a partial change to the view which will alter its composition with new structures. There will be some minor loss of legibility to the canalside edge and movement. | Although development fronting the canal is not uncharacteristic within the view, existing trees along the canal edge/northern Site edge contribute positively to defining the character of the view. Partial views of new development will be available along the canal and above the ridgeline of existing development. Loss of trees will detract from the view. The adverse effects have the potential to reduce to 'minor' over time as the new trees and planting matures. |

| Viewpoint Location and No.                                                                                             | Construction                                                                                                                                                                                                                                                 | Operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2. View west along the Rochdale Canal from the Rochdale Canal footbridge.</b>                                       | The extent of construction works at the elevated position of the view is likely to cause a change to the view which will alter its composition with new structures. There will be some loss of legibility to the canalside edge and movement.                | New development will feature prominently in the foreground of the view. The character of the view will change substantially as a result of the loss of trees along the canal edge resulting in an adverse change. The set back of development from the canal edge and integration of new landscape along the development frontage will reduce the overall magnitude of effect. The adverse effects will potentially reduce to 'minor' over time as the new trees and planting matures.                                                                                 |
| <b>3. View south along Benville Walk from the area of housing to the north of lock 70 on the Rochdale Canal.</b>       | The extent of construction works at this position of the view is likely to cause a change to the view which will alter its composition with new structures. There will be some loss of legibility to the canalside edge and terminus of the viewpoint.       | New development will form a high quality new built element within the view which will aid legibility. Loss of existing trees will detract from the view, resulting in a 'neutral' effect overall. There is potential for the view to be 'small beneficial' in nature over time as new planting along the canalside matures.                                                                                                                                                                                                                                            |
| <b>4. View south from Oldham Road footpath in front of Church of St Wilfrid and St Ann.</b>                            | The extent of construction works at this position of the view is likely to cause a partial change to the view which will alter its composition with new structures.                                                                                          | The overall character of the view will be largely unchanged. The Proposed Development will form a high quality built element to the view.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>5. View south from Hapsford Walk within the area of housing to the north of the Rochdale Canal.</b>                 | Clear, open views of the construction works along the canalside edge. The phased approach to construction will reduce the potential overall effects.                                                                                                         | The open space in the foreground of the view will be retained. The new development will form a clear change in the character in the backdrop of the view. New development will form a high-quality new built element within the view. However, the loss of existing mature trees along the canal edge will detract from the view. The overall nature of the effect will therefore be adverse. The nature of the effects has the potential to reduce over time as the new landscape along the canal edge matures and embeds the development into the canalside setting. |
| <b>6. View south east from Central Park Tram Stop.</b>                                                                 | Obstructed views of the construction works from the tram stop edge, only partial sight of any work including cranes and machinery.                                                                                                                           | Rooflines may be visible in the middle distance, though existing structures obscure most of the Site. The overall character of the view will be unchanged.                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>7. View south along Ten Acres Lane from the bridge crossing the Rochdale Canal.</b>                                 | Construction works will cause a perceptible change to the view which will alter the views composition. The construction views will be experienced at close-range and are uncharacteristic within the existing view, resulting in a temporary adverse effect. | The Proposed Development will form a new component in the view which will mark a key nodal point along Ten Acres Lane for people travelling across the bridge. The existing character of the view along the Lane will be retained. High quality architectural design along with embedded mitigation will result in a positive addition to the view.                                                                                                                                                                                                                    |
| <b>8. View east along the Rochdale Canal towpath/National Cycle Network Route 66/Bee Network: Beeway from lock 74.</b> | Negligible change in view due to tree screening in the foreground of the view, and visual screening provided by the road bridge. The effects are not considered significant.                                                                                 | The change in view is minimal due to tree screening in the foreground, and visual screening provided by the road bridge. The character of the view is already urbanised with partial views of other development a similar distance away on the other side of the bridge. Views are likely to be reduced when intervening trees are in leaf. There is                                                                                                                                                                                                                   |

| Viewpoint Location and No.                                                             | Construction                                                                                                                                                                                                                                                                                        | Operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                        |                                                                                                                                                                                                                                                                                                     | currently little to orientate people along this route and the development would form a subtle 'marker' denoting Ten Acres Lane and signifying the approach to Newton Heath town centre and the community facilities within the Site, therefore improving the legibility of the townscape.                                                                                                                                                                                                                                           |
| <b>9. View east along Makkah Close.</b>                                                | The extent of construction works at this position of the view is likely to cause a minor change in the backdrop of the view. The foreground and overall character of the view will be unchanged. The loss of trees along the canal edge will be noticeable, resulting in an overall adverse effect. | The development will form a new, high quality built element within the view, and will enhance the overall quality of the built development within the view. New tree planting will potentially increase the beneficial effects of the Proposed Development over time as it matures, by helping to embed the development into the landscape setting.                                                                                                                                                                                 |
| <b>10. View north along Ten Acres Lane.</b>                                            | Construction works will form a new component within the view.                                                                                                                                                                                                                                       | A minor, noticeable change to the view as a result of partial views of new high quality development. New landscape will help to embed the proposals within the landscape. The positive effects have the potential to increase over time as the landscape matures.                                                                                                                                                                                                                                                                   |
| <b>11. View north-east along Ten Acres Lane towards Ten Acres Lane Sports Complex.</b> | Very minor change in the character of the view due to existing trees along the boundary within the Ten Acres Lane Sports Complex.                                                                                                                                                                   | Minor change in the view, with new structures partially screened within the background of the view. The overall character of the view will be unchanged.                                                                                                                                                                                                                                                                                                                                                                            |
| <b>12. View north along Hallam Road from the footpath of Briscoe Lane.</b>             | The removal of existing trees will form a noticeable change in the character of the view. Partial views of construction works will form a new component within the view.                                                                                                                            | The Proposed Development will form a noticeable change in the backdrop to the view. New high quality development will be partially visible along with the, however the loss of existing mature trees will detract from the view. There is potential for beneficial effects in the long-term when new proposed planting matures.                                                                                                                                                                                                     |
| <b>13. View north along Mitchell Street.</b>                                           | The construction works will form a noticeable addition to the view. The full extent of construction works will largely be screened from this viewpoint location.                                                                                                                                    | Small change in the character of the view due to the addition of high quality new development and landscape treatment.                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>14. View west along Millwright Street</b>                                           | Change in the character of the view due to loss of existing mature trees and partial, close-range views of construction works.                                                                                                                                                                      | Moderate change in the character of the view due to removal of trees and the introduction of new, high quality development. The proposed layout will allow views to permeate into the Site. The proposed new development will appear larger than the existing small-scale residential development in the foreground of the view. The loss of existing mature trees will be particularly noticeable from this viewpoint. Glimpsed views of new landscape will potentially reduce adverse effects to 'minor' over time as it matures. |
| <b>15. View north east from footpath within Philip's Park Cemetery</b>                 | No change to view as a result of the proposed construction works.                                                                                                                                                                                                                                   | No change to view as a result of the Proposed Development                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## Mitigation Measures

- 6.95. Primary mitigation includes modifications to the location or design of the Proposed Development or measures specifically included in the design of the Proposed Development to mitigate a known issue and are therefore 'embedded' into the proposals. The embedded mitigation of relevance to townscape and views is set out below:
- Terraced houses, characteristic of the local area front on to Ten Acres Lane, creating an attractive, safe and active arrival space.
  - Homes are oriented to enjoy good views over the canal.
  - A variety of typologies allow variation and interest in the built form and roofscape along the canal.
  - Apartments are set back from the canal edge allowing for a landscape buffer of planting.
  - Mews streets and parking courts are located to the rear of the canal-side to encourage a safe and attractive environment for pedestrians and cyclists.
  - Larger terraced town houses overlook the canal, with front doors and living rooms fronting onto the canal to create a safe and welcoming environment.
  - Town-houses face the key bridge connection, creating a welcoming edge to the space and improving safety.
  - Tree and shrub planting will create a landscape buffer along the edge of the development, helping to screen and soften buildings, and creating a clear distinction between public and private spaces.
  - Front gardens and shared green spaces will be planted along the canal edge to create habitats and encourage biodiversity, to support the canal's role as a nature corridor.
  - Landscape design along the canal edge seeks to retain the natural character of this important movement and nature corridor, creating an attractive and vibrant place to move through or dwell. Jackson's community park is located at the centre of the site, serving as a community focus and heart to the new neighbourhood and wider community.
- 6.96. There are no additional mitigation measures proposed in relation to townscape and views in addition to embedded primary mitigation measures.

## Cumulative Effects

- 6.97. A total of 7 additional committed developments have been considered following consultation with the Council. The locations are highlighted in **Appendix 2.2**.
- 6.98. Of the cumulative schemes assessed, 3 are to be developed within the Central Park townscape character area containing the Site, as defined within the Local Plan, namely:
- 123295/FO/2019 - Former Workshop, Arkady Industrial Estate, Briscoe Lane Manchester M40 2XG. Erection of a light industrial and storage/distribution building (Sui Generis) (3251 sqm) with associated car parking and boundary treatment.
  - 128133/FO/2020 - 497 Oldham Road Manchester M40 5AA. Erection of single storey building to form light industrial and distribution unit.
  - 127629/FO/2020 - Land to the South West Of Moston Vale, Manchester. Erection of battery energy storage facility.
  - 129444/FO/2021 – Former Mather and Platt Foundry, Grimshw Lane, M40 2BA. Demolition of existing building and erection of 12 No. industrial units, associate landscape and car parking.

- 6.99. The 4 identified schemes within the Central Park character area industrial in nature, and therefore different in terms of impact on townscape character to the remediation works proposed for the Site. There are therefore not predicted to be any cumulative townscape impacts on townscape character.
- 6.100. Due to the overall visibility of the Site being restricted by surrounding built form, tree cover and relatively flat topography, the key viewpoints identified for assessment are predominantly close or medium-range views (refer to **Figures 6.1 and 6.2** in **Appendix 6.4**). The long-range view from Philips Park Cemetery does not allow views of the Site in conjunction with any of the other identified committed developments. Therefore, there are not predicted to be any viewpoints which will allow views of the Site in conjunction with any of the other cumulative schemes. There are therefore not predicted to be any cumulative visual effects.

## Residual Effects

- 6.101. There are no additional mitigation measures proposed in relation to townscape and views in addition to embedded mitigation measures. Therefore, residual townscape effects are the same as the potential effects and are described below.
- 6.102. For the purposes of this Townscape and Visual Impact Assessment, only effects deemed Moderately Significant and Significant are considered to be Significant in the meaning of EIA Regulations (2017).
- 6.103. A detailed assessment of effects is contained within **Appendix 6.1** and **Appendix 6.2**.
- 6.104. Due to the poor quality and under-use of the existing Site, there are not predicted to be any significant townscape effects during the construction phase.
- 6.105. There are predicted to be temporary significant adverse visual effects during the construction phase on views 1, 2 and 5.
- 6.106. There are predicted to be significant beneficial effects on townscape character, urban grain, land use building heights, movement and linkages and Site character during the operational phase.
- 6.107. There are predicted to be significant adverse effects on views 1, 2 and 5 during the operational phase. This is due to the loss of trees along the canalside which form a key component and define the character of the view. The adverse visual effects are predicted to reduce to 'minor' adverse effects which are not significant over time, as the new proposed trees and planting matures.

Table 6.11: Summary of Receptors, Likely Significant Effects, Mitigation Measures and Residual Effects

| Receptor(s)                     | Likely Significant Effects | Mitigation Measures | Residual Effects                        |
|---------------------------------|----------------------------|---------------------|-----------------------------------------|
| <b>Construction - temporary</b> |                            |                     |                                         |
| Townscape Character             | Small Adverse              | N/A                 | Small Adverse. Minor significance       |
| Urban Grain                     | Negligible Beneficial      | N/A                 | Negligible Beneficial. Not significant. |
| Land Use                        | Small Neutral              | N/A                 | Small Neutral. Minor significance       |
| Building Heights                | Negligible Beneficial      | N/A                 | Negligible Beneficial. Not significant. |
| Topography and Site Levels      | Negligible Neutral         |                     | Negligible Neutral. Not significant.    |
| Movement and Linkages           | Small Adverse              | N/A                 | Small Adverse. Minor significance       |

| Receptor(s)                                      | Likely Significant Effects | Mitigation Measures | Residual Effects                          |
|--------------------------------------------------|----------------------------|---------------------|-------------------------------------------|
| Public Open Space and Environmental Designations | Small Adverse              | N/A                 | Negligible Adverse. Not significant.      |
| Site Character                                   | Small Adverse              | N/A                 | Small Adverse. Not significant.           |
| Viewpoint 1                                      | Medium Adverse             | N/A                 | Medium Adverse. Moderately Significant    |
| Viewpoint 2                                      | Large Adverse              | N/A                 | Large Adverse. Moderately Significant     |
| Viewpoint 3                                      | Small Adverse              | N/A                 | Small Adverse. Minor significance.        |
| Viewpoint 4                                      | Negligible Adverse         | N/A                 | Negligible Adverse. Not Significant       |
| Viewpoint 5                                      | Medium Adverse             | N/A                 | Medium Adverse. Moderately Significant    |
| Viewpoint 6                                      | Negligible Adverse         | N/A                 | Negligible Adverse. Not Significant       |
| Viewpoint 7                                      | Medium Adverse             | N/A                 | Medium Adverse. Minor Significance        |
| Viewpoint 8                                      | Negligible Adverse         | N/A                 | Negligible Adverse. Minor Significance    |
| Viewpoint 9                                      | Small Adverse              | N/A                 | Small Adverse. Minor significance.        |
| Viewpoint 10                                     | Small Adverse              | N/A                 | Small Adverse. Not Significant            |
| Viewpoint 11                                     | Negligible Adverse         | N/A                 | Negligible Adverse. Not Significant       |
| Viewpoint 12                                     | Small Adverse              | N/A                 | Small Adverse. Not Significant            |
| Viewpoint 13                                     | Small Adverse              | N/A                 | Small Adverse. Not Significant            |
| Viewpoint 14                                     | Medium Adverse             | N/A                 | Medium Adverse. Minor Significance        |
| Viewpoint 15                                     | No Change                  | N/A                 | No Change                                 |
| <b>Operational</b>                               |                            |                     |                                           |
| Townscape Character                              | Medium Beneficial          | N/A                 | Medium Beneficial. Moderately significant |
| Urban Grain                                      | Medium Beneficial          | N/A                 | Medium Beneficial. Moderately significant |
| Land Use                                         | Medium Beneficial          | N/A                 | Medium Beneficial. Moderately significant |

| Receptor(s)                                      | Likely Significant Effects | Mitigation Measures | Residual Effects                          |
|--------------------------------------------------|----------------------------|---------------------|-------------------------------------------|
| Building Heights                                 | Medium Beneficial          | N/A                 | Medium Beneficial. Moderately significant |
| Topography and Site Levels                       | Small Beneficial           |                     | Small Beneficial. Not significant         |
| Movement and Linkages                            | Medium Beneficial          | N/A                 | Medium Beneficial. Moderately significant |
| Public Open Space and Environmental Designations | Small Beneficial           | N/A                 | Small Beneficial. Minor significance      |
| Site Character                                   | Large Beneficial           | N/A                 | Large Beneficial. Moderately significant. |
| Viewpoint 1                                      | Medium Adverse             | N/A                 | Medium Adverse. Moderately Significance.  |
| Viewpoint 2                                      | Medium Adverse             | N/A                 | Medium Adverse. Moderately Significant.   |
| Viewpoint 3                                      | Small Neutral              | N/A                 | Small Neutral. Minor Significance         |
| Viewpoint 4                                      | Small Beneficial           | N/A                 | Small Beneficial. Not Significant         |
| Viewpoint 5                                      | Medium Adverse             | N/A                 | Medium Adverse. Moderately Significant.   |
| Viewpoint 6                                      | Negligible Neutral         | N/A                 | Negligible Neutral. Not Significant       |
| Viewpoint 7                                      | Medium Beneficial          | N/A                 | Medium Beneficial. Minor Significance     |
| Viewpoint 8                                      | Small Beneficial           | N/A                 | Small Beneficial. Minor Significance      |
| Viewpoint 9                                      | Small Beneficial           | N/A                 | Small Beneficial. Minor Significance      |
| Viewpoint 10                                     | Small Beneficial           | N/A                 | Small Beneficial. Not Significant         |
| Viewpoint 11                                     | Negligible Beneficial      | N/A                 | Negligible Beneficial. Not Significant    |
| Viewpoint 12                                     | Small Neutral              | N/A                 | Small Neutral. Not Significant            |
| Viewpoint 13                                     | Small Beneficial           | N/A                 | Small Beneficial. Not Significant         |
| Viewpoint 14                                     | Medium Adverse             | N/A                 | Medium Adverse. Minor Significance        |
| Viewpoint 15                                     | No Change                  | N/A                 | No Change. Not Significant                |

## Reference List

6.108. This ES Chapter has been prepared by reference to the following:

- NPPF. Available at <https://www.gov.uk/government/publications/national-planning-policy-framework--2>. [Access: 13.01.22]
- NPPG <https://www.gov.uk/government/collections/planning-practice-guidance> [Access: 13.01.22]
- Manchester City Council Core Strategy  
[https://secure.manchester.gov.uk/info/200074/planning/3301/core\\_strategy](https://secure.manchester.gov.uk/info/200074/planning/3301/core_strategy) [Access: 13.01.22]
- European Landscape Convention (ELC) (2000) <https://www.coe.int/en/web/landscape> [Access: 13.01.22]
- Guidelines for Landscape and Visual Impact Assessment, Third Edition. Landscape Institute, Institute of Environmental Management and Assessment.
- Visual Representation of Development Proposals. Landscape Institute Technical Guidance Note 06/09. 17<sup>th</sup> September 2019.

# 7. Traffic and Transport

## Introduction

- 7.1. This Chapter of the ES has been prepared by Vectos and assesses the likely Traffic and Transport impacts of the Proposed Development upon the Site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.
- 7.2. This Chapter is accompanied by one technical appendix, a Transport Assessment (**Appendix 7.1**). A Framework Travel Plan prepared by Vectos has also been submitted as part of this Application.
- 7.3. The authors of the chapter (Oliver McLaughlin and James Whitton) have extensive experience in preparing Traffic and Transport Chapters for EIA developments and regularly provide input to Environmental Impact Assessments focussing specifically on traffic and transport. Oliver McLaughlin BSc (Hons), MSc, MCIHT has over 9 years of Transport Planning experience and frequently prepares the Traffic and Transport Chapters of Environmental Impact Assessments. James Whitton BSc (Hons), MCIHT has over 10 years of Transport Planning experience and also has extensive experience of assessing the impact of traffic on the environment.

## Limitations and Assumptions

- 7.4. The assessment undertaken in this Chapter is based on design information available at the time of assessment.
- 7.5. As the scoping discussions and initial assessment work were undertaken during the peak of the Covid-19 pandemic, undertaking traffic surveys was not acceptable to Transport for Greater Manchester (TfGM) as traffic patterns were clearly significantly disrupted and surveys would not provide a realistic representation of traffic movement post-pandemic.
- 7.6. After submitting evidence from the Department for Transport (DfT) traffic collection points in the surrounding area, which demonstrated no discernible traffic growth along the A62 corridor over the preceding decade, TfGM agreed that the traffic counts undertaken in 2010 to support a previous residential and commercial application on Site would be acceptable to use.
- 7.7. No other limitations or difficulties have been identified.

## Legislative and Policy Context

- 7.8. The following transport policy and guidance has been considered in the preparation of this Chapter:
- The National Planning Policy Framework
  - Transport for the North Strategic Transport Plan
  - Manchester Core Strategy
  - Guide to Development in Manchester SPD & Planning Guidance
  - Places for Everyone
  - Greater Manchester Transport Strategy 2040
  - Manchester Residential Quality Guidance

## Legislation

- 7.9. There is currently no specific legislation relating to the assessment of traffic and transport in an ES.

## National Planning Policy

### National Planning Policy Framework (2021)

- 7.10. The current National Planning Policy Framework (NPPF) was published in July 2021 and sets out the government's planning policies for England and how these are expected to be applied. This revised Framework replaces the previous NPPF published in March 2012 and revised in July 2018 and February 2019. At the heart of the Framework is a presumption in favour of sustainable development.
- 7.11. As part of promoting sustainable transport, paragraph 110 of the revised NPPF states that in assessing applications for development, it should be ensured that:
- a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;
  - b) safe and suitable access to the Site can be achieved for all users;
  - c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and
  - d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.
- 7.12. Paragraph 111 goes on to state 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".

### Transport for the North (TfN) Strategic Transport Plan

- 7.13. TfN is the voice of the North of England for transport – a statutory body of elected leaders and a partnership of business leaders from across the whole of the North of England who collectively represent all of the region's 15 million citizens. TfN's vision is of "a thriving North of England, where world class transport supports sustainable economic growth, excellent quality of life and improved opportunities for all."
- 7.14. Supporting this vision are four pan-Northern transport objectives, which have informed the development of the Strategic Transport Plan and TfN's work programmes:
- Transforming economic performance.
  - Increasing efficiency, reliability, integration, and resilience in the transport system.
  - Improving inclusivity, health, and access to opportunities for all.
  - Promoting and enhancing the built, historic, and natural environment.
- 7.15. Five work programmes have been identified in the Strategic Transport Plan that will transform the North's transport network. These are:
- Local and sustainable transport;
  - Integrated and smart travel;
  - Strategic Rail Strategy (HS2; NPR);
  - Major Road Network for the North;
  - Connecting Strategic Development Corridors.
- 7.16. TfN's Investment Programme sets out a programme of infrastructure investment across the various modes of transport and over the short, medium- and long-term timescales. The bulk of interventions are rail-focused although some strategic highway schemes have been identified.

## Local Planning Policy

### Manchester Core Strategy (2012-2027)

- 7.17. The Core Strategy forms the key document in Manchester's Local Development Framework and was adopted in 2012. It sets out a number of strategic policies that will guide development within Manchester. Policy SP1 sets out the spatial principles that will guide development to 2027. One of these principles is as follows:

'New development will maximise the potential of the City's transport infrastructure, in particular promoting walking, cycling and the use of public transport.'

- 7.18. In addition, the policy goes on to state that developments in all parts of the Manchester should 'improve access to jobs, services and education and open space by being located to reduce the need to travel and provide good access to sustainable transport provision'.
- 7.19. This is reinforced through policy DM 1 of the Core Strategy, which concerns development management. This states that all developments should have regard to specific issues including the access to new development by sustainable transport modes, vehicular access and car parking.
- 7.20. The Core Strategy contains three specific policies that relate to transport that have been considered as part of this planning application. These are as follows:

#### Policy T1 – Sustainable Transport

'To deliver a sustainable high quality, integrated transport system to encourage modal shift away from car travel to public transport, cycling and walking...the Council will support proposals that:

- Improve choice by developing alternatives to the car;
- Promote regeneration and economic vitality by relieving traffic congestion and improving access to jobs and services;
- Improve access to transport services and facilities in order to enable people with mobility impairments to participate fully in public life;
- Improve the pedestrian environment and Manchester's cycle network;
- Contribute to improvements to the extent and reliability of the public transport network;
- Improve and development appropriate road, rail and water freight transport routes;
- Facilitate transport that reduces carbon emissions ie. electric charging points;
- Would reduce congestion, pollution and road traffic accidents;
- Accounts for the needs of road users.'

#### Policy T2 – Accessible areas of opportunity and Need

'The Council will actively manage the pattern of development to ensure that new development:

- Is located to ensure good access to the cities main economic drivers;
- Is easily accessible by sustainable modes and provides residents access to strategic employment sites;
- All new development should provide appropriate car parking facilities, taking account of the guidance which reflects policy in the Regional Strategy (RS).'

### Policy T3 – Strategic Integration

'The Council will support proposals that contribute to an economically and environmentally sustainable transport network...'

- 7.21. The development proposals are in line with these policy objectives, ensuring that the Site will be accessible to all users by a range of different transport modes.

### **Guide to Development in Manchester SPD & Planning Guidance**

- 7.22. This document brings together the development principles that applies to new developments in Manchester. Key information has been extracted from this document, that has been considered within the planning process, regarding transport.

- 7.23. Paragraph 2.22 of the document states that:

'In order to reduce reliance on the car, residents and workers should be within easy walking distance of facilities such as clinics, corner shops, newsagents and public transport.'

- 7.24. Paragraph 2.27 of the document states:

'The implementation of a range of traffic management measures, for example surfacing changes and, used with care, smaller corner radii, should be considered, to ensure that vehicle movements, including by cyclists, are safe, and so that pedestrians can cross safely and easily without the use of safety barriers.'

- 7.25. Paragraph 2.28 of the document states:

'The identification of key routes for pedestrians and cyclists will be required as an integral part of the design of new development schemes. Routes which do not follow the street network should not mean taking long detours; they should, where possible, take short convenient routes with many options for joining the road network. Care should be taken to ensure that they are not unobserved, narrow or badly lit.'

- 7.26. Paragraph 2.29 of the document states:

'Developments should have regard to, and respond to, the location of all public transport facilities, routes and stops. Where this is insufficient, developers should actively pursue access to different forms of public transport provision for their site. The Council will continue to promote the development of its highly successful Metrolink network, and developers bringing forward proposals adjacent to proposed routes will be expected to support and accommodate its future development and use.'

- 7.27. The Proposed Development is well aligned with the above policies, being located in close proximity to a range of different facilities and sustainable transport links. The new development is also designed as such to promote and encourage sustainable travel and link to the existing network.

- 7.28. Paragraph 2.30 of the document states:

'at the planning stage consideration should be given to the proximity of the development to existing travel facilities and services, Site layout, suitable density, cycling, pedestrian facilities and potential for parking restraint.'

### **Places for Everyone (PfE)**

- 7.29. In 2020, Stockport Metropolitan Borough Council withdrew from the Greater Manchester Spatial Framework (GMSF) 2020 Joint Development Plan Document (DPD). Following this, the remaining nine Greater Manchester Local Authorities have continued to develop a successor Plan known as the Places for Everyone (PfE) Joint DPD.

- 7.30. The final stage of public consultation took place between 9th August and 3rd October 2021. Following this consultation the PfE DPD was submitted to the Secretary of State on 14th February 2022.

- 7.31. The PfE DPD sets out the proposed approach to housing and employment land across Greater Manchester for the next 20 years. The plan identifies the amount of new development that would come forward, in terms of housing, offices, and industry and warehousing, and the main areas in which this will be focused.

#### Greater Manchester Transport Strategy 2040

- 7.32. In 2015, TfGM began consulting on a 2040 Vision for Transport to deliver a transport system which enables residents, businesses and visitors in Greater Manchester to travel to a wide range of different destinations and opportunities, and where sustainable transport can be a viable and attractive alternative to the car.
- 7.33. The vision is for Greater Manchester to have “World class connections that support long-term, sustainable economic growth and access to opportunity for all”. The Transport Vision aims are as follows:
- Supporting Sustainable Economic growth;
  - Protecting Our Environment;
  - Improving Quality of Life for All;
  - Developing an Innovative City Region.
- 7.34. Under Policy 3, the Transport Strategy states that TfGM will “maintain a conurbation-wide programme of travel choices interventions, supported by journey planning tools and information, to encourage travel behaviour change and mode shift, in order to make the most efficient use of available capacity, particularly during peak periods”. Such interventions comprise:
- “Encouraging employers to allow home working on some days;
  - Measures to encourage people to make at least some of their journeys by public transport, walking and cycling;
  - Physical measures (bus priority measures, reallocating road space for pedestrian and cycling infrastructure, car share schemes, and constraints on long-stay parking in key centres); and
  - Promotions and marketing to provide people and businesses with the information, training and incentives to make better informed decisions about how, when and where they travel and the impact of their choices.”
- 7.35. Under Policy 4, TfGM will also “continue to work with planning authorities and developers to ensure the accessibility of new development by sustainable modes and to reduce the impact on the highway network”. This will be in accordance with the principles of:
- “Reducing the need to travel by car, and the distance travelled;
  - Maximising accessibility by sustainable modes;
  - Making the best use of existing infrastructure, particularly through increasing the density of development close to public transport nodes;
  - Maximising opportunities to provide additional public transport; and
  - Designing to encourage active travel.”
- 7.36. The Proposed Development aspires to conform to the vision and goals as set out within the 2040 Vision Document by ensuring that the Site is accessible by a variety of sustainable transport modes in order to deliver a quality development that enhances the environment.

#### Manchester Residential Quality Guidance

- 7.37. The Manchester Residential Quality Guidance was adopted in March 2017 and is a material consideration in the determination of planning applications. This document outlines the considerations, qualities, and opportunities that will help to deliver high quality residential development as part of successful and sustainable neighbourhoods across

Manchester. It contains guidance for developers in relation to design standards, with new proposals expected to comply with the guidance within.

- 7.38. The guidance states that 'residential development within Manchester should aim to offer true modal choice, prioritising walking and cycling in the first instance as a key component in developing sustainable neighbourhoods and healthy communities.'
- 7.39. It goes on to state that the sustainable development of Manchester depends on reducing dependence on the car, suggesting that residential development should consider the manner in which they encourage access to the wider public transport network.
- 7.40. In relation to parking, the guidance states that 'there is no one size fits all approach to car parking and it should be considered on a Site by Site basis.' It also goes on to note that car parking demand will be influenced by the availability of public transport and other factors. As such, in line with this document, car parking levels for the Site will take into account the following:
- How regular and frequent public transport is;
  - How easy it is to access a Site by safe walking and cycling routes;
  - Operational needs of Proposed Developments;
  - Social credentials of the Site (ie. private housing or affordable housing);
  - Relationship between different land uses, such as how close housing is to employment, shops and leisure uses;
  - The level of cycle parking provided for each new dwelling; and
  - Availability and cost of parking spaces on Site and close by.
- 7.41. The guidance therefore promotes residential development in sustainable locations, such as the application site, where the excellent accessibility to public transport will result in a low demand for parking.
- 7.42. Residential development should also consider how it could use technology to enhance living within Manchester. Although the council does not provide any specific electric vehicle (EV) parking standards, the provision of EV charging infrastructure will be required in all new properties with dedicated parking.

## Assessment Methodology and Significance Criteria

- The Proposed Development phases are set out in section 4 of this Statement.
- 7.43. The traffic impact of the Proposed Development has been considered for three scenarios which are summarised below:
- Scenario 1 – Phase 1
  - Scenario 2 – Phase 1 + School
  - Scenario 3 – Phase 1 + School + Phase 2
- 7.44. The impact of traffic from the Proposed Development has first been assessed using the worst-case scenario (Scenario 3) which assumes a full build out of the site. Where the level of impact has been determined to be of a level sufficient enough to require mitigation, an assessment has been made using the traffic flows generated for Scenario 1 and Scenario 2. This has been undertaken to establish which scenario will trigger the requirement for the identified mitigation.
- 7.45. An environmental impact can arise through the extra vehicle trips that might be generated by a Site and from new transport infrastructure. The potential implications that may arise from additional traffic have been described in the

Institute of Environmental Assessment (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic' (1993) and include:

- Driver Delay;
- Public Transport Users Delay;
- Pedestrian Delay;
- Pedestrian Amenity;
- Fear and Intimidation;
- Severance; and
- Accidents and Road Safety.

7.46. The assessment presented in this Chapter considers the above factors during the Construction Phase and Operational Phase of the Proposed Development.

7.47. The IEMA guidelines state that in scoping out the extent of the assessment for the operational and construction phases, it suggests that "two broad rules of thumb could be used as a screening process to delimit the scale and extent of the assessment". Those Rules are:

- Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)
- Rule 2: Include any other specifically sensitive areas where traffic flows have increased by 10% or more.

7.48. The IEMA Guidelines go on to state that any increases in traffic flows of less than 10% are generally accepted as having negligible impact as daily variance in traffic flows can be of equal magnitude. The 30% threshold relates to the level at which humans may perceive change and there may therefore be an effect. Impacts above this level therefore do not suggest that there is a significant impact, only that further consideration is required to assess the significance.

## Assessment Methodology

7.49. The assessment methodology follows the methodology provided by IEMA for the environmental assessment of road traffic and by DfT on preparing Transport Assessments and Travel Plans. The methodology also complies with the guidance given by Manchester City Council (MCC) and confirmed in the scoping of the Transport Assessment.

7.50. Full details of this methodology can be found in the supporting Transport Assessment included in **Appendix 7.1**.

## Significance Criteria

7.51. The IEMA's aforementioned guidance sets out the broad principles of how to assess the magnitude of the effect for each category. This is summarised below:

- Severance – The guidance states that "severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery". Further "changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance respectively". However, the guidance acknowledges that the measurement and prediction of severance is extremely difficult. The assessment of severance pays full regards to specific locations, in particular the location of pedestrian routes to key local facilities and whether or not crossing facilities are provided.
- Driver Delay – such delays "... are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system".

- Pedestrian delay – “Changes in the volume, composition or speed of the traffic may affect the ability of people to cross the roads”. The guidance suggests that assessors “... use their judgement to determine whether pedestrian delay is a significant impact”.
- Pedestrian amenity – broadly defined as the relative pleasantness of a journey, it is affected by traffic flow, traffic composition and pavement width/ separation from traffic. The guidance suggests a tentative threshold for judging the significance of changes in pedestrian amenity of where traffic flow (or its lorry component) is halved or doubled.
- Fear and intimidation – the impact of this is dependent upon the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors a narrow pavement width. The guidance states that there are no commonly agreed thresholds for estimating this from known traffic and physical conditions, but it does nevertheless suggest some threshold which could be used, based on previous research, and are shown in **Table 7.1** below.
- Accidents and safety – the guidance suggests that “Professional judgement will be needed to assess the implications of local circumstances, or factors, which may elevate or lessen risks of accidents, e.g. junction conflicts”.

Table 7.1 – Fear and Intimidation Thresholds

| Magnitude  | Environmental Impact Fear & Intimidation |                         |
|------------|------------------------------------------|-------------------------|
|            | Increase in Average 18hr Vehicle Flows   | Total 18-hour HGV flows |
| Major      | +1800                                    | +3000                   |
| Moderate   | 1200-1800                                | 2000-3000               |
| Minor      | 600-1200                                 | 1000-2000               |
| Negligible | 200-600                                  | 200-1000                |
| Neutral    | Below 200                                | Below 200               |

7.52. The guidance makes it clear that “a critical feature of environmental assessment is determining whether a given impact is significant”. Further, “for many effects there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor backed up by data or quantified information whenever possible. Such judgements will include the assessment of the number of people experiencing a change in environmental impact”.

### Magnitude of Impact

7.53. The magnitude of potential impact (both beneficial and adverse) on environmental baseline conditions has been identified through the detailed consideration of the Proposed Development, taking into account the following:

- Relevant policy or guidelines (i.e. IEMA Guidelines for the Environmental Assessment of Road Traffic (1993);
- The degree to which the environment is potentially affected for example, whether the quality is enhanced or impaired;
- The scale or degree of change from baseline conditions as a result of the Proposed Development;

- The duration of the effect for example, whether it is temporary or permanent; and
- The reversibility of the effect.

7.54. The magnitude of impacts will be assessed and reported for the construction and operational phases using the criteria presented within **Table 7.2**. These have been established with reference to the various guidance quoted in this document or through professional experience and judgement.

Table 7.2: Magnitudes of Impact

| Magnitude of Effect | Effect On                 | Definition of Magnitude                                                                                                                                                                                       |
|---------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Major               | Driver delay              | Over 4 minute increase, averaged over all arms at a junction.                                                                                                                                                 |
|                     | Public transport users    | Over 90% increase in traffic flow on relevant links                                                                                                                                                           |
|                     | Pedestrian delay          | Over 150% increase in traffic flows on relevant links                                                                                                                                                         |
|                     | Pedestrian/ cycle amenity | Over 150% increase in traffic flows on relevant links                                                                                                                                                         |
|                     | Fear and intimidation     | Change in degree of hazard from moderate to extreme.                                                                                                                                                          |
|                     | Severance                 | Over 90% increase in traffic flows on relevant links                                                                                                                                                          |
|                     | Accidents and road safety | Factor of observed accident rates and national averages (100 is equal to the national average) above 160.<br><br>Predicted increase in accidents resulting from the development on a link above 0.9 per annum |
| Moderate            | Driver delay              | Between 3 – 4 minute increase in delay, averaged over all arms at a junction.                                                                                                                                 |
|                     | Public transport users    | 60% - 90% increase in traffic flow on relevant links                                                                                                                                                          |
|                     | Pedestrian delay          | 100% - 150% increase in traffic flows on relevant links                                                                                                                                                       |
|                     | Pedestrian/ cycle amenity | 100% - 150% increase in traffic flows on relevant links                                                                                                                                                       |
|                     | Fear and intimidation     | Change in degree of hazard from great to extreme.                                                                                                                                                             |
|                     | Severance                 | Between 60%-90% increase in traffic flows on relevant links.                                                                                                                                                  |

| Magnitude of Effect | Effect On                 | Definition of Magnitude                                                                                                                                                                                                  |
|---------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | Accidents and road safety | Factor of observed accident rates and national averages (100 is equal to the national average) between 130-160<br><br>Predicted increase in accidents resulting from the development on a link between 0.6-0.9 per annum |
| Minor               | Driver delay              | Between 2 - 3 minute increase in delay, averaged over all arms at junction.                                                                                                                                              |
|                     | Public transport users    | 30% - 60% increase in traffic flow on relevant links                                                                                                                                                                     |
|                     | Pedestrian delay          | 50% - 100% increase in traffic flows on relevant links                                                                                                                                                                   |
|                     | Pedestrian/ cycle amenity | 50% - 100% increase in traffic flows on relevant links                                                                                                                                                                   |
|                     | Fear and intimidation     | Change in degree of hazard from moderate to great.                                                                                                                                                                       |
|                     | Severance                 | Between 30%-60% increase in traffic flows on relevant links.                                                                                                                                                             |
|                     | Accidents and road safety | Factor of observed accident rates and national averages (100 is equal to the national average) between 100-130<br><br>Predicted increase in accidents resulting from the development on a link between 0.3-0.6 per annum |
| Negligible          | Driver delay              | Less than 2 minute increase in delay, averaged over all arms at a junction.                                                                                                                                              |
|                     | Public transport users    | Less than 30% increase in traffic flow on relevant links                                                                                                                                                                 |
|                     | Pedestrian delay          | Less than 50% increase in traffic flows on relevant links                                                                                                                                                                |
|                     | Pedestrian/ cycle amenity | Less than 50% increase in traffic flows on relevant links                                                                                                                                                                |
|                     | Fear and intimidation     | No change in degree of hazard.                                                                                                                                                                                           |
|                     | Severance                 | Less than 30% increase in traffic flows on relevant links.                                                                                                                                                               |
|                     | Accidents and road safety | Factor of observed accident rates and national averages (100 is equal to the national average) below 100                                                                                                                 |

| Magnitude of Effect | Effect On | Definition of Magnitude                                                                                 |
|---------------------|-----------|---------------------------------------------------------------------------------------------------------|
|                     |           | Predicted increase in accidents resulting from the development on a link below 0.3 accidents per annum. |

## Sensitivity of Receptors

- 7.55. The sensitivity of a receptor is defined as the degree to which it responds to a change in its environment. For the Proposed Development, this predominantly relates to the effects of an increase in road traffic near a particular receptor.
- 7.56. Given that the study area is an urban area, the potential environmental receptors affected by the Proposed Development are human, and these receptors include residents living in close proximity to the highway network, vulnerable road users of pedestrians and cyclists and drivers on the network. These parties will tend to be affected by the different environmental impacts to different degrees. For example, pedestrians are more impacted upon by accidents than car drivers.
- 7.57. Overall, the receptors of the environmental impacts are considered to be Low or Local as the Site is within an urban area that is already characterised by existing traffic movements. The importance of each receptor is considered in **Table 7.3**.

Table 7.3: Designation of Potentially Sensitive Receptors

| Designation                         | Receptors                                                                               |
|-------------------------------------|-----------------------------------------------------------------------------------------|
| High (e.g. National/ International) | None                                                                                    |
| Medium (e.g. Regional / County)     | None                                                                                    |
| Low (e.g. Local)                    | Existing Residential Properties<br>Drivers using Study Network<br>Vulnerable Road Users |
| Negligible                          | None                                                                                    |
| Very High (e.g. International)      | None                                                                                    |

## Significance of Effect

- 7.58. The magnitude of impact and the sensitivity of the affected receptors are combined to reach an assessment of the overall significance of effect utilising the matrix presented in **Table 7.4**.

Table 7.4: Significance of Effect Matrix

| Magnitude of Effect | Sensitivity of Receptor |            |            |            |
|---------------------|-------------------------|------------|------------|------------|
|                     | High                    | Moderate   | Low        | Negligible |
| <b>Major</b>        | Major                   | Major      | Moderate   | Minor      |
| <b>Moderate</b>     | Major                   | Moderate   | Minor      | Negligible |
| <b>Minor</b>        | Moderate                | Minor      | Negligible | Negligible |
| <b>Negligible</b>   | Minor                   | Negligible | Negligible | Negligible |

- 7.59. Major effects on driver and public transport user delay will be considered to be significant in EIA terms based on Paragraph 111 of the NPPF.
- 7.60. A minor effect or above on road safety will be considered significant in EIA terms.
- 7.61. Effects on pedestrian/cycle delay and amenity, fear and intimidation and severance that are moderate or above will be considered to be significant in EIA terms.

## Baseline Conditions

### Existing Conditions

- 7.62. The Site is located within the area of Newton Heath, approximately 3km to the northeast of Manchester City Centre. Briscoe Lane lies to the south of the Site from which a number of cul-de-sacs provide access to residential properties and Briscoe Lane Primary School which form the southern boundary.
- 7.63. Along the northern extent of the Site lies the Rochdale canal and towpath with Ten Acres Lane and the Ten Acres Lane Sports Complex providing the western Site boundary. To the west, there are a number of residential properties located off Millwright Street.

## Accessibility by Sustainable Modes of Transport

### Accessibility on Foot

- 7.64. The Institution of Highways and Transportation (IHT) Guidelines for Providing for Journeys on Foot, (May 2000), states that, 'walking accounts for a quarter of all journeys and four fifths of journeys of less than 1.6km. It is suggested that, for commuting, up to 500m is a desirable walking distance, with 1km and 2km being acceptable and preferred maximums respectively'.
- 7.65. An analysis of the pedestrian routes in the area has been completed to identify areas situated within a 1km and 2km catchment. The more recent IHT document 'Planning for Walking' (2015) affirms this by stating that 80% of journeys shorter than a mile (approximately 1.6km) are made wholly on foot. Walking can also be promoted as part of a multi-modal journey, particularly with public transport.
- 7.66. The Newton Heath area and its associated retail, educational, leisure, medical and land uses are located within 1km of the Site. Key facilities and bus stops along Briscoe Lane, Old Church Street and the A62 Oldham Road are also located within a 1km walk of the Site.
- 7.67. Central Park and Newton Heath & Moston Metrolink stations are located within 1km of the Site, facilitating linked walking / Metrolink journeys amongst residents.
- 7.68. Pedestrian accessibility to the development Site has been assessed both in terms of the surrounding infrastructure and the level of local amenities that are located within an acceptable walking distance from the Site.
- 7.69. As such, it is noted that the Site benefits from comprehensive pedestrian infrastructure in the vicinity, comprising wide and well-lit footways on both sides of Ten Acres Lane, Briscoe Lane, Hallam Road and Mitchell Street.

- 7.70. These footways provide a direct link to local amenities located along Briscoe Lane, to the south of the Site which include a youth centre, barbers, beauty salon, as well as numerous convenience stores and take-away food outlets.
- 7.71. In supporting pedestrian trips, the signal-controlled Ten Acres Lane / Briscoe Lane junction provides dropped kerbs and tactile paving aiding the safe movement of pedestrians. Pedestrian crossing facilities are situated on Briscoe Lane notably near the Briscoe Lane / Mitchell Street junction.
- 7.72. The network of wide footways and pedestrian crossings provides safe connections to the local services and bus stops along Briscoe Lane.
- 7.73. The Rochdale Canal tow path runs along Site's northern boundary. This is a traffic free pedestrian route which provides east to west connections and offers a comfortable walking route to Manchester City Centre.
- 7.74. The towpath is tarmacked and as such provides easy connections to local centres and employment hubs along the canal corridor. Pedestrians are also able to cross the Canal via a series of pedestrian bridges.
- 7.75. The wider towpath route, which includes a 6km stretch that runs past the Site, is currently undergoing a series of improvements as part of the Manchester 'Bee Network', which will upgrade the Rochdale Canal corridor linking existing and developing communities and creating a high-quality traffic free route. The improvements include better quality towpath surfaces and improved access under a low bridge at Butler Street. There are also a series of pedestrian bridges enable those travelling on foot along the tow path to cross.
- 7.76. To the north of the Site is the A62 Oldham Road. Pedestrian access onto Oldham Road would be via Ten Acres Lane or Old Church Street, which provide wide footpaths extending its entire length. Access to this road can be achieved via the pedestrian infrastructure provided at the Dean Lane / A62 Oldham Road / Old Church Lane. This includes guard railing, pedestrian refuge islands, dropped kerbs and tactile paving.
- 7.77. This pedestrian infrastructure provides residents with easy and safe walking routes across the A662 Oldham Road towards Central Park Metrolink Stop and Newton Heath & Moston Metrolink Stop.
- 7.78. The Proposed Development's internal pedestrian routes will be of suitable width, with step free access between the Site and the local footway network to allow the Proposed Development to be suitably accessed on foot by all users. The layout will be permeable and provide pedestrian connections that form a natural extension to the adjacent streets and canal towpath, which will assist in reducing walking distances to local amenities and public transport.

#### Accessibility by Cycle

- 7.79. The IHT and DfT document 'Cycle Friendly Infrastructure: Guidelines for Planning and Design' (1996) provides a guide on suggested cycle speeds associated with cyclists of varying confidence and ability. With reference to this guidance, a catchment of 5km would be available within approximately 20 minutes cycle time, using a speed of 10mph (16kph).
- 7.80. Although 5km is often referred to as an 'acceptable' cycling distance, the DfT's most recent Local Transport Note 1/20 'Cycle Infrastructure Design' highlights the potential for a significant increase in cycle trips under five miles in length, which is a distance achievable for most people.
- 7.81. Cycle accessibility to the Site has been assessed both in terms of the surrounding infrastructure and the level of local amenities that are located within a 5km cycling distance from the site.
- 7.82. National Cycle Route 66 runs immediately to the north of the Site and forms part of the Rochdale Canal towpath, connecting the Site to many nearby residential and employment areas while providing access to Manchester Piccadilly and Failsworth, as well as numerous other key facilities along this corridor. Route 66 is mostly free of any vehicular traffic, providing an easy and safe cycle route for future residents.
- 7.83. Route 60 is located approximately 1.1km to the east of the Site and can be accessed via Route 66/ the canal towpath. Route 60 runs in an approximate north-south alignment, connecting areas such as Collyhurst and Ashburys train station. This route is comprised of recommended, safe cycle routes formed of traffic free paths, quiet lanes, segregated cycle lanes and traffic calmed streets.

- 7.84. Ten Acres Lane, Ascot Road and Seabrook Road are advisory/ suggested cycle routes, and Culcheth Lane/ Old Church Street is a signposted cycle route.
- 7.85. The A62 Oldham Road to the west of the Site has sections of designated on-road cycle lanes with Hulme Hall Lane having long stretches of segregated on-route cycle facilities that form part of Route 60.
- 7.86. The A62 Oldham Road and A6010 Hulme Hall Lane have Advanced Stop Lines (ASLs) at the signal-controlled junctions, giving cyclists a safe place to stop at junctions and allowing them to be positioned ahead of other traffic.
- 7.87. The confirmed Bee Network improvements in the area includes the widening of the Rochdale Canal towpath, stepped access improvements on Old Church Street, improved crossing facilities at the Ten Acres Lane / Briscoe Lane junction and other crossing upgrades in the local area. These improvements will create an even higher-quality environment for cyclists/ pedestrians.
- 7.88. Within the 5km cycle catchment, access is gained to eastern areas of Manchester City Centre, including Manchester Piccadilly and Manchester Victoria. Other destinations include Failsworth, New Moston, Clayton, Openshaw, West Gorton and Collyhurst. These destinations include many employment outlets, therefore, there is potential for a high level of mode share by cycle from the Site. This is further encouraged by the Site's close proximity to existing cycle routes.
- 7.89. Within the 5km cycle catchment are a large number of Metrolink Stops and Railway Stations, which could form part of a multi-modal journey to/ from the Site.
- 7.90. The redevelopment of the Site provides the opportunity for future residents to make use of the comprehensive cycling network that surrounds the site, be it part of a single mode journey or multi-modal journey.

#### Accessibility by Bus

- 7.91. The IHT document 'Guidelines for Planning for Public Transport in Developments' (1999) suggests that the maximum walking distance to the nearest bus stop should not exceed 400 metres.
- 7.92. There are multiple bus stops located within close proximity of the Site, with stops on Briscoe Lane, Old Church Street / Culcheth Lane and Oldham Road (A62). These bus stops are in a good state of repair and almost all benefit from a shelter and timetable information. All stops can be easily accessed via the interconnected network of footways.
- 7.93. The Site is well connected to the adjacent bus network and services provide access to a variety of key employment, leisure and educational destinations towards Manchester City Centre and further afield. A wide range of frequent services provided at all times of the day will support trips by this mode.

#### Accessibility by Rail

- 7.94. The closest National Railway Station to the Site is Moston which is located approximately 3km north of the Site. Moston is managed by Northern Trains with services operating to Manchester Victoria, Blackburn, Rochdale and Clitheroe.
- 7.95. The trains that service Moston Rail Station run a regular service, seven days a week, providing frequent access to key employment centres and major interchanges. Interchanges are possible at Manchester Victoria for services towards Liverpool, Blackburn, Huddersfield, Leeds and York.
- 7.96. Moston Rail Station is located within the 5km recommended cycle catchment and is accessible by bike within 15 minutes. Moston station is provided with bike storage for circa. 10 bicycles. Alternatively, Moston rail station can be accessed bus no. 181 or 182 (stops on Oldham Road A62).
- 7.97. A number of additional railway stations are located within 5km of the Site and are considered an 'acceptable' cycle distances. These stations lie to the north and east of the Site and include Ashburys Station, Ardwick, Manchester Piccadilly, and Manchester Victoria.
- 7.98. The Site is considered to be accessible by rail and it is possible to use the National Rail services provided at nearby stations to access a wide variety of destinations both locally and regionally.

### Accessibility by Metrolink

- 7.99. The closest Metrolink stops are Newton Heath & Moston (Pink Line), accessed via Old Church Street and residential streets, and Central Park (also Pink Line), accessed via Ten Acres Lane and The Gateway. Both stops are located within 1km of the Site and are both accessible by walking and cycling.
- 7.100. The Pink Line has regular services to areas such as East Didsbury, Rochdale Town Centre, Deansgate-Castlefield and other stops through Manchester City Centre. Interchanges to other Metrolink lines can be made at Cornbrook and St Peter's Square and interchanges to National Railway services can be made at Manchester Piccadilly and Victoria.
- 7.101. The Site is considered to be very accessible by Metrolink and that it is possible to use the Metrolink to access a wide variety of destinations.

### Baseline Traffic Surveys

- 7.102. As detailed previously in this Chapter, the scoping discussions and initial assessment work with MCC and TfGM were undertaken during the peak of the Covid-19 pandemic. As a result, undertaking traffic surveys was not acceptable to TfGM as traffic patterns were clearly significantly disrupted and surveys would provide a realistic representation of traffic movement post pandemic.
- 7.103. After submitting evidence from DfT traffic collection points in the surrounding area, which demonstrated no discernible traffic growth along the A62 corridor over the preceding decade, TfGM agreed that the traffic counts undertaken in 2010 to support a previous residential and commercial application on site, would be acceptable to use.
- 7.104. The network peak hours determined from the previously undertaken traffic counts were 0800 – 0900 for the AM peak and 1700-1800 for the PM peak. These peak hours have been adopted once again.
- 7.105. Full details of these surveys can be found in the Transport Assessment in **Appendix 7.1**.

### Identification and Evaluation of Significant Effects

- 7.106. Potential environmental impacts can arise due to changes in traffic flow and the design/ operation of the transport measures employed.

### Assessment of Construction Phase Effects

- 7.107. During construction, the primary factors that lead to potential environmental impacts are:
- Transportation of construction materials and equipment to/ from Site
  - Travel to/ from the Site by construction workers
  - Movement of materials and staff around the Site
  - Disruption and disturbance caused by construction traffic and heavy goods vehicles (HGVs)
  - Increases in proportion of HGVs on local roads causing detrimental impacts to residential amenity
- 7.108. A draft Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Development which will be finalised once planning approval has been achieved. It is anticipated that the requirement to prepare and submit a CEMP will be secured via planning condition and will require approval by MCC.
- 7.109. The build sequence and timescales for the construction of the Site are to be confirmed. However, the build sequence will be broadly in line with the following:
- Form access route into the Site from Ten Acres Lane
  - Commence remediation to Phase 1 area

- Commence Phase 1 construction
- Continue with remediation works to Phase 2
- Complete Phase 1
- Continue plot construction to Phase 2
- Complete all Public Open Space areas

7.110. The number and type of construction vehicle arriving at the Site will on the nature of the works taking place at the time. However, indicative information on two-way HGV movements is provided below:

- Soil removal - four to six per hour for initial 16 weeks of construction programme, equating to approximately 40 to 60
- Pile deliveries during piled foundations - one load per day during this stage of the construction works
- Deliveries of materials – maximum of 20 per day for duration of construction period
- Concrete deliveries – 12 movements per day until foundations are completed
- Hard core – 24 movements per day for initial construction period
- Crane provision for roofs and foundations – 200 movements over the duration of the construction period.

7.111. On the basis of the above there would be a maximum of approximately 116 two-way HGV movements per day. However, this scenario would be very unlikely to occur in reality given the variability of activity on Site on a day-to-day basis and the average number of deliveries would be significantly lower than this.

7.112. The number of workers on Site at any one time will depend on which stage of the construction programme has been reached and the construction activity taking place at that time.

7.113. However, even with the addition of fluctuating contractor movements the expected number of total vehicle movements associated with the Construction Phase of the Proposed Development would not significantly affect the existing traffic flows or cause the proportion of HGVs to exceed the Rule 1 criteria and require assessment. The arrival of vehicles related to the construction of the Proposed is also considered to be far below that would be expected once the Site is fully built out and occupied.

7.114. In considering the sensitivity of the receptor and scale of impact, the significance of the effect is considered to be Minor Adverse across the range of potential environmental implications. The scale of increases in traffic on all other routes considered, is such that there would be no significant environmental impacts from construction traffic.

7.115. In conclusion, the environmental impacts of the construction phase would not be significant in respect of pedestrian delay, pedestrian amenity, fear and intimidation, severance, and accidents and safety.

### Assessment of Operational Phase Effects

7.116. This section considers the traffic impacts of the Proposed Development during the Operational Phase. The forecast trip generation of the Proposed Development is described in detail the TA (**Appendix 7.1**).

7.117. As detailed earlier in this chapter, the impact of the Proposed Development has first been assessed using traffic forecasts generated for Scenario 3, which represents the full-build out of the Site.

7.118. Where mitigation has been identified as being required, further assessments using the development assumptions for Scenarios 1 and 2 have been undertaken to understand the point at which mitigation is required.

## Severance

- 7.119. The IEMA 'Guidelines for the Environmental Assessment of Road Traffic' (1993), advises that severance occurs when there is difficulty experienced in crossing a heavily trafficked road.
- 7.120. **Table 7.5** provides an indication of the level of change in severance between the Future Baseline and the Operational Phase scenario.

Table 7.5 – Change in Severance as a Result of the Proposed Development (Scenario 3)

| Link              | AADT 24hr       |                   |          |            |
|-------------------|-----------------|-------------------|----------|------------|
|                   | Future Baseline | Operational Phase | % change | Magnitude  |
| Monsall Road      | 7883            | 7883              | 0%       | Negligible |
| Grimshaw Lane     | 12310           | 12310             | 0%       | Negligible |
| A62 Oldham Road   | 28124           | 29826             | 6%       | Negligible |
| The Gateway       | 5894            | 6104              | 4%       | Negligible |
| Ten Acres Lane    | 3760            | 5462              | 45%      | Minor      |
| Thorp Road        | 7737            | 8089              | 5%       | Negligible |
| Lowcross Road     | 3468            | 3468              | 0%       | Negligible |
| Dean Lane         | 17039           | 17039             | 0%       | Negligible |
| Old Church Street | 9969            | 9969              | 0%       | Negligible |
| All Saints Street | 7398            | 7650              | 3%       | Negligible |
| Culcheth Lane     | 7046            | 7102              | 1%       | Negligible |
| Mitchell Street   | 873             | 1700              | 95%      | Major      |
| Hallam Road       | 643             | 643               | 0%       | Negligible |
| Briscoe Lane      | 16299           | 16843             | 3%       | Negligible |

- 7.121. Severance particularly impacts upon vulnerable road users. These users have been identified as a low sensitivity receptor.
- 7.122. **Table 7.5** indicates that the large majority of links within the study area are not forecast to experience an increase in traffic of over 30% which corresponds to a negligible impact which is not significant in environmental impact terms.
- 7.123. As shown, Ten Acres Lane is forecast to experience a 45% increase in traffic during the Operational Phase when compared with the Future Baseline. This level of traffic increase corresponds to a minor impact which is not significant in environmental impact terms.
- 7.124. The greatest proportional increase in traffic is predicted to occur on Mitchell Street with a 95% increase in traffic which can be categorised as a major impact. This corresponds to a moderate significance of effect which indicates that the Proposed Development could have a significant impact on receptors along this link.
- 7.125. However, even with the change in traffic flow predicted to occur on Mitchell Street overall daily traffic is significantly below that of other nearby roads, including the adjacent Briscoe Lane which also has residential properties fronting onto the highway.

- 7.126. In the context of the local area, the level of traffic on Mitchell Street will continue to be relatively low even with the addition of traffic from the Proposed Development. It is therefore considered that the environmental impact on receptors on this part of the highway network is not significant overall.

#### Driver Delay

- 7.127. The relevant guidance suggests that Driver Delay is only likely to be significant where the traffic on the network is likely to be at or close to the capacity of the system.
- 7.128. To determine the impact of the Proposed Development on driver delay, junction capacity assessments have been undertaken across the local highway network. Full details of the assessment can be found in the Transport Assessment included in Appendix 7.1. A summary of the capacity results has been provided below.

#### A62 Oldham Road/Monsall Road/Grimshaw Lane

- 7.129. This junction has been assessed using software package LinSig 3.2 for both the weekday AM and PM peak hours. Capacity results are expressed as Degree of Saturation (DoS), Mean Max Queue (MMQ) and Practical Reserve Capacity (RFC). If an arm of a junction has a DoS value in excess of 90% this is considered to be operating at or close to capacity. A DoS value in excess of 100% is generally accepted to represent an arm operating overcapacity.
- 7.130. A summary of the capacity assessment results for the A62 Oldham Road/ Monsall Road/ Grimshaw Lane signal junction is provided in **Table 7.6**.

Table 7.6 – A62 Oldham Rd/ Monsall Rd/ Grimshaw Ln Junction Assessment (Scenario 3)

| Lane Ref.                                  | Lane Description              | AM Peak |             | PM Peak |             |
|--------------------------------------------|-------------------------------|---------|-------------|---------|-------------|
|                                            |                               | DoS (%) | Queue (PCU) | DoS (%) | Queue (PCU) |
| Baseline                                   |                               |         |             |         |             |
| 1/1                                        | Monsall Rd (All Directions)   | 91.1    | 17          | 43.2    | 4           |
| 2/2+2/1                                    | A62 Oldham Rd (E) – L & Ahead | 91.6    | 27          | 70.2    | 15          |
| 2/3                                        | A62 Oldham Rd (E) – R & Ahead | 88.9    | 15          | 25.5    | 1           |
| 3/1                                        | Grimshaw Ln – Ahead & L       | 70.3    | 14          | 70.2    | 12          |
| 3/2                                        | Grimshaw Ln – R               | 22.5    | 1           | 31.0    | 3           |
| 4/1                                        | A62 Oldham Rd (W) – L & Ahead | 84.5    | 12          | 71.2    | 16          |
| 4/2                                        | A62 Oldham Rd (W) – R & Ahead | 85.9    | 14          | 72.3    | 17          |
| PRC (%)                                    |                               | -1.8    |             | 24.4    |             |
| Baseline (including Committed Development) |                               |         |             |         |             |
| 1/1                                        | Monsall Rd (All Directions)   | 96.6    | 21          | 47.5    | 5           |
| 2/2+2/1                                    | A62 Oldham Rd (E) – L & Ahead | 96.9    | 35          | 77.2    | 18          |
| 2/3                                        | A62 Oldham Rd (E) – R & Ahead | 92.4    | 21          | 30.0    | 1           |
| 3/1                                        | Grimshaw Ln – Ahead & L       | 72.9    | 14          | 75.7    | 13          |
| 3/2                                        | Grimshaw Ln – R               | 50.3    | 3           | 52.3    | 5           |
| 4/1                                        | A62 Oldham Rd (W) – L & Ahead | 52.7    | 9           | 71.0    | 16          |

| Lane Ref.              | Lane Description              | AM Peak |             | PM Peak |             |
|------------------------|-------------------------------|---------|-------------|---------|-------------|
|                        |                               | DoS (%) | Queue (PCU) | DoS (%) | Queue (PCU) |
| 4/2                    | A62 Oldham Rd (W) – R & Ahead | 54.5    | 10          | 72.2    | 17          |
| PRC (%)                |                               | -7.7    |             | 16.6    |             |
| Baseline + Development |                               |         |             |         |             |
| 1/1                    | Monsall Rd (All Directions)   | 96.6    | 21          | 45.0    | 5           |
| 2/2+2/1                | A62 Oldham Rd (E) – L & Ahead | 97.0    | 35          | 71.9    | 15          |
| 2/3                    | A62 Oldham Rd (E) – R & Ahead | 96.0    | 21          | 56.9    | 3           |
| 3/1                    | Grimshaw Ln – Ahead & L       | 72.9    | 14          | 73.4    | 13          |
| 3/2                    | Grimshaw Ln – R               | 50.3    | 3           | 49.1    | 5           |
| 4/1                    | A62 Oldham Rd (W) – L & Ahead | 94.0    | 17          | 74.1    | 17          |
| 4/2                    | A62 Oldham Rd (W) – R & Ahead | 94.7    | 18          | 74.9    | 18          |
| PRC (%)                |                               | -7.8    |             | 20.2    |             |

- 7.131. As shown in **Table 7.6**, in both the 'Without Development' and 'With Development' scenarios, the junction is forecast to be operating at a level that is at or approaching capacity in the AM peak. The junction is shown to operate within capacity in the PM peak even with the addition of development traffic.
- 7.132. Whilst the junction's available capacity in the AM peak is under pressure, the addition of development traffic is shown to only have a minimal impact on the overall operation of the junction. This is most clearly demonstrated by considering the forecast PRC value which decreases by just 0.1% between the 'Without Development' and 'With Development' traffic scenarios.
- 7.133. In the AM peak aggregate delay across the junction increases from 52 to 68 seconds between the 'Without' and 'With Development' scenarios. In the PM peak, the total delay increases by just one second from 26 to 27 seconds. This equates to a negligible impact which is not significant in environmental terms.
- 7.134. In summary, the addition of development traffic at this junction will have an immaterial impact on its operation.

#### A62 Oldham Road/The Gateway/Ten Acres Lane

- 7.135. This junction has been assessed using the LinSig modelling software package with a summary of capacity assessment results is provided in **Table 7.7**.

Table 7.7 – A62 Oldham Road/The Gateway/Ten Acres Lane (Scenario 3)

| Lane Description |                             | AM Peak |             | PM Peak |             |
|------------------|-----------------------------|---------|-------------|---------|-------------|
|                  |                             | DoS (%) | Queue (PCU) | DoS (%) | Queue (PCU) |
| Baseline         |                             |         |             |         |             |
| 1/2+1/1          | A62 Oldham Rd N – L & Ahead | 23.0    | 4           | 72.5    | 14          |
| 1/3              | A62 Oldham Rd N – Ahead     | 11.9    | 2           | 67.6    | 16          |

| Lane Description                           |                                  | AM Peak |             | PM Peak |             |
|--------------------------------------------|----------------------------------|---------|-------------|---------|-------------|
|                                            |                                  | DoS (%) | Queue (PCU) | DoS (%) | Queue (PCU) |
| 2/1                                        | The Gateway - L                  | 4.6     | 1           | 14.4    | 2           |
| 2/2                                        | The Gateway - R                  | 19.4    | 2           | 31.7    | 4           |
| 3/1                                        | A62 Oldham Rd S – Ahead          | 57.1    | 12          | 23.2    | 4           |
| 3/2                                        | A62 Oldham Rd S – Ahead          | 59.5    | 14          | 26.4    | 5           |
| 3/3+3/4                                    | A62 Oldham Rd S – R              | 4.9     | 0           | 1.5     | 0           |
| 4/1                                        | A62 S Upstream – Ahead & L       | 39.9    | 0           | 19.5    | 0           |
| 4/2                                        | A62 S Upstream – Ahead           | 32.3    | 0           | 14.4    | 0           |
| 4/3                                        | A62 S Upstream – Ahead           | 1.5     | 0           | 0.4     | 0           |
| 5/2+5/1                                    | Ten Acres Ln – L & R             | 25.9    | 0           | 20.5    | 1           |
| 8/1                                        | A62 N – TAL Connector - Ahead    | 11.7    | 0           | 32.0    | 0           |
| 8/2+8/3                                    | A62 N – TAL Connector – R+ Ahead | 14.0    | 7           | 33.8    | 20          |
| PRC (%)                                    |                                  | 51.2    |             | 24.1    |             |
| Baseline (including Committed Development) |                                  |         |             |         |             |
| 1/2+1/1                                    | A62 Oldham Rd N – L & Ahead      | 26.4    | 4           | 84.9    | 21          |
| 1/3                                        | A62 Oldham Rd N – Ahead          | 18.6    | 3           | 82.1    | 23          |
| 2/1                                        | The Gateway - L                  | 5.3     | 1           | 14.4    | 2           |
| 2/2                                        | The Gateway - R                  | 28.8    | 3           | 33.5    | 4           |
| 3/1                                        | A62 Oldham Rd S – Ahead          | 64.2    | 15          | 26.4    | 4           |
| 3/2                                        | A62 Oldham Rd S – Ahead          | 66.3    | 17          | 29.6    | 6           |
| 3/3+3/4                                    | A62 Oldham Rd S – R              | 4.9     | 0           | 1.5     | 0           |
| 4/1                                        | A62 S Upstream – Ahead & L       | 43.6    | 0           | 21.2    | 0           |
| 4/2                                        | A62 S Upstream – Ahead           | 36.0    | 0           | 16.2    | 0           |
| 4/3                                        | A62 S Upstream – Ahead           | 1.5     | 0           | 0.4     | 0           |
| 5/2+5/1                                    | Ten Acres Ln – L & R             | 30.7    | 1           | 23.6    | 1           |
| 8/1                                        | A62 N – TAL Connector - Ahead    | 13.2    | 0           | 37.1    | 0           |
| 8/2+8/3                                    | A62 N – TAL Connector – R+ Ahead | 17.2    | 8           | 40.0    | 25          |
| PRC (%)                                    |                                  | 35.7    |             | 6.0     |             |
| Baseline + Development                     |                                  |         |             |         |             |
| 1/2+1/1                                    | A62 Oldham Rd N – L & Ahead      | 75.0    | 11          | 86.3    | 21          |

|                | Lane Description                 | AM Peak     |             | PM Peak    |             |
|----------------|----------------------------------|-------------|-------------|------------|-------------|
|                |                                  | DoS (%)     | Queue (PCU) | DoS (%)    | Queue (PCU) |
| <b>1/3</b>     | A62 Oldham Rd N – Ahead          | 14.8        | 2           | 83.8       | 24          |
| <b>2/1</b>     | The Gateway - L                  | 4.5         | 1           | 15.8       | 2           |
| <b>2/2</b>     | The Gateway - R                  | 28.8        | 3           | 33.5       | 4           |
| <b>3/1</b>     | A62 Oldham Rd S – Ahead          | 67.3        | 16          | 27.0       | 5           |
| <b>3/2</b>     | A62 Oldham Rd S – Ahead          | 69.5        | 18          | 30.4       | 6           |
| <b>3/3+3/4</b> | A62 Oldham Rd S – R              | 3.0         | 0           | 1.5        | 0           |
| <b>4/1</b>     | A62 S Upstream – Ahead & L       | 46.1        | 0           | 23.6       | 0           |
| <b>4/2</b>     | A62 S Upstream – Ahead           | 36.7        | 0           | 16.7       | 0           |
| <b>4/3</b>     | A62 S Upstream – Ahead           | 1.5         | 0           | 0.4        | 0           |
| <b>5/2+5/1</b> | Ten Acres Ln – L & R             | 75.4        | 4           | 36.3       | 2           |
| <b>8/1</b>     | A62 N – TAL Connector - Ahead    | 20.2        | 0           | 38.0       | 0           |
| <b>8/2+8/3</b> | A62 N – TAL Connector – R+ Ahead | 35.1        | 7           | 41.4       | 27          |
| <b>PRC (%)</b> |                                  | <b>19.4</b> |             | <b>4.3</b> |             |

- 7.136. The results of the junction modelling demonstrate that the A62 Oldham Road/ The Gateway/ Ten Acres Lane junction access currently operates well within capacity.
- 7.137. The inclusion of the additional traffic associated with the identified committed developments results in a reduction in capacity, however the junction continues to operate within capacity.
- 7.138. Traffic generated by the Proposed Development results in a reduction in PRC values and a corresponding increase in DoS values. However, the junction is demonstrated to continue to operate within capacity in both peak periods. It should be noted that the Ten Acres Lane priority movements are demonstrated to operate within capacity with a maximum queueing of 4 PCUs in the AM peak period. This is despite a very robust assessment strategy of making no allowances for internal cross visitation trips between the residential units and the school and also assessing a full vehicular trip generation from the school.
- 7.139. The aggregate delay at the junction increases from 14 to 20 seconds in the AM peak between the 'Without' and 'With Development' scenarios. In the PM peak, the aggregate delay increases from 21 to 23 seconds between the two scenarios. This represents a negligible impact which is not significant in environmental terms.

#### A62 Oldham Road/ Thorp Road/ Lowcross Road

- 7.140. This junction has been assessed using the LinSig modelling software package with a summary of capacity assessment results is provided in Table 7.8.

Table 7.8 – A62 Oldham Road/ Thorp Road/ Lowcross Road (Scenario 3)

| Lane Ref. | Lane Description | AM Peak |             | PM Peak |             |
|-----------|------------------|---------|-------------|---------|-------------|
|           |                  | DoS (%) | Queue (PCU) | DoS (%) | Queue (PCU) |
| Baseline  |                  |         |             |         |             |

| Lane Ref.                                  | Lane Description             | AM Peak |             | PM Peak |             |
|--------------------------------------------|------------------------------|---------|-------------|---------|-------------|
|                                            |                              | DoS (%) | Queue (PCU) | DoS (%) | Queue (PCU) |
| 1/2+1/1                                    | A62 (W) – Ahead & L          | 24.9    | 2           | 69.1    | 10          |
| 1/3                                        | A62 (W) – Ahead              | 20.1    | 2           | 70.5    | 11          |
| 1/4+1/5                                    | A62 (W) – Ahead & R          | 23.4    | 2           | 71.6    | 11          |
| 2/1                                        | A62 (E) – Ahead & L          | 76.1    | 13          | 32.3    | 4           |
| 2/2                                        | A62 (E) – Ahead              | 77.3    | 14          | 34.2    | 5           |
| 2/3                                        | A62 (E) – R                  | 16.9    | 1           | 73.0    | 5           |
| 3/1                                        | Thorp Rd – L                 | 23.0    | 2           | 53.9    | 6           |
| 3/2                                        | Thorp Rd – Ahead & R         | 77.6    | 10          | 32.7    | 3           |
| 4/1                                        | Lowcross Rd – All Directions | 14.0    | 2           | 72.4    | 7           |
| PRC (%)                                    |                              | 15.9    |             | 23.2    |             |
| Baseline (including Committed Development) |                              |         |             |         |             |
| 1/2+1/1                                    | A62 (W) – Ahead & L          | 28.0    | 2           | 77.6    | 12          |
| 1/3                                        | A62 (W) – Ahead              | 24.4    | 3           | 78.7    | 13          |
| 1/4+1/5                                    | A62 (W) – Ahead & R          | 26.8    | 3           | 79.5    | 13          |
| 2/1                                        | A62 (E) – Ahead & L          | 81.7    | 15          | 35.7    | 5           |
| 2/2                                        | A62 (E) – Ahead              | 82.6    | 17          | 37.7    | 6           |
| 2/3                                        | A62 (E) – R                  | 16.9    | 1           | 78.4    | 5           |
| 3/1                                        | Thorp Rd – L                 | 25.0    | 3           | 56.3    | 6           |
| 3/2                                        | Thorp Rd – Ahead & R         | 83.0    | 11          | 33.4    | 3           |
| 4/1                                        | Lowcross Rd – All Directions | 15.1    | 2           | 77.3    | 7           |
| PRC (%)                                    |                              | 8.4     |             | 13.3    |             |
| Baseline + Development                     |                              |         |             |         |             |
| 1/2+1/1                                    | A62 (W) – Ahead & L          | 35.5    | 3           | 78.7    | 12          |
| 1/3                                        | A62 (W) – Ahead              | 28.4    | 3           | 80.0    | 13          |
| 1/4+1/5                                    | A62 (W) – Ahead & R          | 29.9    | 3           | 81.6    | 14          |
| 2/1                                        | A62 (E) – Ahead & L          | 83.3    | 16          | 38.0    | 5           |
| 2/2                                        | A62 (E) – Ahead              | 85.5    | 18          | 40.6    | 6           |
| 2/3                                        | A62 (E) – R                  | 19.1    | 1           | 78.4    | 5           |
| 3/1                                        | Thorp Rd – L                 | 25.0    | 3           | 56.3    | 6           |
| 3/2                                        | Thorp Rd – Ahead & R         | 87.5    | 13          | 37.9    | 3           |

| Lane Ref.      | Lane Description             | AM Peak    |             | PM Peak     |             |
|----------------|------------------------------|------------|-------------|-------------|-------------|
|                |                              | DoS (%)    | Queue (PCU) | DoS (%)     | Queue (PCU) |
| <b>4/1</b>     | Lowcross Rd – All Directions | 15.1       | 2           | 77.3        | 7           |
| <b>PRC (%)</b> |                              | <b>2.8</b> |             | <b>10.3</b> |             |

- 7.141. As shown in Table 7.8, the A62 Oldham Road/ Thorp Road/ Lowcross Road junction operates within capacity in the 'Without Development' scenarios, in both peak periods. With the addition of development traffic, the AM peak PRC reduces to 2.8% from 8.4%, however all arms demonstrate DoS figures of below 90% and the junction therefore operates within capacity. It should be noted that queueing increases by a maximum of 1-2 PCU which would be considered within daily variations experienced at junctions along the A62 corridor.
- 7.142. The PM peak period experiences a smaller impact with a reduction in PRC of 3% to 10.3% and a maximum increase in queueing of 1 PCU. Again, this level of impact is minor and would be largely imperceptible on the ground.
- 7.143. Changes in aggregate delay across the junction between the 'Without' and 'With Development' scenarios are negligible, increasing from 25 to 28 seconds in the AM peak and 33 to 34 seconds in the PM peak. These changes in delay do not equate to a significant environmental impact.

#### A62 Oldham Road/Dean Lane/Old Church Street

- 7.144. This junction has been assessed using the LinSig modelling software package with a summary of capacity assessment results is provided in **Table 7.9**.

Table 7.9 – A62/Dean Lane/Old Church Street Junction Assessment (Scenario 3)

| Lane Ref.                                  | Lane Description               | AM Peak |             | PM Peak |             |
|--------------------------------------------|--------------------------------|---------|-------------|---------|-------------|
|                                            |                                | DoS (%) | Queue (PCU) | DoS (%) | Queue (PCU) |
| Baseline                                   |                                |         |             |         |             |
| 1/1                                        | A62 (W) – Ahead & L            | 31.2    | 5           | 94.7    | 34          |
| 1/2+1/3                                    | A62 (W) – Ahead & R            | 33.8    | 6           | 95.7    | 39          |
| 2/1                                        | A62 (E) – Ahead & L            | 83.9    | 19          | 38.7    | 8           |
| 2/2+2/3                                    | A62 (E) – Ahead & R            | 85.0    | 20          | 41.6    | 9           |
| 3/1                                        | Dean Ln – All Directions       | 62.0    | 12          | 83.3    | 15          |
| 4/1                                        | Old Church St – All Directions | 83.9    | 13          | 94.1    | 20          |
| PRC (%)                                    |                                | 5.9     |             | -6.3    |             |
| Baseline (including Committed Development) |                                |         |             |         |             |
| 1/1                                        | A62 (W) – Ahead & L            | 34.5    | 5           | 100.5   | 48          |
| 1/2+1/3                                    | A62 (W) – Ahead & R            | 38.5    | 7           | 100.9   | 56          |
| 2/1                                        | A62 (E) – Ahead & L            | 88.2    | 22          | 41.6    | 8           |
| 2/2+2/3                                    | A62 (E) – Ahead & R            | 89.3    | 24          | 44.3    | 9           |

| Lane Ref.              | Lane Description               | AM Peak |             | PM Peak |             |
|------------------------|--------------------------------|---------|-------------|---------|-------------|
|                        |                                | DoS (%) | Queue (PCU) | DoS (%) | Queue (PCU) |
| 3/1                    | Dean Ln – All Directions       | 67.3    | 14          | 87.3    | 16          |
| 4/1                    | Old Church St – All Directions | 87.4    | 17          | 99.9    | 25          |
| PRC (%)                |                                | 0.8     |             | -12.1   |             |
| Baseline + Development |                                |         |             |         |             |
| 1/1                    | A62 (W) – Ahead & L            | 37.8    | 7           | 101.4   | 52          |
| 1/2+1/3                | A62 (W) – Ahead & R            | 41.3    | 9           | 101.7   | 60          |
| 2/1                    | A62 (E) – Ahead & L            | 89.6    | 28          | 43.2    | 9           |
| 2/2+2/3                | A62 (E) – Ahead & R            | 90.1    | 30          | 45.7    | 10          |
| 3/1                    | Dean Ln – All Directions       | 68.3    | 16          | 87.3    | 16          |
| 4/1                    | Old Church St – All Directions | 89.8    | 17          | 99.9    | 25          |
| PRC (%)                |                                | -0.1    |             | -13.0   |             |

- 7.145. The results presented in **Table 7.9** reveal only minor changes in the junction's operation between the 'Without Development' and 'With Development' scenarios.
- 7.146. In the 'Without Development' AM peak hour scenario, the junction operates with a worst-case DoS value of 89.3% on the eastern A62 arm which indicates that the junction is operating within its practical capacity.
- 7.147. With the addition of development traffic this value increases to 90.1% which indicates the junction is operating at or close to capacity. However, this value represents an increase in DoS of just 0.8% with a corresponding increase in queuing of six PCUs compared to the 'Without Development' scenario.
- 7.148. Furthermore, a change in PRC value of just 0.9% is predicted to occur with the addition of development traffic in the AM peak hour.
- 7.149. The PM peak hour is shown to operate overcapacity in both the 'Without Development' and 'With Development' scenarios.
- 7.150. Again, only small increases in DoS and queuing are predicted once development traffic demand has been added. In the 'Without Development' scenario, a worst-case DoS value of 100.9% has been calculated for the western A62 arm of the junction with a corresponding queue of 56 PCUs.
- 7.151. With the addition of development traffic in the PM peak, the forecast DoS value for this arm increases to 101.7% with a queue of 60 PCUs. This represents an increase in DoS of 0.8% and an increase in queuing of four vehicles when compared with the 'Without Development' scenario.
- 7.152. The minimal impact of development traffic on the operation of the junction in the PM peak is also illustrated in the predicted PRC values for the junction with a change of just 0.9%.
- 7.153. Overall, the predicted change in operation of the A62 Oldham Road/ Thorp Road/ Lowcross Road junction between the 'Without Development' and 'With Development' scenarios cannot be reasonably considered to represent a severe impact at this location.

- 7.154. The predicted change in aggregate delay is negligible for both the AM and PM peak between the 'Without' and 'With Development' scenarios. In the AM peak the aggregate delay across the junction increases from 35 to 40 seconds. In the PM peak, the delay increases from 79 to 87 seconds. The change in delay is not significant in environmental terms.

Old Church Street/All Saints Street/Culcheth Lane/Briscoe Lane

- 7.155. This junction has been assessed using the PICADY module of the industry standard JUNCTIONS modelling software package. Results are expressed as Ratio of Flow to Capacity (RFC) with a value of 0.85 or over indicating that a junction is operating at or close to capacity. An RFC value of 1.00 or over indicates that a junction is operating overcapacity.
- 7.156. A summary of the capacity assessment results for the AM and PM peaks is provided in **Table 7.10**.

Table 7. 10 – Old Church Street/All Saints Street/Culcheth Lane/Briscoe Lane Junction (Scenario 3)

| Lane Description                                  |                                     | AM Peak |             | PM Peak |             |
|---------------------------------------------------|-------------------------------------|---------|-------------|---------|-------------|
|                                                   |                                     | RFC     | Queue (PCU) | RFC     | Queue (PCU) |
| <b>Baseline</b>                                   |                                     |         |             |         |             |
| <b>B-CD</b>                                       | Briscoe Ln – L & R to All Saints St | 0.41    | 1           | 1.28    | 74          |
| <b>B-A</b>                                        | Briscoe Ln – R to Culcheth Ln       | 0.11    | 0           | 1.25    | 25          |
| <b>AB-CD</b>                                      | Culcheth Ln – R to All Saints St    | 0.23    | 0           | 0.63    | 2           |
| <b>D-ABC</b>                                      | All Saints St – All Directions      | 1.19    | 21          | 0.44    | 1           |
| <b>CD-AB</b>                                      | Old Church St – R to Briscoe Ln     | 0.96    | 9           | 0.48    | 1           |
| <b>Baseline (including Committed Development)</b> |                                     |         |             |         |             |
| <b>B-CD</b>                                       | Briscoe Ln – L & R to All Saints St | 0.41    | 1           | 1.29    | 78          |
| <b>B-A</b>                                        | Briscoe Ln – R to Culcheth Ln       | 0.11    | 0           | 1.26    | 26          |
| <b>AB-CD</b>                                      | Culcheth Ln – R to All Saints St    | 0.23    | 0           | 0.63    | 2           |
| <b>D-ABC</b>                                      | All Saints St – All Directions      | 1.19    | 21          | 0.44    | 1           |
| <b>CD-AB</b>                                      | Old Church St – R to Briscoe Ln     | 0.96    | 9           | 0.48    | 1           |
| <b>Baseline + Development</b>                     |                                     |         |             |         |             |
| <b>B-CD</b>                                       | Briscoe Ln – L & R to All Saints St | 0.46    | 1           | 1.33    | 90          |
| <b>B-A</b>                                        | Briscoe Ln – R to Culcheth Ln       | 0.15    | 0           | 1.30    | 30          |
| <b>AB-CD</b>                                      | Culcheth Ln – R to All Saints St    | 0.28    | 1           | 0.63    | 2           |
| <b>D-ABC</b>                                      | All Saints St – All Directions      | 1.22    | 42          | 0.49    | 1           |
| <b>CD-AB</b>                                      | Old Church St – R to Briscoe Ln     | 0.89    | 6           | 0.51    | 1           |

- 7.157. As shown in **Table 7.10**, the junction is predicted to operate overcapacity in both the 'Without Development' and 'With Development' scenarios with only small increases in RFC occurring.

- 7.158. In the AM peak a worst-case RFC value of 1.19 is forecast for the All Saints Street arm of the junction in the AM peak 'Without Development' scenario. A corresponding queue value of 21 PCUs is given for this arm.
- 7.159. With the addition of development traffic, the RFC value for this arm increases to 1.22 with a queue of 42 PCUs predicted.
- 7.160. In the PM peak, a worst-case RFC value of 1.29 is forecast for the Briscoe Lane arm of the junction in the 'Without Development' scenario. The modelling exercise has calculated a corresponding queue value of 78 PCUs for this arm.
- 7.161. In the 'Without Development' scenario the RFC value for this arm increases to 1.33 with a corresponding queue value of 90 PCUs.
- 7.162. It should be noted that the relationship between RFC and queues is such that queues begin to increase exponentially at high RFC values (>0.85). In these situations, even small increases in RFC values can result in significant increases in modelled queues.
- 7.163. Therefore, in such instances modelled queues length results should be treated with extreme caution with RFC values providing a more stable reflection of levels of impact. The increases in RFC between the 'Without Development' and 'With Development' scenarios in both peaks confirm that traffic from the Proposed Development will only have a minor impact on the operation of the A62 Oldham Road/ Thorp Road/ Lowcross Road junction.
- 7.164. In the AM peak, the total delay across the junction increases from 66 to 117 seconds between the 'Without' and 'With Development' scenarios. In the PM peak there is an increase in total delay from 247 to 279 seconds once development traffic is added to the junction. The change in delay in both peaks is negligible and not significant in environmental terms.

#### Briscoe Lane/Mitchell Street

- 7.165. This junction has been assessed using the PICADY module of the JUNCTIONS modelling software package.
- 7.166. A summary of the capacity assessment results for the AM and PM peaks is provided in **Table 7.11**.

Table 7.11 – Briscoe Lane/Mitchell Street Junction Assessment (Scenario 3)

| Lane Ref.                                  | Lane Description          | AM Peak |             | PM Peak |             |
|--------------------------------------------|---------------------------|---------|-------------|---------|-------------|
|                                            |                           | RFC     | Queue (PCU) | RFC     | Queue (PCU) |
| Baseline                                   |                           |         |             |         |             |
| B-AC                                       | Mitchell St to Briscoe Ln | 0.03    | 0           | 0.14    | 0           |
| C-AB                                       | Briscoe Ln to Mitchell St | 0.04    | 0           | 0.02    | 0           |
| Baseline (including Committed Development) |                           |         |             |         |             |
| B-AC                                       | Mitchell St to Briscoe Ln | 0.03    | 0           | 0.14    | 0           |
| C-AB                                       | Briscoe Ln to Mitchell St | 0.04    | 0           | 0.02    | 0           |
| Baseline + Development                     |                           |         |             |         |             |
| B-AC                                       | Mitchell St to Briscoe Ln | 0.26    | 0           | 0.24    | 0           |
| C-AB                                       | Briscoe Ln to Mitchell St | 0.10    | 0           | 0.07    | 0           |

- 7.167. The results summarised in **Table 7.11** demonstrate that the Briscoe Lane/ Mitchell Street priority T-junction has sufficient capacity to accommodate traffic demand in both the 'Without Development' and 'With Development' scenarios. A peak RFC value of 0.26 in the AM peak period demonstrates the junction operates well within capacity, with no notable queueing, even with the development Site fully built out and occupied.
- 7.168. An increase in total delay from 5 to 8 seconds is predicted to occur in the AM peak between the 'Without' and 'With Development' scenarios. In the PM peak an increase in total delay from 10 to 11 seconds is predicted between the 'Without' and 'With Development' scenarios. This is a negligible impact as is not significant in environmental terms.

#### Briscoe Lane/Ten Acres Lane

- 7.169. The capacity of this junction has been assessed in the LinSig software package. The existing configuration has been tested first with Baseline and Baseline 'Without Development' traffic flows. The results of this exercise presented in **Table 7.12**.

Table 7.12 – Briscoe Lane/Ten Acres Lane Junction Assessment

| Lane Ref.                                  | Lane Description                  | AM Peak |             | PM Peak |             |
|--------------------------------------------|-----------------------------------|---------|-------------|---------|-------------|
|                                            |                                   | DoS     | Queue (PCU) | DoS     | Queue (PCU) |
| Baseline                                   |                                   |         |             |         |             |
| 1/1                                        | Briscoe Ln (W) – All Directions   | 27.3    | 3           | 79.4    | 17          |
| 2/1                                        | Briscoe Ln (E) – All Directions   | 74.2    | 14          | 26.0    | 3           |
| 3/1                                        | Ten Acres Ln (N) – All Directions | 72.0    | 6           | 68.0    | 8           |
| 4/1                                        | Ten Acres Ln (S) – All Directions | 37.7    | 3           | 79.0    | 6           |
| PRC (%)                                    |                                   | 21.2    |             | 13.4    |             |
| Baseline (including Committed Development) |                                   |         |             |         |             |
| 1/1                                        | Briscoe Ln (W) – All Directions   | 27.7    | 3           | 81.6    | 18          |
| 2/1                                        | Briscoe Ln (E) – All Directions   | 74.3    | 14          | 26.9    | 3           |
| 3/1                                        | Ten Acres Ln (N) – All Directions | 73.1    | 6           | 66.4    | 8           |
| 4/1                                        | Ten Acres Ln (S) – All Directions | 38.1    | 3           | 74.0    | 6           |
| PRC (%)                                    |                                   | 21.1    |             | 10.3    |             |

- 7.170. As shown in Table 7.12, the junction is shown to operate within capacity under 'Without Development' traffic conditions.
- 7.171. The existing configuration of the junction has then been tested using the 'With Development' traffic flows generated for each development scenario. The results of the exercise are summarised in Table 7.13.

Table 7.13 – Briscoe Lane/Ten Acres Lane Junction Assessment (Scenarios 1-3)

|                          |                                 |      |    |      |    |
|--------------------------|---------------------------------|------|----|------|----|
| <b>Base + Scenario 1</b> |                                 |      |    |      |    |
| <b>1/1</b>               | Briscoe Ln (W) – All Directions | 30.7 | 4  | 87.0 | 21 |
| <b>2/1</b>               | Briscoe Ln (E) – All Directions | 79.8 | 16 | 31.3 | 3  |

|                          |                                   |             |    |             |    |
|--------------------------|-----------------------------------|-------------|----|-------------|----|
| <b>3/1</b>               | Ten Acres Ln (N) – All Directions | 76.4        | 7  | 68.0        | 9  |
| <b>4/1</b>               | Ten Acres Ln (S) – All Directions | 33.5        | 3  | 76.4        | 6  |
| <b>PRC (%)</b>           |                                   | <b>12.9</b> |    | <b>3.4</b>  |    |
| <b>Base + Scenario 2</b> |                                   |             |    |             |    |
| <b>1/1</b>               | Briscoe Ln (W) – All Directions   | 38.5        | 5  | 87.6        | 21 |
| <b>2/1</b>               | Briscoe Ln (E) – All Directions   | 85.7        | 19 | 32.6        | 4  |
| <b>3/1</b>               | Ten Acres Ln (N) – All Directions | 81.2        | 9  | 69.9        | 9  |
| <b>4/1</b>               | Ten Acres Ln (S) – All Directions | 36.3        | 4  | 84.0        | 7  |
| <b>PRC (%)</b>           |                                   | <b>5.1</b>  |    | <b>2.7</b>  |    |
| <b>Base + Scenario 3</b> |                                   |             |    |             |    |
| <b>1/1</b>               | Briscoe Ln (W) – All Directions   | 40.6        | 5  | 93.0        | 25 |
| <b>2/1</b>               | Briscoe Ln (E) – All Directions   | 92.0        | 23 | 40.4        | 4  |
| <b>3/1</b>               | Ten Acres Ln (N) – All Directions | 88.6        | 11 | 71.1        | 10 |
| <b>4/1</b>               | Ten Acres Ln (S) – All Directions | 35.0        | 4  | 89.2        | 8  |
| <b>PRC (%)</b>           |                                   | <b>-2.2</b> |    | <b>-3.3</b> |    |

- 7.172. As shown in **Table 7.13**, with the development traffic forecasts for Scenarios 1 and 2 the junction will continue to operate within capacity. However, with the addition of development traffic forecast for Scenario 3 the junction is forecast to operate with DoS values in excess of 90% and negative PRC values.
- 7.173. Aggregate delay across the junction for the 'Without Development' scenario is 10 seconds in the AM peak and 13 seconds in the PM peak.
- 7.174. Under Scenario 1 traffic conditions, aggregate delay increases to 11 and 16 seconds for the AM and PM peaks respectively.
- 7.175. Under Scenario 2 traffic conditions, aggregate delay increases to 14 and 17 seconds for the AM and PM peaks respectively.
- 7.176. Finally, for Scenario 3 the aggregate delay across the junction is 19 seconds in the AM peak and 21 seconds.
- 7.177. The changes in delay at the junction between the 'Without' and 'With Development' scenarios can be categorised as negligible. The predicted change in delay is not significant in environmental terms. However, mitigation has been considered to improve the junction from an operational perspective which is discussed later in this Chapter.

#### Ten Acres Lane/Proposed Site Access

- 7.178. The design of the Ten Acres Lane/ Proposed Site Access priority T-junction has been capacity tested using the PICADY module of the JUNCTIONS software package.
- 7.179. The assessment results have been summarised in **Table 7.14**.

Table 7.14 – Ten Acres Lane/Proposed Site Access Junction Assessment (Scenario 3)

| Lane Ref.              | Lane Description            | AM Peak |             | PM Peak |             |
|------------------------|-----------------------------|---------|-------------|---------|-------------|
|                        |                             | RFC     | Queue (PCU) | RFC     | Queue (PCU) |
| Baseline + Development |                             |         |             |         |             |
| B-A                    | Site Access to Ten Acres Ln | 0.45    | 1           | 0.14    | 0           |
| C-AB                   | Ten Acres Ln to Site Access | 0.18    | 0           | 0.15    | 0           |

- 7.180. The results presented in Table 7.14 confirm that the proposed design of this access junction is appropriate to meet future traffic demand with a peak RFC of 0.45 and queueing figure of 1 PCU in the AM peak.

#### Driver Delay Summary

- 7.181. As shown in the above tables, traffic from the Proposed Development is expected to have an immaterial impact on driver delay across most of the study network.
- 7.182. The addition of traffic from the Proposed Development is predicted to impact on available capacity at the Briscoe Lane/ Ten Acres Lane. The resultant change in junction performance would be likely to lead to additional delay for drivers. However, the predicted change in delay is not significant in environmental terms.
- 7.183. The change in performance across the study network represents a negligible magnitude of impact and a corresponding negligible significance of effect.

#### Public Transport Users

- 7.184. There is no industry guidance on the assessment of public transport users. The assessments of driver delay will be used to establish any increased delays to bus users by considering the bus routes and services within the study area.
- 7.185. The junction capacity assessments presented earlier in the chapter demonstrate that there will be minimal increases in queuing and delay as a result of traffic from the Proposed Development. On this basis it is also reasonable to assume that there will be no material additional delay to public transport users.
- 7.186. Public transport users have been identified as a low sensitivity receptor. Based upon the results of the capacity assessments across the study network the magnitude of impact has been identified as negligible.

#### Pedestrian Delay

- 7.187. The Proposed Development will provide improvements to the pedestrian environment compared with the baseline. This will be achieved through additional pedestrian connectivity through the Site itself as well as connections to the canal towpath. This additional infrastructure will therefore improve pedestrian connectivity in the surrounding area, especially to the tow path.
- 7.188. Pedestrians have been identified as a low sensitivity receptor and the significance of effects has been identified as negligible. It may be argued that pedestrian delay may actually be reduced as a result of the Proposed Development.

#### Pedestrian/ Cyclist Amenity

- 7.189. Negative changes in pedestrian amenity are assumed to be significant where traffic flows (or HGV component) double or more.
- 7.190. As previously outlined pedestrians have been identified as a low sensitivity receptor. Given none of the links considered have been shown to experience a doubling of flows, it is concluded that the magnitude of impact is negligible. The Proposed Development will also deliver enhancements to pedestrian and cyclist amenity and on this basis the significance of effects is also identified as minor beneficial.

#### Fear and Intimidation

- 7.191. The level of fear and intimidation experienced by vulnerable road users has been established with reference to the Institute of Environmental Assessment (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic' (1993).
- 7.192. **Table 7.15** provides a summary of the change in traffic flows predicted to occur between the Future Baseline and Operational Phase within the study network. The magnitude of impact on each link is also identified.

Table 7.15 – Change in Fear and Intimidation as a Result of the Proposed Development (Scenario 3)

| Link              | AADT 18hr       |                   |        |            |
|-------------------|-----------------|-------------------|--------|------------|
|                   | Future Baseline | Operational Phase | Change | Magnitude  |
| Monsall Road      | 8083            | 8083              | 0      | Neutral    |
| Grimshaw Lane     | 12622           | 12622             | 0      | Neutral    |
| A62 Oldham Road   | 28837           | 30582             | 1745   | Moderate   |
| The Gateway       | 6043            | 6259              | 216    | Negligible |
| Ten Acres Lane    | 3855            | 5600              | 1745   | Moderate   |
| Thorp Road        | 7934            | 8294              | 360    | Negligible |
| Lowcross Road     | 3556            | 3556              | 0      | Neutral    |
| Dean Lane         | 17471           | 17471             | 0      | Neutral    |
| Old Church Street | 10222           | 10222             | 0      | Neutral    |
| All Saints Street | 7585            | 7843              | 258    | Negligible |
| Culcheth Lane     | 7225            | 7282              | 57     | Neutral    |
| Mitchell Street   | 895             | 1743              | 848    | Minor      |
| Hallam Road       | 659             | 659               | 0      | Neutral    |
| Briscoe Lane      | 16713           | 17270             | 557    | Negligible |

- 7.193. As shown in **Table 7.15**, with reference to the previously identified criteria, the significance of effect of the Proposed Development on fear and intimidation is considered to be negligible on the majority of identified highway links.
- 7.194. A moderate significance of effect is forecast for the A62 Oldham Road and Ten Acres Lane but this is not considered to be significant in environmental impact terms as there would be no discernible change in traffic flow as these links are already highly trafficked.
- 7.195. It is therefore concluded that the Proposed Development will not lead to any change in fear and intimidation that could be considered significant in environmental impact terms.

### Accidents and Safety

- 7.196. As previously described in the Baseline Conditions section of this Chapter, a review of accident data has revealed that there are no accident blackspots on the highway network in the vicinity of the site.
- 7.197. There is therefore no evidence to suggest that there are any underlying highway safety issues on the local highway network and no evidence to suggest that traffic from the Proposed Development would increase the risk of accidents. All proposed Site access junctions and other supporting works are designed to the relevant guidelines and will be subject to safety audits from independent third parties. The significance of effect of the Proposed Development on accidents is safety is therefore concluded to be negligible.

## Summary

7.198. A summary of the likely significant effects on receptors is provided in **Table 7.16**.

Table 7.16: Traffic and Transport Summary of likely significant effects and receptors at risk

| Likely Significant Effect          | Receptor(s)                     | Significance before Mitigation |
|------------------------------------|---------------------------------|--------------------------------|
| <b>Construction Phase</b>          |                                 |                                |
| <b>Severance</b>                   | Existing residential properties | Negligible                     |
|                                    | Vulnerable road users           | Negligible                     |
| <b>Driver Delay</b>                | Drivers using study network     | Negligible                     |
| <b>Public Transport Users</b>      | Existing residential properties | Negligible                     |
|                                    | Vulnerable road users           | Negligible                     |
| <b>Pedestrian Delay</b>            | Existing residential properties | Negligible                     |
|                                    | Vulnerable road users           | Negligible                     |
| <b>Pedestrian/ Cyclist Amenity</b> | Existing residential properties | Negligible                     |
|                                    | Vulnerable road users           | Negligible                     |
| <b>Fear and Intimidation</b>       | Existing residential properties | Negligible                     |
|                                    | Vulnerable road users           | Negligible                     |
| <b>Accidents and Safety</b>        | Existing residential properties | Negligible                     |
|                                    | Vulnerable road users           | Negligible                     |
|                                    | Drivers using study network     | Negligible                     |
| <b>Operational Phase</b>           |                                 |                                |
| <b>Severance</b>                   | Existing residential properties | Negligible                     |
|                                    | Vulnerable road users           | Negligible                     |
| <b>Driver Delay</b>                | Drivers using study network     | Negligible                     |
| <b>Public Transport Users</b>      | Existing residential properties | Negligible                     |
|                                    | Vulnerable road users           | Negligible                     |
| <b>Pedestrian Delay</b>            | Existing residential properties | Negligible                     |
|                                    | Vulnerable road users           | Negligible                     |
| <b>Pedestrian/ Cyclist Amenity</b> | Existing residential properties | Negligible                     |
|                                    | Vulnerable road users           | Negligible                     |
| <b>Fear and Intimidation</b>       | Existing residential properties | Negligible                     |
|                                    | Vulnerable road users           | Negligible                     |
| <b>Accidents and Safety</b>        | Existing residential properties | Negligible                     |

| Likely Significant Effect | Receptor(s)                 | Significance before Mitigation |
|---------------------------|-----------------------------|--------------------------------|
|                           | Vulnerable road users       | Negligible                     |
|                           | Drivers using study network | Negligible                     |

## Mitigation Measures

### During Construction

- 7.199. The potential effects of construction will be short term with a minor adverse impact, which is not considered to be significant. No off-site mitigation for increase in traffic is therefore proposed to be necessary. However, a variety of management measures will be in place to mitigate the impact of construction activity which will be managed by a Construction Transport Management Plan (CTMP).
- 7.200. The construction programme is based on normal working hours in line with MCC guidance of 07:30-18:00 Monday to Friday and 08:00-14:00 on Saturdays.
- 7.201. A full traffic management plan will be developed to address the following issues as a minimum:
- Integration of traffic management scheme with surrounding construction developments and calming measures.
  - Access, egress, drop off and turning areas.
  - Temporary and/or permanent alterations to local traffic routes (both vehicular and pedestrian).
  - Additions, alterations and positions of any temporary signage, road markings or protection barriers.
  - Pedestrian access around Site and relevant protection, lighting and signage schemes.
  - Temporary suspension / relocation of any parking bays or bus stops.
  - Segregation of plant, materials and pedestrians on Site and safe access routes between welfare and Site areas.
  - The provision of car parking on site, and public transport strategy for staff and operatives
  - Loading bays, hoist positions and tower crane areas.
  - Any other measures to ensure the safe integration of pedestrians, cyclists and road users both on, off and surrounding the development.
  - Control of contamination of vehicle wheels by mud. This would include wheel washing prior to departure.

### During Operation

- 7.202. As outline in this Chapter, no significant environmental impacts are predicted to occur as result of traffic from the Proposed Development. However, whilst no mitigation is required to address environmental impacts, improvements are proposed as part of the Proposed Development to assist overall accessibility. These are detailed below:

#### Off-Site Highway Mitigation

- 7.203. To mitigate the operational impact of development traffic at the Briscoe Lane/ Ten Acres Lane junction, a package of works has been proposed to provide additional capacity at this junction. This comprises a widening of the Ten Acres Lane (Southbound) approach to allow a separate lane for right turning traffic. Full details of the proposed package of mitigation works can be found in the Transport Assessment (**Appendix 7.1**).
- 7.204. The design of the mitigating works has been supplemented by an additional capacity assessment to quantify the benefit of this intervention. The results of this assessment for the 'With Development' scenario are summarised in **Table 7.17**.

Table 7.17– Briscoe Lane/Ten Acres Lane Junction Assessment (with Mitigation)

| Lane Description              |                                   | AM Peak    |             | PM Peak    |             |
|-------------------------------|-----------------------------------|------------|-------------|------------|-------------|
|                               |                                   | DoS        | Queue (PCU) | DoS        | Queue (PCU) |
| <b>Baseline + Development</b> |                                   |            |             |            |             |
| <b>1/1</b>                    | Briscoe Ln (W) – All Directions   | 38.5       | 5           | 84.7       | 20          |
| <b>2/1</b>                    | Briscoe Ln (E) – All Directions   | 87.2       | 20          | 33.3       | 3           |
| <b>3/1</b>                    | Ten Acres Ln (N) – All Directions | 86.4       | 8           | 59.8       | 7           |
| <b>4/1</b>                    | Ten Acres Ln (S) – All Directions | 37.9       | 4           | 84.6       | 7           |
| <b>PRC (%)</b>                |                                   | <b>3.2</b> |             | <b>6.2</b> |             |

7.205. As demonstrated in Table 7.17 the proposed package of mitigation works at this location will ensure that the junction continues to operate within capacity following the introduction of all the development traffic associated with the development Site being fully built out.

### Cumulative Effects

- 7.206. The traffic impact assessment which informs this chapter has considered the likely significance of effect of the Proposed Development cumulatively with other committed developments. The scope of these committed developments has been discussed and agreed with MCC.
- 7.207. The list of Committed Developments is contained within **Appendix 2.2**. With regard to the Etihad committed development proposals, it is important to highlight that the majority of traffic generated by events at the Etihad Stadium would generally occur outside of the morning and late afternoon peak periods which are assessed as part of the Transport Assessment. Whilst some traffic could be generated within those peak periods, the frequency to which this would occur would be infrequent/sporadic and therefore cannot be considered normal traffic conditions which is the scenario explored within the TA.
- 7.208. Although not the same scale, the traffic impact, and frequency of impact, of the Etihad events would be comparable to the spike in traffic volumes experienced around bank holiday weekend or the Christmas period, for example, and traffic counts and assessments for these periods are not accepted by Highways Authorities when undertaking traffic impact assessments. As such, this scheme is not considered a committed development from a traffic impact standpoint.

### Residual Effects

- 7.209. A summary of the post-mitigation residual effects of the Proposed Development is provided in **Table 7.18**.

Table 7.18 – Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

| Likely Significant Effects | Receptor(s)                     | Mitigation Measures                                                                                  | Residual Effects       |
|----------------------------|---------------------------------|------------------------------------------------------------------------------------------------------|------------------------|
| <b>Construction Phase</b>  |                                 |                                                                                                      |                        |
| Severance                  | Existing residential properties | CTMP to be developed prior to commencement of construction phase and agreed with relevant consultees | Negligible – Temporary |
|                            | Vulnerable road users           |                                                                                                      |                        |
| Driver Delay               | Drivers using study network     |                                                                                                      | Negligible – Temporary |

| Likely Significant Effects  | Receptor(s)                     | Mitigation Measures                                                                                                                                            | Residual Effects       |
|-----------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Public Transport Users      | Existing residential properties |                                                                                                                                                                | Negligible – Temporary |
|                             | Vulnerable road users           |                                                                                                                                                                |                        |
| Pedestrian Delay            | Existing residential properties |                                                                                                                                                                | Negligible – Temporary |
|                             | Vulnerable road users           |                                                                                                                                                                |                        |
| Pedestrian/ Cyclist Amenity | Existing residential properties |                                                                                                                                                                | Negligible – Temporary |
|                             | Vulnerable road users           |                                                                                                                                                                |                        |
| Fear and Intimidation       | Existing residential properties |                                                                                                                                                                | Negligible – Temporary |
|                             | Vulnerable road users           |                                                                                                                                                                |                        |
| Accidents and Safety        | Existing residential properties |                                                                                                                                                                | Negligible – Temporary |
|                             | Vulnerable road users           |                                                                                                                                                                |                        |
|                             | Drivers using study network     |                                                                                                                                                                |                        |
| Operational Phase           |                                 |                                                                                                                                                                |                        |
| Severance                   | Existing residential properties | None                                                                                                                                                           | Negligible – Permanent |
|                             | Vulnerable road users           |                                                                                                                                                                |                        |
| Driver Delay                | Drivers using study network     | Enhancements to capacity at the Briscoe Lane/ Ten Acres Lane junction                                                                                          | Negligible – Permanent |
| Public Transport Users      | Existing residential properties |                                                                                                                                                                | Negligible – Permanent |
|                             | Vulnerable road users           |                                                                                                                                                                |                        |
| Pedestrian Delay            | Existing residential properties | Provision of high-quality infrastructure through the Site including connection to the canal towpath, including the primary north-south route along Hallam Road | Negligible – Permanent |
|                             | Vulnerable road users           |                                                                                                                                                                |                        |
| Pedestrian/ Cyclist Amenity | Existing residential properties |                                                                                                                                                                | Negligible – Permanent |
|                             | Vulnerable road users           |                                                                                                                                                                |                        |
| Fear and Intimidation       | Existing residential properties | None                                                                                                                                                           | Negligible – Permanent |
|                             | Vulnerable road users           |                                                                                                                                                                |                        |
| Accidents and Safety        | Existing residential properties | None                                                                                                                                                           | Negligible – Permanent |

## Reference List

7.210. This ES Chapter has been prepared by reference to the following:

- Institute of Environmental Management and Assessment (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic' (1993)

# 8. Noise and Vibration

## Introduction

- 8.1. This Chapter of the ES has been prepared by Wardell Armstrong LLP (WA) and assesses the likely Noise and Vibration impacts of the proposals upon the Site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.
- 8.2. This chapter describes the baseline conditions, and the potential effect of the Proposed Development on noise and vibration at existing and proposed sensitive receptors.
- 8.3. This Chapter is accompanied by three technical appendices, a Noise Guidance and Legislation (**Appendix 8.1**), Noise Monitoring Results (**Appendix 8.2**) and Noise Modelling Results (**Appendix 8.3**).
- 8.4. All Acoustic Consultants involved in the preparation of this ES Chapter hold a full membership with the Institute of Acoustics. Wardell Armstrong LLP is registered with the Association of Noise Consultants.

## Limitations and Assumptions

### Assumptions

- 8.5. The following assumptions have been made and an assessment of construction and operational stage impacts at noise sensitive receptors has been reported. In order to reduce the level of uncertainty within the assessment the following steps have been taken.
- The background noise measurement locations were selected to be representative of the background noise level at the closest point of the receptors to the Proposed Development.
  - In accordance with the guidance, the sound level meter was mounted vertically on a tripod 1.2 m above the ground. Monitoring locations were also more than 3.5 m from any other reflecting surfaces.
  - The distance between the source and nearest receptors has been measured from scale plans showing the locations of each building.
  - All noise measurements were undertaken during suitable weather conditions.
  - The results of each measurement period reported to the nearest 0.1dB.
  - Noise measurements made using Class 1 integrating sound level meters.
  - Noise meters were calibrated at the start and end of each monitoring period, no significant drift in calibration was noted.
- 8.6. The following assumptions have been made with regard to the operational phase of the Proposed Development.
- Gardens will have 1.8m high boundary fencing, with a minimum mass of 15kg/m<sup>2</sup>.
  - Development led road traffic will be evenly distributed across each of the four access points.

### Construction Limitations

- 8.7. Traffic flow information for the construction phase of the Proposed Development is not available at this stage, therefore, it is not possible to undertake a quantitative assessment of the impact of these additional vehicles at ESR locations.

- 8.8. Forecasting of construction traffic is difficult at this stage of the design as the level of construction traffic will be dictated by the future build programme, which will be governed by market forces in the building sector. In order to quantify the level of construction vehicles on a link by link basis, the following information is required.
- The daily quantum of construction vehicles per day.
  - A split of vehicle types used during construction (contractor to specify).
  - Origin/destination information for construction vehicles.
  - The location of the Site access(es) to be used during the construction phases.
  - The agreed route through the development area that will be taken by HGVs.
  - The arrival times of construction related journeys.
  - The number of construction workers.
  - Details of any transport strategies adopted through the construction phases.
- 8.9. At this stage, detailed information regarding the nature and timescales of activities likely to take place during the earthworks and construction phase are not known. The contractor undertaking the enabling and construction works has not yet been appointed. Many of these unknown details will be resolved in due course once a contractor has been appointed.

### Operational Limitations

- 8.10. Internal designs of the proposed dwellings in Phase 2 of the Proposed Development were not available, due to the early design stage of the application. Therefore, mitigation measures have been advised in outline terms only.
- 8.11. The location and design of the proposed school has not yet been decided, therefore an assessment of noise impact on the school has been carried out for the entire proposed school site. The assessment sets out the constraints and suitability of the proposed school location.
- 8.12. The noise modelling has been checked for accuracy against the measured noise levels. This has been undertaken to assess the suitability of the noise model to determine the propagation of noise across the Site. This has been undertaken by co-locating receptor locations into the model with the monitoring locations.
- 8.13. The traffic data is based on baseline year counts carried out in 2019. The traffic data scenarios include base year vehicle movements, as well as vehicle movements associated with the Proposed Development, and the cumulative developments. Vectos, the traffic consultant involved with the project, have informed WA that no growth factor has been applied to the baseline scenario. WA understand that this methodology was agreed with Traffic for Greater Manchester (TfGM).

### Legislative and Policy Context

- 8.14. Planning policy at the national, regional and local level and its relevance to environmental design and assessment is discussed within the Planning Statement that has been submitted as part of this planning application. The applicable planning guidance, policy and standards are summarised as follows.
- National Planning Policy Framework, 2021 (NPPF).
  - Noise Policy Statement for England, 2010 (NPSE).
  - Planning Practice Guidance - Noise 2019 (PPG-NOISE).
  - IEMA Guidelines for Environmental Noise Impact Assessment (IEMA).

- BS5228:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise (BS5228-1), and Part 2: Vibration (BS5228-2).
- BS7445-2: 1991 Description & Measurement of Environmental Noise Guide to the Acquisition of Data Pertinent to Land Use (BS7445-2).
- ProPG: Planning & Noise – New Residential Development, 2017 (ProPG).
- AVO Residential Design Guide January 2020 v1.1 (AVO).
- LA 111 - Noise and Vibration (LA111).
- The Department of Transport's technical memorandum Calculation of Road Traffic Noise 1998 (CRTN).
- British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings (BS8233).
- Building Bulletin 93 Acoustic Design of Schools (BB93).
- British Standard BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound (BS4142).
- BS6472-1: 2008 Guide to Evaluation of Human Exposure to Vibration in Buildings (BS6472-1).

## National Planning Policy

8.15. In July 2021 a revised 'National Planning Policy Framework' (NPPF) was published to provide the Government's planning policies and how they are expected to be applied.

8.16. Paragraph 185 of the NPPF states;

'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the Site or the wider area to impacts that could arise from the development. In doing so they should:

a) 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;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;...'

8.17. Paragraph 187 of the NPPF states;

'Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.'

8.18. With regard to 'adverse impacts' the NPPF refers to the 'Noise Policy Statement for England' (NPSE), which defines three categories, as follows:

- 'NOEL – No Observed Effect Level  
This is 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.
- LOAEL – Lowest Observed Adverse Effect Level  
This is the level above which adverse effects on health and quality of life can be detected.

- SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur’.

- 8.19. The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided. The second aim refers to the situation where the impact lies somewhere between LOAEL and SOAEL, and it requires that all reasonable steps are taken to mitigate and minimise the adverse effects of noise. However, the requirement to mitigate and minimise the adverse effects of noise does not mean that such adverse effects cannot occur.
- 8.20. The Planning Practice Guidance (PPG) provides further detail about how the effect levels can be recognised. Above the LOAEL noise becomes noticeable, however it has no adverse effect as it does not cause any change in behaviour or attitude. Once noise crosses the LOAEL threshold it begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. Increasing noise exposure further might cause the SOAEL threshold to be crossed. If the exposure is above this level the planning process should be used to avoid the effect occurring by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused. At the highest extreme the situation should be prevented from occurring regardless of the benefits which might arise. **Table 8.1** below summarises the noise exposure hierarchy.

Table 8.1: Noise Exposure Hierarchy

| Response                                         | Examples of Outcomes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Increasing Effect Level             | Action                           |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------|
| Not present                                      | No Effect                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | No Observed Effect                  | No specific measures required    |
| Present 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    |
| <b>Lowest Observed Adverse Effect Level</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                     |                                  |
| Present and intrusive                            | Noise can be heard and causes small changes in behaviour, attitude or other physiological response, 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 small actual or perceived change in the quality of life                                                               | Observed Adverse Effect             | Mitigate and reduce to a minimum |
| <b>Significant Observed Adverse Effect Level</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                     |                                  |
| Present and disruptive                           | The noise causes a material change in behaviour and/or attitude, e.g. having to keep windows closed most of the time, avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to close windows for 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                            |
| Present and very disruptive                      | Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.                                                                                                                                                                                                                            | Unacceptable Adverse Effect         | Prevent                          |

## Noise from Earth Works and Construction Phase Activities

- 8.21. The activities associated with the earthworks and construction phase of the Proposed Development will have the potential to generate noise and create an impact on the surrounding area and on the proposed receptors within the Site itself. Guidance on the prediction and assessment of noise from development sites is in BS5228-2009+A1:2014-1.
- 8.22. BS5228-1 provides guidance on significance criteria for assessing the potential noise impacts associated with the construction phase of large projects. For the purposes of this noise assessment, the noise likely to be generated by the earthworks and construction phase, have been assessed against significance criteria established, using the BS5228-1 ABC Method.
- 8.23. The ABC method for determining significance criteria requires the ambient noise levels at existing sensitive receptors to be determined. The ambient noise levels at each existing receptor location are then rounded to the nearest 5dB(A) to determine the appropriate threshold value in accordance with the category value, A B or C, as detailed in **Table 8.2**.

Table 8.2 – Thresholds for Significant Impact from Construction Noise at Residential Receptors in Accordance with the ABC Method of BS5228-1

| Assessment Category and Threshold Value Period<br>( $L_{Aeq}$ )                                                                                  | Threshold Value, in decibels (dB) |                          |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------|--------------------------|
|                                                                                                                                                  | Category A <sup>*1</sup>          | Category B <sup>*2</sup> | Category C <sup>*3</sup> |
| Night-time (23:00 to 07:00)                                                                                                                      | 45                                | 50                       | 55                       |
| Evenings and Weekends <sup>*4</sup>                                                                                                              | 55                                | 60                       | 65                       |
| Daytime (07:00 to 19:00 hours) and Saturdays (07:00 to 13:00 hours)                                                                              | 65                                | 70                       | 75                       |
| <sup>*1</sup> Category A: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than this value.          |                                   |                          |                          |
| <sup>*2</sup> Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as Category A values. |                                   |                          |                          |
| <sup>*3</sup> Category C: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than Category B values. |                                   |                          |                          |
| <sup>*4</sup> 19:00 to 23:00 weekdays, 13:00 to 23:00 Saturdays and 07:00 to 23:00 Sundays                                                       |                                   |                          |                          |

- 8.24. For the purposes of the Chapter, it is possible to estimate the degree of impact from the Site works (earthworks and construction), according to the suggested standards, by reference to the time periods during which noise levels may occur in excess of the quoted values.
- 8.25. The noise assessment for the construction phase, details baseline daytime noise levels measured at similar locations to the sensitive receptor locations identified in this Chapter. It also sets out details of 'best practice' management and control measures to ensure that impacts are minimised as far as possible.
- 8.26. The construction phase has only been considered for existing sensitive receptors close to the Site boundary.
- 8.27. Construction noise can have disturbing effects on the surrounding neighbourhood. The effects are varied and are complicated further by the nature of the Site works, which will be characterised by noise sources which will change location throughout the construction period. The duration of Site operations is also an important consideration. Higher noise levels may be acceptable if it is known that the levels will occur for a limited period. Details of the

construction phase assessment at sensitive receptors has been undertaken in this respect and detailed in this Chapter.

### Noise from Construction Vehicles

- 8.28. In addition to the earthworks and construction activities, vehicle movements to and from the Proposed Development have the potential to generate noise at sensitive receptors, in the immediate vicinity of the local road network.
- 8.29. At this stage, detailed traffic data relating to the likely numbers of construction vehicles is not available. However, the number of construction vehicles is not considered to be significant relative to the existing flows on the major road links surrounding the Site.
- 8.30. It is therefore considered that the level of road traffic noise at sensitive receptor locations will not change significantly, due to construction vehicles during the construction phases of the Proposed Development, and this impact has not therefore been considered further in this Chapter.

### Vibration from the Earthworks and Construction Phases

- 8.31. Work involving heavy plant on an open Site is likely to generate vibration, which may, in certain circumstances, propagate beyond the boundary of the site. Ground-borne vibration may be experienced where particularly heavy plant, vibrating compaction equipment or piling rigs are being used close to existing receptors, or dwellings which become occupied before the completion of the Proposed Development.
- 8.32. BS5228-2 indicates that the threshold of perception is generally accepted to be between a peak particle velocity (PPV) of 0.14 and 0.3mm/sec. In an urban situation it is unlikely that such vibration levels would be noticed. BS5228-2 also indicates that it is likely that vibration of 1.0 mm/s in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents. The standard also identifies vibration of 10 mm/s is likely to be intolerable for any more than a very brief exposure to this level.
- 8.33. The Highways Agency Research report No. 53 "Ground Vibration caused by Civil Engineering Works" 1986 suggests that, when vibration levels from an unusual source exceed the human threshold of perception, complaints may occur. The onset of complaints due to continuous vibration is probable when the PPV exceeds 3mm/sec.
- 8.34. British Standard BS6472: 2008 "Guide to Evaluation of human exposure to vibration in buildings. Part 1: Vibration sources other than blasting" (BS6472-1) suggests that adverse comments or complaints due to continuous vibration are rare in residential situations below a PPV of 0.8mm/sec. Continuous vibration is defined as "vibration which continues uninterrupted for either a daytime period of 16 hours or a night-time period of 8 hours". The proposed earthworks and construction work at the Site will not cause continuous vibration as defined in BS6472-1.
- 8.35. Human perception of vibration is extremely sensitive. People can detect and be annoyed by vibration before there is any risk of structural damage. Cases where damage to a building have been attributed to the effects of vibration alone are extremely rare; even when vibration has been considered to be intolerable by the occupants.
- 8.36. It is not possible to establish exact vibration damage thresholds that may be applied in all situations. The likelihood of vibration induced damage or nuisance will depend upon the nature of the source, the characteristics of the intervening solid and drift geology and the response pattern of the structures around the site. Most of these variables are too complex to quantify accurately and thresholds of damage, or nuisance, are therefore conservative estimates based on a knowledge of engineering.
- 8.37. Where ground vibration is of a relatively continuous nature, there is a greater likelihood of structural damage occurring, compared to transient vibration; for example, that caused by transiting vehicles.
- 8.38. BS5228-2 suggests that the onset of cosmetic damage is 15mm/sec (15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz for residential or light commercial type buildings).
- 8.39. WA's archives contain field trial measurements of ground vibration associated with types of machinery likely to be used during the construction of the Proposed Development. The representative measured levels made by WA using a Vibrock B801 Digital Seismograph, are set out in **Table 8.3**.

Table 8.3 – Measured Vibration Levels of Plant Under Normal Operating Conditions

| Plant Type                     | Distance from Source |            |            |
|--------------------------------|----------------------|------------|------------|
|                                | 10m (mm/s)           | 20m (mm/s) | 30m (mm/s) |
| 25-30 tonne excavator          | 0.175                | 0.075      | Background |
| 25 tonne dumptruck (Volvo A25) |                      |            |            |
| Loaded                         | 1.000                | 0.150      | Background |
| Empty                          | 0.225                | 0.050      | Background |
| Dozer                          | 1.050                | 0.400      | Background |
| Vibrating roller Drum          |                      |            |            |
| Vibrator on                    | 4.470                | 3.270      | 2.350      |
| Vibrator off                   | 0.500                | 0.150      | 0.050      |
| Loading shovel                 | 1.025                | 0.150      | Background |

- 8.40. Guidance on the assessment of vibration from development sites is given in British Standard 5228:2009 +A1:2014-2 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 2: Vibration (BS5228-2). BS5228-2 2009 indicates that vibration can have disturbing effects on the surrounding neighbourhood; especially where particularly sensitive operations may be taking place. The significance of vibration levels which may be experienced at receptors is dependent upon the nature of the source.

### Road Traffic Noise and Existing Sensitive Receptors

- 8.41. The operational phase of the Proposed Development will generate changes to road traffic on the existing road network. These additional vehicle movements have the potential to increase road traffic noise levels at existing receptors located adjacent to the main routes to and from the Proposed Development.
- 8.42. The construction of the new roads through the Site has the potential to change the way vehicles move around the local area, having the potential to both increase or decrease road traffic noise at existing sensitive receptors.
- 8.43. The current and future traffic noise levels at all sensitive receptors both with and without the Proposed Development in place, have been predicted using SoundPLAN noise modelling software.
- 8.44. SoundPLAN uses calculation procedures set out in CRTN. The memorandum was prepared to enable entitlement under the Noise Insulation Regulations 1975 to be determined; but it is stated in the document, that the guidance is equally appropriate for the calculation of traffic noise for land use planning purposes.
- 8.45. The procedures outlined in CRTN assume typical traffic and noise propagation conditions that are consistent with moderately adverse wind velocities and directions during specified periods. In CRTN, all noise levels can be expressed in terms of the index  $L_{10(18 \text{ hour})}$  dB(A).
- 8.46. For this noise assessment, CRTN has been used to determine the noise levels at the existing and proposed sensitive receptors.
- 8.47. The traffic information for the Proposed Development has been derived from the work undertaken by Vectos and has been provided as 18 hour AAWT flows. HGV percentage flows have also been provided. The traffic data has been provided in scenarios which include base years with and without the development.
- 8.48. The traffic data includes predicted traffic growth to future years along with the following committed developments:
- Part 4, part 5 storey residential building at Land off Oldham Road, Dulverton Street, Holyoak Street and Droylsden Road, Manchester.

- Light Industrial and storage/distribution building at Arkady Industrial Estate, Briscoe Lane, M40 2XG.
- Eight, two storey, dwelling houses and a three storey residential building off Dob Brook Close, Manchester, M40 1DB.
- Replacement of existing waste reception buildings with Mechanical Treatment and Reception building off Reliance Street Waste Management Site, Reliance Street, Manchester, M40 3EZ.
- Single Storey light industrial and distribution building off Oldham Road, Manchester, M40 5AA.
- Battery energy storage facility at land to the south west of Moston Vale, Manchester.
- Housing Led, mixed use development at land bounded by Hulme Hall Lane, Carley Street, Iron Street, Coleshill Street, and Rochdale Canal, M40 8HH.

8.49. The existing sensitive receptors used in the assessment of road traffic noise with and without development traffic in place are detailed in this Chapter. Impacts will also be felt at receptors adjacent to and beyond those listed. However, any impact will be equal to or less than is felt at the receptors identified.

### Guidance Noise Levels at Proposed Sensitive Receptors

8.50. The Noise Policy Statement for England refers to the World Health Organisation (WHO) when discussing noise impacts. The WHO Guidelines for Community Noise 1999 suggest guideline values for internal noise exposure which take into consideration the identified health effects and are set, based on the lowest effect levels for general populations. British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings (BS8233) bases its advice on the WHO Guidelines. The noise guideline levels stated in BS8233 are reproduced below.

- 35 dB LAeq,16hour during the daytime in noise sensitive rooms.
- 30 dB LAeq,8hour during the night-time in bedroom areas.
- 45 dB LAf,max should not be exceeded during the night-time in bedroom areas.
- 50 dB LAeq, 16hour desirable level for gardens and external amenity areas.
- 55 dB LAeq, 16hour upper guideline level which is acceptable in noisier environments.

8.51. In addition, for internal noise levels it states:

‘Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.’

8.52. Furthermore, with regard to external noise, the Standard states:

‘For traditional external areas that are used for amenity space such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB LAeqT with an upper guidance value of 55 dB LAeq,T which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited’.

8.53. These guidance values for internal and external areas of the proposed dwellings, have been used in this assessment to determine the suitability of the Site for the Proposed Development. However, it is not appropriate to use these noise guideline levels to identify the significance for Site suitability.

- 8.54. The Site suitability section of this chapter, does not follow the standard EIA procedure, but instead determines the noise level at proposed dwellings, and demonstrates that the internal and external noise guideline levels can be achieved through the use of mitigation measures, as required.

### **ProPG: Planning & Noise Professional Practice Guidance on Planning & Noise**

- 8.55. ProPG Planning and Noise provides professional practice guidance in relation to new residential development exposed to noise from transport sources. It provides practitioners with a recommended approach to the management of noise within the planning system in England.
- 8.56. The guidance reflects the Government's overarching National Planning Policy Framework, the Noise Policy Statement for England, and Planning Practice Guidance (including PPG-Noise) and draws on other authoritative sources of guidance. It provides advice for Local Planning Authorities and developers, and their professional advisors, on achieving good acoustic design in and around new residential developments.

### **AVO: Acoustics, Ventilation and Overheating Residential Design Guide**

- 8.57. In January 2020 the Acoustics Ventilation and Overheating: Residential Design Guide (AVO) was published by the Association of Noise Consultants. The AVO guide recommends an approach to acoustic assessments for residential development that takes into consideration the interdependence of provisions for acoustics, ventilation and overheating.
- 8.58. The guide provides a means of assessment to satisfy the need to consider acoustics, ventilation and overheating at the planning stage. It also assists in educating clients, environmental health officers, planning officers and other stakeholders of the interdependence of design for acoustics, ventilation and overheating.
- 8.59. The application of the AVO Guide is intended to form part of the good acoustic design process in accordance with ProPG.

### **Proposed Schools**

- 8.60. Where a new school or educational institute is proposed, the internal and external noise levels, including a number of parameters for internal acoustics must be assessed in relation to BB93. Department for Education (DfE) presents a revision to Section 1 of BB93 dated February 2015, providing revised parameters for the internal acoustics.
- 8.61. The potential impacts of the existing and future sources of noise at the proposed school Site have been assessed with reference to the DfE update and BB93. The documents provide detailed guidance on recommended external and internal noise levels to be achieved at school development sites.
- 8.62. For new school developments, the DfE update and BB93 recommend that the following daytime noise levels should be achieved.
- An upper limit of 60 dB LAeq,30 minutes at the boundary of external premises used for teaching and recreation.
  - 55 dB LAeq,30 minutes in unoccupied playgrounds, playing fields and other outdoor areas.
  - 50 dB LAeq,30 minutes in at least one area of the unoccupied playgrounds, playing fields and other outdoor areas to ensure suitable noise levels for outdoor teaching.
  - Indoor ambient noise limits in schools of between 30 and 50 dB LAeq,30 minutes depending on the use of the room.

### **British Standard 4142:2014+A1:2019 (BS4142), Method for Rating & Assessing Industrial & Commercial Sound**

- 8.63. BS4142 is used to rate and assess sound of an industrial and/or commercial nature including:
- Sound from industrial and manufacturing processes.
  - Sound from fixed installations which comprise mechanical and electrical plant and equipment.

- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises.
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

8.64. The standard is applicable to the determination of the following levels at outdoor locations:

- Rating levels for sources of sound of an industrial and/or commercial nature.
- Ambient, background and residual sound levels, for the purposes of.
  1. Investigating complaints.
  2. Assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature.
  3. Assessing sound at proposed new dwellings or premises used for residential purposes.

8.65. The purpose of the BS4142 assessment procedure is to assess the significance of sound of an industrial and/or commercial nature.

8.66. BS4142 refers to noise from the industrial source as the 'specific sound' and this is the term used in this chapter to refer to noise which is predicted to occur due to equipment associated with existing and proposed sources of industrial noise. Where possible, the 'specific sound' levels, from existing sources of noise have been measured.

8.67. Where there are proposed sources of industrial noise appropriate noise limits have been imposed to reduce the potential for a noise impact.

8.68. BS4142 assesses the significance of impacts by comparing the specific noise level to the background sound level ( $L_{A90}$ ). This chapter provides details of the background noise survey undertaken.

8.69. Certain acoustic features can increase the significance of impacts over that expected from a simple comparison between the specific noise level and the background sound level. In particular BS4142 identifies that the absolute level of sound, the character, and the residual sound and the sensitivity of receptor should all be taken into consideration. BS4142 includes allowances for a rating penalty to be added if it is found that the specific sound source contains a tone, impulse and/or other characteristic, or is expected to be present. The specific sound level along with any applicable correction is referred to as the 'rating level'.

8.70. The greater the increase between the rating level over the background sound level, the greater the magnitude of the impact. The assessment criteria given by BS4142 are as follows:

- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

8.71. During the daytime, BS4142 requires that noise levels are assessed over 1-hour periods. However, during the night-time, noise levels are required to be assessed over 15-minute periods.

8.72. Where the initial estimate of the impact needs to be modified due to context, BS4142 states that all pertinent factors should be taken into consideration, including:

- The absolute level of sound.

- The character and level of the residual sound compared to the character and level of the specific sound.
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

### Local Planning Policy

8.73. Manchester City Council has prepared Technical Guidance, 2015, to set out the council's preferred noise assessment methodology with regard to noise and amenity.

8.74. Section 2.1 of the guidance document states that:

"Typically any developments involving residential dwellings are the most noise-sensitive, whilst industrial developments such as general industry are one of the least noise sensitive.

However, industrial and commercial uses are amongst the most likely to cause a noise impact. Thus many developments require noise control or protection measures to mitigate against the effects of noise from outside sources, which include the effects of noise from road or rail, industry or commercial premises.

The express inclusion of noise in the National Planning Policy Framework (NPPF) means that it is a material planning consideration for local planning decisions."

8.75. The Manchester Core Strategy sets out the following with regards to noise and amenity.

"Policy SP1 'Spatial Principles' states that one of the key spatial principles is the emphasis on the creation of neighbourhoods of choice, providing high quality and diverse housing around district centres which meet local needs, all in a distinct environment.

All development should have regard to the character, issues and strategy for each regeneration area.

8.76. The policy goes on to state that development in all parts of the City should make a positive contribution to neighbourhoods of choice including;

- Creating well designed places that enhance or create character.
- Making a positive contribution to the health, safety and well being of residents.
- Consider the needs of all members of the community.
- Protect and enhance the built and natural environment.
- Minimise emissions, ensure efficient use of natural resources and reuse previously developed land wherever possible.
- Improve access to jobs, services, education and open space by being located to reduce the need to travel and provide good access to sustainable transport provision.

8.77. Policy DM1 'Development Management' states that all development should have regard to the specific issues such as:

- Appropriate siting, layout, scale, form, massing, materials and detail.
- Impact on the surrounding areas in terms of the design, scale and appearance of the Proposed Development. Development should have regard to the character of the surrounding area.
- 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.

- Design for health.
- Adequacy of internal accommodation and external amenity space.”

## Assessment Methodology and Significance Criteria

### Desk Top Survey

- 8.78. A desk top study has been undertaken to establish the potential noise and vibration impacts and other relevant features up to 1 km from the boundary of the Site. in accordance with current guidance and industry best practice.
- 8.79. The potential major sources of noise contributing to baseline conditions were identified through a desktop study of the development Site and surrounding land uses using available maps and aerial photography. The monitoring locations to measure noise at receptors and on-site, were identified as those most likely to be affected by the Proposed Development, and to establish the existing sources of noise.

### Site Visit / Other Assessment

- 8.80. Noise measurements have been carried out at seven monitoring locations which are considered to be representative of the existing and proposed sensitive receptors. The monitoring locations are as follows; and are shown on **Figure 8.1**.
- Monitoring Location 1 – In the western part of the Site approximately 5m from Ten Acres Lane. The monitoring location was chosen to measure noise from road traffic on Ten Acres Lane at the development site. The monitoring at this location is also considered to be representative of the ambient and background sound level of existing receptors to the west of the site.
  - Monitoring Location 2 – To the north of the site, approximately 9m from the A62. The monitoring location was chosen to measure noise from road traffic on the A62.
  - Monitoring Location 3 – To the south of the site, approximately 2m from Briscoe Lane. The monitoring location was chosen to measure noise from road traffic on Briscoe Lane. The monitoring at this location is also considered to be representative of the ambient and background sound level of existing receptors to the south of the site.
  - Monitoring Location 4 – To the north of the site, on the eastern Site boundary of T&A Textiles & Hosiery. The monitoring location was chosen to measure industrial noise from T&A Textiles & Hosiery Lane.
  - Monitoring Location 5 – On the southern Site boundary, adjacent to Briscoe Lane’s Academy. The monitoring location was chosen to measure noise from Briscoe Lane’s Academy at the development site. The monitoring at this location is also considered to be representative of the ambient and background sound level of existing receptors to the south of the site.
  - Monitoring Location 6 – On the eastern Site boundary, adjacent to Mitchell Street. The monitoring location was chosen to measure road traffic noise from Mitchell Street at the development site. The monitoring at this location is also considered to be representative of the ambient and background sound level of existing receptors to the east of the site.
  - Monitoring Location 7 – On the northern Site boundary, adjacent to Rochdale Canal. The monitoring location was chosen to measure noise in the northern part of the site. The monitoring at this location is also considered to be representative of the ambient and background sound level of existing receptors to the north of the site.
- 8.81. The dates and times of noise monitoring carried out at each location is detailed in **Table 8.4** below.

Table 8.4: Dates and Times of Noise Monitoring

| Monitoring Location | Type of Monitoring  | Earliest Monitoring Start Date and Time |            | Last Monitoring End Date and Time |           |
|---------------------|---------------------|-----------------------------------------|------------|-----------------------------------|-----------|
|                     |                     | Date                                    | Time (hrs) | Date                              | Time(hrs) |
| 1                   | Continuous Attended | 30 <sup>th</sup> March 2021             | 06:30      | 30 <sup>th</sup> March 2021       | 13:00     |
| 2                   | Continuous Attended | 24 <sup>th</sup> Nov 2021               | 11:00      | 24 <sup>th</sup> Nov 2021         | 14:00     |
| 3                   | Continuous Attended | 23 <sup>rd</sup> Nov 2021               | 13:00      | 23 <sup>rd</sup> Nov 2021         | 16:00     |
| 4                   | Continuous Attended | 25 <sup>th</sup> Nov 2021               | 10:45      | 25 <sup>th</sup> Nov 2021         | 13:45     |
| 5                   | Continuous Attended | 08 <sup>th</sup> April 2021             | 11:30      | 08 <sup>th</sup> April 2021       | 12:30     |
| 6                   | Continuous Attended | 08 <sup>th</sup> April 2021             | 09:53      | 08 <sup>th</sup> April 2021       | 11:08     |
| 7                   | Continuous Attended | 08 <sup>th</sup> April 2021             | 11:23      | 08 <sup>th</sup> April 2021       | 12:28     |

- 8.82. The noise measurements were carried out using Class 1, integrating sound level meters. The microphones were mounted vertically on tripods 1.5m above the ground with the diaphragm horizontal and more than 3.5 metres from any other reflecting surfaces.
- 8.83. All noise monitoring took place during dry conditions with wind speeds of less than 5m/s. The sound level meters were calibrated to a reference level of 94dB at 1kHz both before, and on completion of, the noise survey. No significant drift in the calibration during the survey was noted.
- 8.84. For the purpose of this assessment daytime hours are taken to be 0700 to 2300 hours and night-time hours to be 2300 to 0700 hours.
- 8.85. A-weighted  $L_{eqs}$  were measured to comply with the requirements of BS8233, together with  $L_{A90}$  to comply with the requirements of BS4142, WHO, and BB93. In order to establish the noise levels from the local road network,  $L_{A10}$  noise levels were measured in accordance with the requirements of CRTN and DMRB. The maximum and minimum sound pressure levels were also measured to provide additional information. The measured noise levels are set out in full in **Appendix 8.2**.

### Sensitive Receptors

- 8.86. **Table 8.5** details the existing sensitive receptors that have been assessed, these are also shown on **Figure 8.1**. Other existing sensitive receptors (e.g. those at a greater distance from the site, and on roads used by development led road traffic) are likely to be affected by the Proposed Development, although the effect is likely to be equal or less than those identified.

Table 8.5: Existing Noise Sensitive Receptor Locations

| Receptor                    |                            | Grid Co-ordinates |          | Bearing from Site | Approx. Distance to Receptor Boundary (m) |
|-----------------------------|----------------------------|-------------------|----------|-------------------|-------------------------------------------|
| Existing Sensitive Receptor | Address                    | Easting           | Northing |                   |                                           |
| ESR1                        | 1 Makkah Close, Manchester | 387248            | 400084   | South-west        | 5                                         |

| Receptor                    |                                 | Grid Co-ordinates |          | Bearing from Site | Approx. Distance to Receptor Boundary (m) |
|-----------------------------|---------------------------------|-------------------|----------|-------------------|-------------------------------------------|
| Existing Sensitive Receptor | Address                         | Easting           | Northing |                   |                                           |
| ESR2                        | 9 Hammer Close, Manchester      | 387539            | 400465   | North             | 23                                        |
| ESR3                        | 70 Mitchell Street, Manchester  | 387954            | 400322   | East              | 5                                         |
| ESR4                        | 27 Mortlake Drive, Manchester   | 387810            | 400225   | South-East        | 12                                        |
| ESR5                        | 190 Briscoe Lane, Manchester    | 387450            | 399820   | South             | 190                                       |
| ESR6                        | 145 Mitchell Street, Manchester | 388045            | 400236   | East              | 140                                       |
| ESR7                        | 19 Ten Acres Lane, Manchester   | 387135            | 400325   | West              | 125                                       |

### Generic Significance Impact Criteria

- 8.87. The significance of an environmental effect for both construction noise, road traffic noise and on-site operational noise is determined by the interaction of magnitude and sensitivity. The Impact Significance Matrix used in this assessment is shown in **Table 8.8**.
- 8.88. The potential noise effects associated with the Proposed Development have been assessed in accordance with the above guidance to determine whether noise and vibration impacts occur at receptors. Where likely adverse effects are identified, appropriate mitigation measures are proposed to avoid, reduce or compensate for the adverse effects.
- 8.89. The significance of an environmental effect will be determined not only by the magnitude of the impact, but also by the sensitivity of the receptor, as shown in **Table 8.6**. Whilst **Tables 8.6 and 8.7** relate to the IEMA guidance, these have been developed in order to accommodate the range of noise criteria that is detailed within such guidance as the DMRB, BS5228, BS8233 and BS4142 to be amalgamated in order to inform the EIA.

Table 8.6 – Magnitude of Noise Impact

| Magnitude of Impact | Criteria for Assessing Impact                                                                                                                                                                                                                                                    |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Major</b>        | Total loss or major/substantial alteration to key element/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.                                                                   |
| <b>Moderate</b>     | Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.                                                                                       |
| <b>Minor</b>        | A minor 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. |
| <b>Negligible</b>   | Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.                                                                                                                                                            |

Table 8.7 – Sensitivity of Receptors

| Sensitivity | Example of Receptor                                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>High</b> | The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance. |

| Sensitivity     | Example of Receptor                                                                                                                          |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Moderate</b> | The receptor/resource has moderate capacity to absorb change without significantly altering its present character, or is of high importance. |
| <b>Low</b>      | The receptor/resource is tolerant of change without detriment to its character, is of low or no local importance.                            |

8.90. The significance of an environmental effect for both construction noise, road traffic noise, on-site operational noise, and vibration is determined by the interaction of magnitude and sensitivity. The Impact Significance Matrix used in this assessment is based on the IEMA guidelines for noise impact assessment, shown in **Table 8.8**. A major change (only) is considered to be significant as highlighted below.

Table 8.8 – Impact Significance Matrix

| Magnitude  | Sensitivity                          |                                      |                                      |
|------------|--------------------------------------|--------------------------------------|--------------------------------------|
|            | High                                 | Moderate                             | Low                                  |
| Major      | Major<br>Adverse/Beneficial          | Major-Moderate<br>Adverse-Beneficial | Moderate-Minor<br>Adverse-Beneficial |
| Moderate   | Major-Moderate<br>Adverse/Beneficial | Moderate-Minor<br>Adverse-Beneficial | Minor<br>Adverse/Beneficial          |
| Minor      | Moderate-Minor<br>Adverse/Beneficial | Minor<br>Adverse/Beneficial          | Minor-Negligible                     |
| Negligible | Negligible                           | Negligible                           | Negligible                           |

### Construction Phase Significance Criteria

8.91. **Table 8.9** has been used to determine the magnitude of impact for the construction and operational phase of the development.

Table 8.9 – Construction Noise Assessment Significance Criteria

| Magnitude of Impact | Criteria for assessing Construction Noise Impact                                                                                                                              |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Major</b>        | Noise levels exceed the Assessment Category threshold level for the duration of the construction works.                                                                       |
| <b>Moderate</b>     | Noise levels exceed the Assessment Category threshold level for periods of more than one month, but for significantly less than the whole duration of the construction works. |
| <b>Minor</b>        | Noise levels exceed the Assessment Category threshold level for periods of less than one month.                                                                               |
| <b>Negligible</b>   | Noise levels do not exceed the Assessment Category threshold level during any period.                                                                                         |

### Construction Vibration Significance Criteria

8.92. The vibration effects during the construction phase are assessed against the criteria set out in **Table 8.10** below.

Table 8.10 – Construction Vibration Assessment Significance Criteria

| Magnitude of Impact | Criteria for Assessing Construction Vibration impact                                                                                                           |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Major</b>        | > 10mm per sec. Vibration likely to be intolerable for more than brief exposure. Approaching the level at which cosmetic damage may occur in light structures. |
| <b>Moderate</b>     | 5mm – 10mm per second. Tolerance less likely even with prior warning and explanation.                                                                          |
| <b>Minor</b>        | 1mm – 5mm per second. Complaints are likely but can be tolerated if prior warning and explanation given.                                                       |
| <b>Negligible</b>   | <1mm per second. Below level at which complaints are likely.                                                                                                   |

## Road Traffic Noise

- 8.93. The changes in road traffic noise levels have been assessed against the significance criteria shown in **Table 8.11**. The criteria are based upon guidance contained within LA111 for the assessment of changes in road traffic noise. The criteria do not relate to the actual existing noise levels (i.e. traffic noise due to the current residential development). It relates only to the predicted changes in road traffic noise likely to result from the Proposed Development.

Table 8.11 – Road Traffic Noise – Long Term Magnitude of Change

| Long Term Magnitude | Criteria for Assessing Road Traffic Noise         |
|---------------------|---------------------------------------------------|
| <b>Major</b>        | Greater than or equal to 10.0dB increase in noise |
| <b>Moderate</b>     | 5.0 – 9.9 dB increase in traffic noise            |
| <b>Minor</b>        | 3.0 – 4.9 dB increase in traffic noise            |
| <b>Negligible</b>   | Less than 3.0dB increase in traffic noise.        |

## Baseline Conditions

- 8.94. Wardell Armstrong LLP (WA) carried out attended noise surveys to assess the existing ambient and background sound levels at existing and proposed sensitive receptors, and across the Site. The noise survey is discussed below. Baseline noise monitoring has been carried out on the 30<sup>th</sup> March 2021, 08<sup>th</sup> April 2021, and between the 23<sup>rd</sup> and 25<sup>th</sup> November 2021.
- 8.95. Attended noise monitoring allows observations and detailed notes to be made of the notable noise sources that contribute to each of the measured levels. These observations identified notable noise sources at the site, including:
- **Road Traffic Noise:** Noise from Oldham Road to the north was audible in the northern part of the site. Road traffic noise from Ten Acres Lane was audible in the western part of the site. Road traffic noise from Briscoe Lane was audible in the south-eastern part of the site. Noise from road traffic on other local roads was also audible to a lesser extent.
  - **Industrial Noise:** Industrial noise from T&A Textiles and Hosiery was faintly audible at the north-western most Site boundary.
  - **Aircraft Noise:** Distant noise from overflying aircraft was occasionally audible at the site, and the noise is included into this assessment.
  - **Birdsong:** Noise from birdsong was occasionally audible at all monitoring locations.
  - **Other:** Noise from other sources including passing dog walkers, emergency vehicle sirens, commercial premises, was audible at a number of monitoring locations.

## Existing Measured Noise Levels

- 8.96. The measured noise levels for each monitoring location have been divided into daytime (i.e. 07:00-23:00 hours) and, where measured, night-time (i.e. 23:00-07:00 hours) categories. The individual levels have been logarithmically averaged and then rounded-up to give a single daytime and a single night-time level for each location. The background sound levels have been arithmetically averaged, and then rounded-up to give representative background sound levels at each location. The results for each of the monitoring locations 1 to 7 are presented in Table 8.12, below, with full details of the measured noise levels included within **Appendix 8.2**.
- 8.97. The measured noise levels at locations 4 and 7 have been used for the assessment of noise from T&A Textiles and Hosiery, which has been considered later in this chapter.

Table 8.12 – Average Daytime and Night-time Noise Levels (Figures in dB(A))

| Monitoring Location | Time  | Average Measured Noise Level $L_{Aeq, T}$ | Up to 10 <sup>th</sup> Highest Measured $L_{Af, Max}$ | Average Measured Background Noise Level, $L_{A90}$ |
|---------------------|-------|-------------------------------------------|-------------------------------------------------------|----------------------------------------------------|
| 1                   | Day   | 59                                        | -                                                     | 47                                                 |
|                     | Night | 59                                        | 74                                                    | 51                                                 |
| 2                   | Day   | 69                                        | 81                                                    | 57                                                 |
|                     | Night | 60                                        | -                                                     | -                                                  |
| 3                   | Day   | 66                                        | 80                                                    | 54                                                 |
|                     | Night | 58                                        | -                                                     | -                                                  |
| 4                   | Day   | 56                                        | -                                                     | 46                                                 |
| 5                   | Day   | 52                                        | -                                                     | 43                                                 |
| 6                   | Day   | 51                                        | -                                                     | 42                                                 |
| 7                   | Day   | 55                                        | -                                                     | 47                                                 |

- 8.98. Noise monitoring at Locations 2 and 3, was carried out in accordance with the shortened measurement methodology described in CRTN. This consists of three 1-hour consecutive measurements during the quiet daytime period (between 1000-1600 hours). As the main noise sources at these locations was road traffic noise, the maximum noise levels  $L_{AF, max}$ , measured during the daytime, are considered to be a robust representation of the individual event levels likely to occur on nearby roads during the night-time periods.
- 8.99. The measured noise levels at ML's 1, 2 and 3, have been used to calibrate the computer noise model, together with the Baseline traffic flow data, provided by Vectos. This ensures that the computer noise model is representative of the true existing and future noise environment surrounding the Site.

## Future Noise Levels

- 8.100. The Future noise levels with the development in place have been considered using the vehicle movements provided by Vectos, which include scenarios for baseline, as well as baseline with committed developments and with the Proposed Development.
- 8.101. Through discussions with the Traffic Consultants, we understand that the use of Future Years is considered to not be accurate in this area, as levels of vehicles movements have been stagnant or decreased for a number of years now. Therefore, Vectos have agreed a methodology with Traffic for Greater Manchester (TfGM), to base the assessment on the use of base years.

- 8.102. The baseline was collected in the year 2019, however through discussions with Vectos, it is understood that typical growth of vehicle movements is not expected on the local road network therefore, 2019 traffic data should be used in this assessment.

## Identification and Evaluation of Significant Effects

### Effect During Construction (Short Term)

#### Noise from Earthworks and Construction Phase Activities

##### Existing Receptors

- 8.103. The activities associated with the earthworks and construction phase of the Proposed Development have the potential to generate noise and create an impact on the surrounding area. Construction noise can have effects on the surrounding neighbourhood. The effects are varied and are complicated further by the nature of the Site works, which will be characterised by mobile noise sources that will change location throughout the construction period. The duration of construction works is also an important consideration. Higher noise levels may be acceptable if it is known that the levels will occur for a limited period.
- 8.104. During the earthworks and construction phase, any work carried out at the Site is likely to generate noise that may propagate beyond the boundary of the Site. As previously stated, detailed information regarding the nature and timescales of activities likely to take place during the earthworks and construction phase are not known at this stage. Activities on the Site that could give rise to construction related noise impacts including (but are not limited to) the following.
- Site preparation (e.g. ground excavation, levelling of ground, trenching, trench filling, unloading and levelling of hardcore and compacting filling).
  - Construction of the Proposed Development, including piling, the creation of access roads, fabrication processes (e.g. planing, sanding, routing, cutting, drilling and laying foundations).
- 8.105. Residents generally understand that there will be some noise when construction is underway and identify that issues tend to occur where work starts early, finishes late or takes place on Saturday afternoon, Sundays or Bank Holidays.
- 8.106. Based on the ambient noise levels measured during the daytime period, the appropriate category value has been determined for each of the sensitive receptors closest to the Site boundary, as detailed in this Chapter. Details of the noise survey carried out at the sensitive receptors is set out in the Baseline section of this chapter. The construction phase noise limits at existing sensitive receptors are shown in **Table 8.13**, below.

Table 8.13 – Daytime Construction Noise Assessment Significance Criteria

| Receptor |                                |  |     |    |    |   | Representative Monitoring Location | Average Measured Noise Levels (dB L <sub>Aeq</sub> ) | Ambient Noise Level Rounded to the Nearest 5dB(A) (dB L <sub>Aeq</sub> ) | Appropriate Category Value A, B or C in Accordance with BS5228-1 | Noise Level above which Construction Activities May Cause a Significant Impact at the Receptor (dB L <sub>Aeq</sub> ) |
|----------|--------------------------------|--|-----|----|----|---|------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| ESR1     | 1 Makkah Close, Manchester     |  | ML1 | 59 | 60 | A | 65                                 |                                                      |                                                                          |                                                                  |                                                                                                                       |
| ESR2     | 9 Hammer Close, Manchester     |  | ML7 | 55 | 55 | A | 65                                 |                                                      |                                                                          |                                                                  |                                                                                                                       |
| ESR3     | 70 Mitchell Street, Manchester |  | ML6 | 51 | 50 | A | 65                                 |                                                      |                                                                          |                                                                  |                                                                                                                       |

| Receptor |                               | Representative Monitoring Location | Average Measured Noise Levels (dB L <sub>Aeq</sub> ) | Ambient Noise Level Rounded to the Nearest 5dB(A) (dB L <sub>Aeq</sub> ) | Appropriate Category Value A, B or C in Accordance with BS5228-1 | Noise Level above which Construction Activities May Cause a Significant Impact at the Receptor (dB L <sub>Aeq</sub> ) |
|----------|-------------------------------|------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| ESR4     | 27 Mortlake Drive, Manchester | ML5                                | 52                                                   | 50                                                                       | A                                                                | 65                                                                                                                    |

- 8.107. The earthworks and construction phase activities have the potential to generate short-term increases in noise levels, above those recommended in BS5228-1, and identified in **Table 8.13**. The levels of noise received at the receptors closest to the Proposed Development would depend upon the sound power levels of the machines used, the distance to the properties, the presence of screening or reflecting surfaces and the ability of the intervening ground to absorb the propagating noise.
- 8.108. The nearest existing noise sensitive receptors to the Proposed Development, as detailed in **Table 8.5**, will vary depending on the phase of the Proposed Development under construction. Given the distances between the construction activities and residential dwellings, noise levels at the existing noise sensitive receptors may occasionally occur above those detailed in **Table 8.13**.
- 8.109. When considering existing receptors as having moderate sensitivity, the noise arising from the construction phase is likely to have a short-term effect on existing residential properties of **Moderate Adverse** (i.e. Not Significant) prior to the implementation of mitigation measures. Suitable mitigation measures (as discussed within the mitigation of this Chapter) will, therefore, be identified and implemented to reduce the significance of the effect.

#### Proposed Receptors

- 8.110. Proposed receptors (i.e. new residential units) that become occupied before the completion of construction would experience a similar noise impact. Following occupancy of any new residential units, the noise generated by earthworks during any subsequent construction phases of the Proposed Development may exceed Category A in BS5228 at any of the sensitive receptors that are located within the immediate vicinity of the construction works. Thus, when considering existing receptors as having moderate sensitivity, the noise arising from the construction phase is likely to have a short-term effect on proposed residential properties of **Moderate Adverse** (i.e. Not Significant) prior to the implementation of mitigation measures. Suitable mitigation measures (as discussed within the Mitigation of this Chapter) have been identified and should be implemented to reduce the significance of the effect.

#### **Vibration from Earthworks and Construction**

- 8.111. It is not possible to mitigate vibration emissions from an open site. It is important therefore to examine the proposed working method to ascertain what, if any, operations would be likely to cause unacceptable levels of vibration at nearby sensitive locations. It is possible that these operations could be modified to reduce their vibration impacts.
- 8.112. The nearest sensitive properties to the proposed construction works, as detailed in Table 8.5, will vary depending upon the part of the Proposed Development under construction. The sensitive receptors could include sensitive premises which become occupied before the completion of the construction phase. As a worst-case scenario, earthworks and construction works may potentially take place at a distance of, approximately, 10m from existing residential properties. At this distance, it is considered possible that vibration due to the operation of construction machinery will be above the threshold of complaint. However, this would be transient only and for very limited periods during the works (i.e. when activities take place at the Site's boundaries, close to proposed dwellings, once occupied).

- 8.113. In addition to the earthworks and construction works described, it is possible that piling will be required. At this time, the type(s) of piling that would be used at various locations across the Site is not known and it is likely that the contractor responsible for undertaking construction works at the Site would decide the appropriate method of piling required. BS5228-2 recognises that the most common form of vibration associated with piling is the intermittent type derived from conventional driven piling. The intensity of vibration disturbance, which may be registered at a receptor, will be a function of many factors. These are set out in BS5228-2 and include:
- Energy per blow or cycle;
  - Distance between source and receptor;
  - Soil structure interaction (i.e. nature of connection between soil and structure being monitored); and
  - Construction of structure and location of measuring points (e.g. soil surface, building foundation and internal structural element).
- 8.114. As the responsible contractor has not yet been appointed, detailed information regarding the above is not known and it is not possible to assess the potential impacts of vibration generated by piling. Therefore, based upon previous experience and reasonable assumptions made at this stage, vibrations arising from the construction phase are likely to have a short-term effect on existing and proposed residential properties of **Moderate Adverse** (i.e. Not Significant) prior to the implementation of mitigation measures.
- 8.115. The receptors likely to be affected by piling will vary depending on the phase of the Proposed Development under construction. Once the precise building locations, ground conditions for each location and type(s) of piling are confirmed, vibration levels could be estimated and recommendations for control made as appropriate.

## Effect During Operation (Long Term)

### Road Traffic Noise at Existing Sensitive Receptors

- 8.116. Road traffic is the dominant source of noise affecting the Site, and additional road traffic associated with the Proposed Development has the potential to increase road traffic noise at existing receptors. In addition, the development includes a new road through the Site itself, which could carry both development related, and none development traffic who may use the new road as a 'cut-through'.
- 8.117. Therefore, using SoundPLAN noise modelling software, CRTN predictions have been carried out to assess any potential changes in road traffic noise at existing receptor locations due to the operational phase of the Proposed Development. The changes in noise levels at each of the receptors considered have been assessed by comparing the noise levels predicted for the following scenarios.
- Scenario 1: **2019 Base:** Observed traffic network flows based on 2019 traffic surveys, no development or committed development traffic.
  - Scenario 1a: **2019 Baseline + Phase 1:** Based on the 2019 base traffic flow data, and including Phase 1 of the Proposed Development.
  - Scenario 1b: **2019 Baseline + Phase 1 + Committed Developments:** Based on the 2019 base traffic flow data, and including Phase 1 of the Proposed Development and Committed Developments.
  - Scenario 2a: **2019 Baseline + Phase 1 + School:** Based on the 2019 base traffic flow data, and including Phase 1 of the Proposed Development and Proposed School.
  - Scenario 2b: **2019 Baseline + Phase 1 + School + Committed Developments:** Based on the 2019 base traffic flow data, and including Phase 1 of the Proposed Development, Proposed School, and Committed Developments.
  - Scenario 3a: **2019 Baseline + Phase 1 + School + Phase 2:** Based on the 2019 base traffic flow data, and including Phase 1 and Phase 2 of the Proposed Development, as well as the Proposed School.

- Scenario 3b: **2019 Baseline + Phase 1 + School + Phase 2 + Committed Developments**: Based on the 2019 base traffic flow data, and including Phase 1 and Phase 2 of the Proposed Development, as well as the Proposed School.

- 8.118. The Proposed Development includes additional road traffic flows on, existing roads, but it also includes the development of new roads associated with the Site.
- 8.119. Through discussions with the Traffic Consultants, we understand that the use of Future Years is considered to not be accurate in this area, as levels of vehicles movements have been stagnant or decreased for a number of years now. Therefore, Vectos have agreed a methodology with Traffic for Greater Manchester (TfGM).
- 8.120. The results of the road traffic assessment are shown as the change in noise at ESRs for the façade that is likely to be impacted the most. The results of the assessment are detailed in **Table 8.14** and include the noise impact for each ESR in accordance with the significance criteria detailed in **Table 8.11**
- 8.121. The assessment shown in **Table 8.14** is based on the comparison of Scenarios 1 and 3a. This comparison is considered to be a worst-case assessment of the change between the baseline scenario, and the future acoustic environment, with the Proposed Development in place.

Table 8.14 – SoundPLAN Predictions, showing the Baseline and with the Proposed Development Scenarios, and Changes in Predicted Road Traffic Noise Levels (Figures in dB)

| Existing Sensitive Receptor Number |                                 | Predicted L <sub>10 18hour</sub> dB(A) at the façade of the Receptor |             | Change in Noise (Scenario 1 vs Scenario 3a) | Significance of Impact |
|------------------------------------|---------------------------------|----------------------------------------------------------------------|-------------|---------------------------------------------|------------------------|
|                                    |                                 | Scenario 1                                                           | Scenario 3a |                                             |                        |
| ESR1                               | 1 Makkah Close, Manchester      | 61.5                                                                 | 64.2        | +2.8                                        | Negligible Adverse     |
| ESR3                               | 70 Mitchell Street, Manchester  | 55.1                                                                 | 59.8        | +4.7                                        | Minor Adverse          |
| ESR5                               | 190 Briscoe Lane, Manchester    | 69.0                                                                 | 69.6        | +0.6                                        | Negligible Adverse     |
| ESR6                               | 145 Mitchell Street, Manchester | 72.3                                                                 | 72.3        | +0.0                                        | No Change              |
| ESR7                               | 19 Ten Acres Lane, Manchester   | 62.2                                                                 | 64.6        | +2.4                                        | Negligible Adverse     |

- 8.122. The changes in noise levels have been assessed against the significance criteria contained in Table 8.11. The results show that the highest increase will be +4.7dB(A) at ESR3 when comparing the With Development (Scenario 3a) and Without Development scenario (Scenario 1). The lowest adverse impact is +0.6dB(A) at ESR56. No change in noise levels was identified at ESR6, between the two scenarios.
- 8.123. The sensitivity of the ESR is moderate and the magnitude of change at most ESRs is Negligible and No Change. Therefore, there is likely to be a **Negligible** (i.e. Not Significant) direct, permanent, long-term impact on ESRs 1, 5, 6, and 7. Due to the introduction of a proposed link road, through the development, the magnitude of change at ESR3 is Minor Adverse. Therefore, ESR3 is likely to experience a **Minor Adverse** (i.e. Not Significant) direct, permanent, long-term impact.

### Road Traffic Noise at Proposed Sensitive Receptors

- 8.124. This section is used to inform the level of mitigation required at the proposed dwellings.

- 8.125. In accordance with ProPG:2017, a Site Noise Risk Assessment (SNRA) has been carried out. The SNRA assesses the initial risk of noise from transportation sources having an adverse impact on a Proposed Development, based on the overall measured levels with no mitigation in place.
- 8.126. A 3D noise model has been built in the noise modelling software SoundPLAN version 8.2. The noise model considers the existing undeveloped Site and its surrounding environment, but includes the proposed link road, and takes into account vehicle movements set out in Scenario 3b, at the PSRs. The propagation of noise across the Site will be affected by the presence of proposed dwellings, and therefore the model is only relevant for those dwellings closest to the noise source.
- 8.127. The noise model has been prepared using the traffic data provided by Vectos together with the measured maximum noise levels as described in the baseline section of this chapter.
- 8.128. The modelled values allow for predictions of existing and proposed noise levels across the Site to be made. Figures showing daytime  $L_{Aeq,16hour}$ , night-time  $L_{Aeq,8hour}$  levels are included as Drawings 8.01 and 8.02 in Appendix 8.3. The colouring on the figures shows the potential risk of noise from road traffic in accordance with ProPG:2017.
- 8.129. The drawings indicate that majority of the proposed dwellings are likely to be at a negligible to low risk of experiencing a noise impact, during the daytime and night-time periods. Some facades of proposed dwellings located closest to and facing Ten Acres Lane and the proposed link road are expected to be at a medium risk of experiencing an adverse noise impact, due to road traffic noise.
- 8.130. It should be noted that the assessment in terms of ProPG includes Site roads and development traffic, and is considered to be worst case. In addition, further into the site, noise levels will be lower due to the attenuation of sound over distance, and the proposed intervening dwellings. Therefore, the potential for an adverse noise impact will be low.
- 8.131. In accordance with ProPG, where there are more than 10 noise events at night with an  $L_{Amax,f}$  higher than 60 dB, a Site should not be regarded as negligible risk. As shown in Table 8.12 the  $L_{Amax,f}$  level is higher than 60 dB adjacent to the Ten Acres Lane and therefore the Site should not be regarded as negligible risk.
- 8.132. The SNRA shows that local noise mitigation and good acoustic design will be required for the Proposed Development, to ensure that the potential risk of the noise impact is minimised, and internal noise guideline levels are achieved.
- 8.133. In accordance with ProPG:2017, a Stage 2 full noise assessment is required to ensure future residents are protected and good acoustic design has been implemented.

#### Overheating Risk Assessment

- 8.134. In accordance with the AVO guide, an Overheating Risk Assessment (ORA) has been carried out. The ORA assesses initial risk of overheating, caused by the need to mitigate against noise generated by nearby transportation sources, based on the noise levels at the development site.
- 8.135. The modelled daytime ( $L_{Aeq,16hr}$ ) and night-time ( $L_{Aeq,8hr}$ ) noise levels, taking into account Scenario 3b at the PSRs, have been compared to the information provided in Table 3-2 of AVO. The results are shown in Drawings 8.03 for the daytime and 8.04 during the night-time periods, in Appendix 8.3.
- 8.136. The modelled values allow for predictions of existing and proposed noise levels across the Site to be made. Figures showing daytime  $L_{Aeq,16hour}$ , night-time  $L_{Aeq,8hour}$  levels are included as Drawings 8.03 and 8.04. The colouring on the figures shows the potential risk of overheating, due to likely mitigation measures required to reduce noise levels in premises.
- 8.137. The drawings indicate that majority of the proposed dwellings are likely to be at a negligible to low risk of experiencing overheating, during the daytime and night-time periods. Some facades of proposed dwellings located closest to and facing Ten Acres Lane and the proposed link road are expected to be at a medium risk of experiencing overheating, due to likely acoustic design measures required to achieve the recommended internal noise levels.
- 8.138. Proposed dwellings located further away from Ten Acres Lane are at a Low to Negligible risk of experiencing overheating during the daytime and night-time periods.

- 8.139. As majority of the proposed dwellings will experience a negligible to low risk of overheating, with only select facades of select dwellings experiencing a medium risk of overheating, the ORA shows that a Stage 2 overheating assessment is not required. Good acoustic design measured should be incorporated into the design of the Site to ensure that, where required, the risk of overheating is minimised and that internal noise guideline levels are achieved.

#### Assessment of Noise at Proposed Receptors in Terms of Noise Guideline Levels

- 8.140. The ProPG assessment identifies that good acoustic design and mitigation may be need for proposed dwellings. Therefore, SoundPLAN noise modelling software has been used to calculate the noise level at the proposed residential areas to determine potential effects and any required mitigation measures.
- 8.141. In order to present a robust assessment, the traffic data for Scenario 3b with the Proposed Development, and all Committed Developments in place has been used in this assessment.
- 8.142. A comparison between the measured noise levels, close to the source without the influence of other noise sources, and the modelled level without development traffic at the monitoring location points has been carried out. Following this calibration, the development roads and flows, have been included. This '*calibrated-development-flows*' scenario has been used to assess the effect of road traffic noise at proposed receptors.

#### Assessment of Daytime Noise Levels in Outdoor Living Areas

- 8.143. The noise contour plot on Drawing 8.05, in Appendix 8.3, shows the daytime  $L_{Aeq,16Hour}$  noise levels affecting the Site. The noise contour plots indicate that, with the proposed 1.8m high close boarded fencing, upper noise guideline levels, of 55dB(A)  $L_{Aeq,16hrs}$  in all external amenity areas will be achieved without additional mitigation measures. As shown on Drawing 8.05, dwellings further into the site, and away from Ten Acres Lane, and the proposed link road, will achieve the lower guideline noise levels, of 50dB(A)  $L_{Aeq,16hrs}$ , with no mitigation measures required.
- 8.144. There is likely to be a direct, permanent, long-term effect on proposed receptors of **None**. Therefore, no specific mitigation measures are required to reduce noise levels in garden areas.

#### Assessment of Daytime Noise Levels in Living Rooms and Bedrooms

- 8.145. SoundPLAN noise modelling has been used to calculate the noise level at the residential areas of the development Site with a façade correction applied. The calculated façade noise levels, during the daytime are summarised in Drawing 8.06 at Phase 1, and Drawing 8.07 on Phase 2, these are shown in Appendix 8.3, and are detailed as follows;
- Less than 48dB  $L_{Aeq,16Hour}$  – Green (This level allows the internal noise guideline level of 35dB  $L_{Aeq}$  to be achieved, assuming that a partially open window provides 13dB(A) noise attenuation).
  - 48 to 68dB  $L_{Aeq,16Hour}$  – Yellow.
  - Over 68dB  $L_{Aeq,16Hour}$  – Orange.
- 8.146. In accordance with BS8233, the internal noise level in living rooms and bedrooms during the daytime should be no more than 35dB(A)  $L_{Aeq,16Hour}$ .
- 8.147. There is likely to be a direct, permanent, long-term effect on proposed receptors of **Minor adverse**. Therefore, appropriate mitigation measures have been identified and should be implemented to achieve noise guideline levels in living rooms and bedrooms during the daytime, where yellow and orange facades occur on the noise contour plots.

#### Assessment of Night-time Noise Levels in Bedrooms

- 8.148. SoundPLAN noise modelling has been used to calculate the noise level at the residential areas of the development Site with a façade correction applied. The calculated façade noise levels, during the night-time are summarised in Drawing 8.08 for Phase 1, and Drawing 8.09 for Phase 2, these are shown in Appendix 8.3, and are detailed as follows:
- Less than 43dB  $L_{Aeq,8Hour}$ , or less than 58dB  $L_{AF,max}$  – Green (This level allows the internal noise guideline level of 30dB  $L_{Aeq}$  to be achieved, assuming that a partially open window provides 13dB(A) noise attenuation).

- 43 to 63dB LAeq,8Hour, or 58 to 78dB LAF,max – Yellow.
- Over 63dB LAeq,8Hour, or over 78dB LAF,max – Orange.

- 8.149. In accordance with BS8233, the internal noise level in bedrooms at night should achieve 30dB LAeq,8Hour, and 45dB LAF,max. Drawings 8.08 and 8.09 show the mitigation requirements to attenuate noise levels during the night-time periods, for both LAeq, and LAF,max.
- 8.150. There is likely to be a direct, permanent, long-term effect on proposed receptors of **Minor adverse**. Therefore, appropriate mitigation measures have been identified and should be implemented in order to achieve noise guideline levels in bedrooms during the night-time where yellow and orange facades occur on the noise contour plots.

#### Assessment of the Daytime Noise Levels at the Proposed School

- 8.151. A primary school is proposed in the south-eastern part of the development site. The exact location and shape of the school is not yet known, therefore SoundPLAN noise modelling has been used to calculate the noise levels across the proposed school Site during the daytime.
- 8.152. The noise contour plot on Drawing 8.05 shows the daytime LAeq,16Hour noise levels affecting the proposed school site. The plot indicates that noise across the school Site will achieve the 50dB(A) LAeq,16Hour guideline level for external teaching areas, away from the proposed link road, and closer to Briscoe Lane Academy. The proposed school, once in place, is expected to provide screening from noise generated on the proposed link road. Therefore, noise levels on outdoor teaching areas and playing fields associated with the school, once the school is in place, are expected to be lower.
- 8.153. In addition, the noise contour plot indicates that, depending on the location of the proposed school, the façade noise levels likely to be experienced are between 63 and 43 LAeq, 30mins. Appropriate mitigation measures will therefore be identified and should be implemented to achieve the required internal noise levels as appropriate, depending upon the future use of the various spaces.
- 8.154. There is likely to be a direct, permanent, long-term effect on proposed receptors at the school of **Negligible to Moderate Adverse**. Therefore, appropriate mitigation measures will be identified and implemented in order to achieve noise guideline levels in noise sensitive parts of the school.

#### Industrial Noise at Proposed Sensitive Receptors

- 8.155. The proposed dwellings at the site may experience an adverse impact due to noise generated at nearby industrial noise sources. These include the existing T&A Textiles and Hosiery, to the north of the site, as well as the approved but not yet constructed industrial park with 12no. buildings, located to the west of the site. The effects of these noise sources have been assessed separately.

#### T&A Textiles and Hosiery

- 8.156. This section of the assessment details the assessment of the existing industrial noise, from the nearby T&A Textiles & Hosiery (T&A), at the Proposed Development site. The assessment has been carried out in accordance with BS4142.

#### Identification of Specific Noise

- 8.157. Attended noise measurements, onsite observations of the noise sources, and detailed calculations have been used to identify the noise sources, as well as noise levels which would affect the proposed dwellings.
- 8.158. Industrial noise from T&A, audible at the site, has been found to be noise associated with deliveries. This includes HGV movements, reversing alarms, and loading and unloading noise. The noise levels, from the operations have been measured during attended Site works, and supplemented with observations and audio recordings, which allow detailed analysis.

- 8.159. The delivery activities were identified to occur up to once per hour, for up to 10 minutes. The overall specific noise level, which comprises all noise sources associated with the delivery and loading activities, measured at ML4, has been calculated to be 66dB(A) at the monitoring location.
- 8.160. The deliveries are understood to only occur during operating hours of the T&A premises, between 1000-1900 hours. Attended observations were carried out on Site between 0500 hours and 0700 hours, and no activity at the industrial premises was observed. Therefore, industrial noise at proposed receptors, during the night-time have not been assessed.
- 8.161. The proposed dwellings are located approximately 100m from the T&A premises. Therefore, a correction, of -17dB, has been applied to calculate the specific noise level at the nearest dwellings.
- 8.162. The calculated specific sound level, associated with the T&A premises, at the proposed dwellings is up to 49dB(A) during the daytime.

#### Application of Weighting for Characteristics of Specifics Noise

- 8.163. BS4142 includes guidance on the application of an additional weighting which should be applied should the industrial noise be considered to be tonal, impulsive, or intermittent, as experienced at the proposed sensitive receptors.
- 8.164. Noise from T&A includes reversing alarms as part of delivery activities. These include a tonal component, therefore a 2dB correction has been applied to account for a just perceptible tonality, of the short-term reversing alarms, at the proposed dwellings.
- 8.165. No other acoustic characteristic corrections are considered to be appropriate.

#### Identification of the Background Sound Level

- 8.166. Section 8 of BS4142 provides guidance on the selection of the background sound to be used in the assessment. BS4142 states that the background sound levels used for the assessment should be representative of the period being assessed (i.e., daytime or night-time periods), and that there is no "single" background sound level.
- 8.167. A summary of the daytime measured noise levels for use in the assessment are presented in the Table 8.12 To ensure a robust assessment, the background sound levels, used for this industrial noise assessment, were measured during the quiet daytime period. Therefore, noise from the T&A has been compared against the background sound level of 47dB(A) during the daytime.

#### Identification of Rating Noise Level

- 8.168. As activities associated with deliveries operate for up to 10 minutes per hour, an on-time correction is appropriate, to establish the rating level at nearby receptors. The on-time correction applied, during the daytime periods is -8dB. The rating level is shown in **Table 8.15** below.

Table 8.15 – Noise Rating Level

| Description                      | Calculated Noise Levels (dB) |
|----------------------------------|------------------------------|
| Specific Sound Level at ML4      | 66                           |
| Specific Sound Level at Receptor | 49                           |
| Tonal Correction                 | +2                           |
| On-Time                          | -8                           |
| Rating Level                     | 43                           |
| Background Sound Level           | 47                           |

|                            |    |
|----------------------------|----|
| Exceedance over Background | -4 |
|----------------------------|----|

BS4142:2014 Assessment

- 8.169. In accordance with BS4142, the noise rating levels for the noise sources associated with the existing industrial noise sources, as received at the proposed sensitive receptors, have been compared with the corresponding measured background sound level during the daytime, this is shown in Table 8.17. The results show that during the daytime, noise from T&A is below the measured background sound level. Noise from the T&A is therefore expected to generate a low impact at proposed receptors, depending upon context. This is the lowest category identified in BS4142.
- 8.170. In accordance with BS4142, an assessment has been undertaken of the context of the sound.

BS4142 Context Assessment

- 8.171. BS4142:2014 States; "The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound sources exceeds the background sound level and the context in which the sound occurs".
- 8.172. The first requirement of this statement has been determined within the noise impact assessment section above. To determine the context in which the industrial sound will reside, three factors must be considered, these are;
- The absolute level of sound.
  - The character and level of the residual sound compared to the character and level of the specific sound.

*The sensitivity of the receptor. The absolute level of sound*

- 8.173. To determine the first context test in BS4142 it is necessary to determine whether the residual and background sound levels are high or low. Section 11 of BS4142 states;

"Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.

Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse."

- 8.174. The measured residual and background sound levels are considered to be moderate during the daytime. Therefore, the impact suggested in Table 8.15 need not be adjusted for the level of residual or background sound.

*The character and level of the residual sound compared to the character and level of the specific sound*

- 8.175. The T&A is located to the north-west of the site. The residual noise at the Site is considered to be dominated by road traffic noise on Ten Acres Lane and Oldham Road. The noise levels associated with the T&A premises are generated during deliveries, therefore, majority of the noise is generated through HGV movements. Noise from the T&A is therefore considered to be in of character with the residual noise levels on site. Therefore, there is a potential for the character of the sound to further decrease the potential impact of the noise from the T&A at receptors.

*The sensitivity of the receptor*

- 8.176. With regard to the sensitivity of the receptors, Section 11 of BS4142 states;

"The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:

i) facade insulation treatment;

ii) ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and

iii) acoustic screening.”

- 8.177. The proposed dwellings, closest to the T&A premises are expected achieve the internal guideline noise levels with windows open to maintain background ventilation. It is generally agreed that an open window provides 13dB of attenuation. Even with windows open to provide ventilation, the industrial noise rating level will be below the internal guideline level of 35dB(A), set out in BS8233. Therefore, no specific mitigation measures for industrial noise are thought to be required.
- 8.178. The assessment indicates that the noise associated with the T&A will have a **low impact** at proposed sensitive receptors, without specific façade insulation treatment. This is the lowest category set out in BS4142.
- 8.179. Therefore, specific mitigation measures are not required to reduce the impact of noise from the T&A at proposed residential dwellings.

*Summary of BS4142 Assessment*

- 8.180. An assessment of industrial noise was carried out on Site to establish the likelihood of nearby industrial noise, from the T&A premises, affecting the Proposed Development.
- 8.181. The noise assessment has found that, even with a +2 correction applied to account for a tonal characteristic of the noise associated with the premises, the rating noise level from the T&A premises will be below the background sound levels at the Proposed Development site. The proposed receptors nearest to the T&A premises are therefore expected to experience only a **low impact** from industrial noise at the T&A premises. This is the lowest category set out in BS4142.
- 8.182. Therefore, no specific mitigation measures are required, to protect residents from industrial noise generated at the T&A premises.

**Industrial Development – Grimshaw Lane, Manchester**

- 8.183. This section of the ES Chapter details the assessment of the future industrial premises, located off Grimshaw Lane, Manchester, approved 24<sup>th</sup> September 2021 (Ref: 129444/FO/2021). This agreed development comprises 12 industrial units with associated loading bays and car parking.

**Hoare Lea Noise Assessment**

- 8.184. A noise assessment for these industrial premises has been carried out by Hoare Lea in February 2021, the details of this are contained within Hoare Lea's Noise Assessment Report (Ref: Grimshaw Lane, Manchester Rep-10-12571-05-AM-20201104-Environmental Noise Report -Rev 2.DOCX).
- 8.185. The Hoare Lea noise assessment is based on noise monitoring carried out between Friday 6<sup>th</sup> and Monday 9<sup>th</sup> November 2020. Unattended noise monitoring was carried out between the 6<sup>th</sup> and 9<sup>th</sup> to establish daytime and night-time noise levels during the daytime and night-time periods.
- 8.186. Noise monitoring carried out by Hoare Lea was done approximately 5m to the south-west of Ten Acres Lane, and is considered to be representative of the proposed Jackson's Brickworks development. As the proposed development does not introduce receptors closer to the industrial buildings than existing dwellings, this monitoring is considered to be appropriate.
- 8.187. The industrial noise assessment carried out by Hoare Lea is based on the following assumptions:
- The internal noise levels inside industrial buildings are 76dB  $L_{Aeq,1hr}$ .
  - The sound reduction of the building envelope is 25dB(A)  $R_w$ .
  - The attenuation provided by the distance between the industrial premises and nearby receptors will be 28dB.
- 8.188. With the above assumptions taken into account, the Hoare Lea noise assessment calculates that the specific industrial noise levels, likely to be experienced at existing dwellings on Makkah Close and Staplehurst Road are 37dB during the daytime and night-time periods.

- 8.189. In accordance with BS4142, Hoare Lea have added an acoustic character correction of +3dB to account for the likely intermittency in the operation of the future noise sources.
- 8.190. The rating level, of the agreed industrial park, at the nearby existing dwellings on Makkah Close and Staplehurst Road, has been found to be 40dB.
- 8.191. The Hoare Lea noise monitoring identified that representative background sound levels, used to assess the industrial noise during the daytime and night-time periods is 44dB  $L_{A90,T}$ .
- 8.192. The noise assessment carried out by Hoare Lea found that, the rating noise level at receptors on Makkah Close and Staplehurst Road, from the agreed industrial park was 4dB below the measured background sound level. Therefore, the industrial park would generate a 'Low Impact' at nearby existing receptors, which is the lowest category set out in BS4142.

#### Industrial Noise at Proposed Receptors

- 8.193. The noise impact assessed by Hoare Lea, considers the existing and future noise levels at ESR1. Therefore, it is considered to be representative of the proposed dwellings located on the south-western site boundary, closest to Ten Acres Lane.
- 8.194. The industrial noise assessment carried out by Hoare Lea identified that the proposed dwellings are expected to experience a **Low Impact** from the agreed industrial park, with a rating level of 40dB expected to be experienced during the daytime and night-time periods.
- 8.195. As shown in this ES Chapter, dwellings located close to and facing Ten Acres Lane are expected to experience residual noise levels of between 48-68dB  $L_{Aeq,16hrs}$  during the daytime and 43-63dB  $L_{Aeq,8hrs}$  during the night-time. This is shown on Drawings 8.06 and 8.08 respectively.
- 8.196. Therefore, a glazing and ventilation strategy, designed to mitigate road traffic noise internally, is expected to be more than sufficient to mitigate any noise from the agreed industrial park. This is based on noise levels established as part of the Hoare Lea assessment, which has already been agreed by the MCC.
- 8.197. The agreed industrial park is therefore expected to generate a Negligible Impact at proposed residential receptors, in accordance with Table 8.8, and no specific mitigation measures for the agreed industrial park are therefore thought to be required.

#### Assessment of Noise from Briscoe Lane Academy at Proposed Dwellings

- 8.198. Briscoe Lane Academy is located on the south-eastern Site boundary. The majority of noise generated by a school typically occurs on playing fields during break and lunch times. As the playing fields of the Briscoe Academy are screened from the Proposed Development by the existing school buildings, the Proposed Development is not expected to be affected by noise from the school. Therefore, noise from the school is very unlikely to be significant, and its effect has not been considered further.

#### Assessment of Ten Acres Lane Sports Complex

- 8.199. Ten Acres Lane sports Complex is located to the south-west of the Proposed Development site. It was noted that no activity at the sports complex occurred during the noise survey, therefore noise from the complex was not measured. Discussions with the sports complex were however carried out. During this consultation, Wardell Armstrong was informed that the external football pitches are only used by public bookings, and are only available for booking between the hours of 1700 and 2200. Therefore, the sports complex is not active during night-time periods.
- 8.200. A desktop review of the sports complex has shown that the building envelope comprises 50% blockwork, and 50% cladded insulation. This type of construction typically provides a high amount of acoustic attenuation. Therefore, noise from activities inside the sports complex are assumed to be sufficiently mitigated by the building envelope to not generate an adverse impact at proposed receptors.
- 8.201. As the external football pitches comprise Artificial Grass Pitches, the Sport England Design Guidance Note on Artificial Grass Pitch Acoustics, 2015, (AGP), was used to inform the computer noise model. In accordance with the

note, the existing pitches were modelled as an area source, at a height of 1.5m above the ground. These were calibrated to a level of 58dB ( $L_{Aeq, 1hour}$ ) at a distance of 10m from the side line halfway marking, as specified in AGP guidance.

- 8.202. These noise levels at proposed dwellings, taking into account future traffic levels, and the sports pitches were modelled, and are shown on Drawing 8.05. The figure shows that the noise levels in garden areas achieve the external guideline noise levels of 55dB, as set out in BS8233, with no specific mitigation in place.

## Mitigation Measures

### Construction Phase

#### Noise from Earthworks and Construction

- 8.203. In order to reduce the potential impact of noise levels generated by the construction phase of the Proposed Development, at existing receptor locations in the immediate vicinity of the Site, mitigation measures will be required. These can be included within a Construction Environmental Management Plan.
- 8.204. Typically, unless otherwise agreed with the Local Authority, noisy construction works should be restricted to daytime hours to between 0730 and 1800 hours Monday to Friday, and between 0830 and 1400 hours on Saturdays, with no noisy work permitted on Sundays or Bank Holidays.
- 8.205. Under Section 60 of the COPA 1974 Act the local authority has the power to serve a notice which could impose requirements as to the way in which works are to be carried out. This could specify times of operation, maximum levels of noise which should be emitted and the type of plant which should or should not be used. This is a common way of enforcing reasonable levels of construction noise.
- 8.206. However, it may be preferable for the chosen contractor to obtain prior consent under Section 61 of COPA 1974. Section 61 enables anyone who intends to carry out works to apply to the local authority for consent. Under Section 61 the local authorities and those responsible for construction work, have an opportunity to settle any problems, relating to the potential noise, before work starts.
- 8.207. The CEMP will require that best working practice will be implemented during each phase of the earthworks and construction works at the Site. The construction works will follow the guidelines in BS5228-1 and the guidance in BRE Controlling particles, vapour and noise pollution from construction sites, Parts 1 to 5, 2003.
- 8.208. The following measures will also be included to minimise noise emissions.
- When works are taking place within close proximity to the sensitive receptors identified, the screening of noise sources via the erection of temporary screens will be employed.
  - All machinery will be regularly maintained to control noise emissions, with particular emphasis on lubrication of bearings and the integrity of silencers.
  - Site staff will be made aware that they are working adjacent to a sensitive area and avoid all unnecessary noise due to misuse of tools and equipment, unnecessary shouting and radios.
  - As far as possible, the avoidance of two noisy operations occurring simultaneously in close proximity to the same sensitive receptor.
  - Adherence to any time limits imposed on noisy works by the local authority.
  - Implement set working hours during the week and at weekends.
  - Ensure engines are turned off when possible.
  - Should earthworks and construction activities need to be carried out during night-time hours, the local authority may include a planning condition that requests advance notice and details of any night working to be provided.

## Vibration from Earthworks and Construction

- 8.209. BS5228-2 recognises that the most common form of vibration associated with piling is the intermittent type derived from conventional driven piling. Whilst it is recognised that the piling process will need to be selected on the basis of the strata to be encountered, the loads to be supported and the economics of the system, careful consideration (by the appointed Developer(s)) will be given to the type of piling to be used in order to minimise the potential for vibration to be generated by any necessary piling.
- 8.210. The receptors likely to be affected by piling will vary depending on the phase of the Proposed Development under construction. Once the precise building locations and ground conditions for each location and type(s) of piling are confirmed, vibration levels will be estimated and recommendations for control made as appropriate.
- 8.211. To keep ground borne vibration to a minimum the following measures (as referred to in BS5228-2) will be put in place (and enshrined within the CEMP):
- Substitution: Where reasonably practicable, plant and or methods of work likely to cause significant levels of vibration at the receptors identified will be replaced by less intrusive plant/methods of working; and
  - Isolation of plant at source: This may prove a viable option where the plant is stationary (e.g. a compressor, generator) and located close to a receptor.
- 8.212. There are a number of measures that can be implemented, depending upon the type of piling chosen (e.g. continuous flight auger (CFA) piling produces significantly less vibration than conventional driven piling and, therefore, fewer mitigation measures would be required if CFA piling were chosen as the preferred method). Additionally, the distance between the piling rig and the receptors has a significant bearing upon the likely impact, and the vibration produced by piling is transient and occurs in any one location for only a limited period of time.
- 8.213. BS5228-2 indicates that mitigation might include the use of alternative methods, removal of obstructions, provision of cut-off trenches, reduction of energy input per blow, reduction of resistance to penetration. As the construction programme and methodologies become more defined, earthworks and construction vibration will be reviewed and a detailed strategy for control will be devised and implemented.

## Operation

### Existing Sensitive Receptors

- 8.214. The assessment shows that road traffic noise as a result of the Proposed Development will increase at some existing sensitive receptors. However, the magnitude of the increase at the ESRs is shown to be between None and Minor Adverse (Not Significant). Therefore, no specific mitigation measures are required to reduce the increased road traffic noise at ESRs.

### Proposed Sensitive Receptors

- 8.215. The Proposed Development is understood to be proposed as a hybrid application, with Phase 1 on the western part of the Site requiring a full planning permission informed by a detailed noise assessment. Phase 2 of the Proposed Development, on the eastern part of the Site is proposed in outline terms only. Therefore, mitigation measures in Phase 2 of the Site have been recommended in outline terms only.

### Phase 2 (Outline Assessment)

- 8.216. As Phase 2 of the Proposed Development, is proposed in outline terms, mitigation measures have been recommended in outline terms only. Mitigation measures will include:
- The orientation of dwellings to screen garden areas from significant sources of noise.
  - 1.8m high close boarded fencing for external areas, adjacent to the road network.
  - Appropriate glazing and ventilation.
- 8.217. This will be delivered through reserved matters applications and a suitably worded condition to ensure the relevant standards are met.

- 8.218. This approach is demonstrated to be an effective method of mitigation for the proposed dwellings which are exposed to the highest noise levels. These are the dwellings on the western Site boundary close to the Ten Acres Lane and main Site access road. The results of the modelling are shown on Drawing 8.05.
- 8.219. The noise contour plot shows that, with the correct orientation of dwellings, and 1.8m high close boarded fencing, 55dB(A) can be achieved in all garden areas. Gardens associated with dwellings located further into the site, and away from the proposed Link Road, are expected to achieve the lower guideline noise level of 50dB (L<sub>Aeq,16 hours</sub>), with no specific mitigation measures required.
- 8.220. When assessing daytime noise levels in noise sensitive rooms, the noise attenuation provided by the overall building façade will be considered. To mitigate noise levels, the composition of the building façade will be designed to provide the level of attenuation required.
- 8.221. As glazing is generally the building element that attenuates noise the least, the proportion of glazing in a building façade is an important consideration when assessing overall noise attenuation. In the absence of design details for the building façades, it is assumed that the glazing to buildings would comprise about 25% of the façade area. To calculate the overall attenuation provided by this percentage of glazing in a brick or block façades, a non-uniform partition calculation can be used.
- 8.222. The calculation combines the different degrees of attenuation of the wall element and the window element. A façade comprising a solid brick or blockwork, will attenuate noise by 45dB (British Standard 8233: Guidance on Sound Insulation & Noise Reduction for Buildings 2014) whereas standard thermal double glazing will attenuate traffic noise by 26-29dB(A) (BRE Digest 379 Double Glazing for Heat & Sound Insulation). The overall noise attenuation provided by this combination is, therefore, between 31.9dB(A) and 34.9dB(A).
- 8.223. A number of types of glazing would be able to achieve noise mitigation of between 26-29dB(A). For example, 6/12/6 glazing would achieve 26dB(A) attenuation and 10/12/4 glazing would achieve 29 dB(A) attenuation. The noise attenuation requirements are summarised on Drawing 8.07 during the daytime periods, and Drawing 8.09 during the night-time periods. The plots for both the daytime and night-time have been colour coded to show:
- Green colour – Windows can be opened without the internal noise guideline levels being exceeded, and any industrial noise would cause a low impact.
  - Yellow colour – Standard glazing and acoustic ventilation will be required to achieve internal noise guideline levels and any industrial noise would cause a low impact.
  - Orange colour – Enhanced glazing and possible mechanical ventilation will be required to achieve internal noise guideline levels.
- 8.224. The proposed mitigation measures have been calculated using computer noise modelling. This takes into account the proposed Site layout, and any screening provided by intervening dwellings.
- 8.225. The potential risk of overheating occurring at proposed receptors, due to the likely acoustic design measures required, to achieve internal noise guideline levels, has been assessed in accordance with AVO guidance. The Stage 1 assessment has indicated that the proposed dwellings in Phase 2 of the development will experience a Negligible to Low risk of overheating.

#### Phase 1 (Detailed Assessment)

- 8.226. As Phase 1 of the Proposed Development, is proposed as a full planning application, mitigation measures have been calculated in detailed terms. Mitigation measures will include:
- The orientation of dwellings to screen garden areas from significant sources of noise.
  - 1.8m high close boarded fencing for external areas, adjacent to the road network.
  - Appropriate glazing and ventilation.
- 8.227. This will be delivered through a suitably worded condition to ensure the relevant standards are met.

- 8.228. This approach is demonstrated to be an effective method of mitigation for the proposed dwellings which are exposed to the highest noise levels. These are the dwellings on the western Site boundary close to the Ten Acres Lane and main Site access road. The results of the modelling are shown on Drawing 8.05, included in **Appendix 8.3**.
- 8.229. The noise contour plot shows that, with the correct orientation of dwellings, and 1.8m high close boarded fencing, 55dB(A) can be achieved in all garden areas. Gardens associated with dwellings located further into the site, and away from the proposed Link Road, are expected to achieve the lower guideline noise level of 50dB ( $L_{Aeq,16\text{ hours}}$ ), with no specific mitigation measures required.
- 8.230. When assessing daytime noise levels in noise sensitive rooms, the noise attenuation provided by the overall building façade will be considered. To mitigate noise levels, the composition of the building façade will be designed to provide the level of attenuation required.
- 8.231. Detailed noise break-in calculations, which allow the calculation of the overall attenuation of non-uniform partitions, have been used to determine the appropriate glazing and ventilation strategy for proposed dwellings. The calculations are based on final layout and elevation drawings provided by the client.
- 8.232. The calculation combines the different degrees of attenuation of the wall element and the window element. A façade comprising a solid brick or blockwork, will attenuate noise by 45dB (British Standard 8233: Guidance on Sound Insulation & Noise Reduction for Buildings 2014) whereas attenuation provided by glazing is less.
- 8.233. An appropriate glazing and ventilation strategy has been devised to establish the mitigation measures required to achieve internal daytime and night-time guideline noise levels inside proposed premises. The recommended glazing and ventilation strategy is shown on Drawings 8.06 and 8.08, and have been colour coded to show:
- Green colour – Windows can be opened without the internal noise guideline levels being exceeded, and any industrial noise would cause a low impact.
  - Yellow colour – 6/12/6 double thermal glazing, with Greenwood 5000EA AC.1 trickle ventilators.
  - Orange colour – 10/16/10 double thermal glazing, with Greenwood 2500EA AC.1 trickle ventilators.
- 8.234. The proposed mitigation measures have been calculated using computer noise modelling. This takes into account the proposed Site layout, and any screening provided by intervening dwellings.
- 8.235. The potential risk of overheating occurring at proposed receptors, due to the acoustic design measures required, to achieve internal noise guideline levels, has been assessed in accordance with AVO guidance. The Stage 1 assessment has indicated that majority of the proposed dwellings in Phase 1 of the development will experience a Negligible to Low risk of overheating.

## Proposed School

- 8.236. Mitigation measures may be required to ensure that the internal and external areas of the proposed school can achieve the suggested noise limits. Any mitigation measures will be identified and agreed at the detailed design stage and will be specific to the noise source and level of attenuation required. This should be controlled through a planning condition.

## Cumulative Effects

- 8.237. When considering likely significant cumulative effects, this assessment has considered the following intra-cumulative effects (i.e. those that occur as a result of the Proposed Development in isolation) and inter-cumulative effects (i.e. those that occur as a result of the Proposed Development in combination with the other developments). For the latter, the 'other developments' include any development that is known within the planning system and any development where construction has yet to commence. Where construction has commenced, the other development is considered to be part of the existing baseline conditions.
- 8.238. The results of the long-term noise impact assessment of road traffic noise is detailed in Table 8.16 below and includes the noise impact for each existing sensitive receptor in accordance with the significance criteria.

Table 8.16 - SoundPLAN predictions for the Long-term with and without Development, and Committed Developments, Scenarios and Changes in Predicted Road Traffic Noise Levels (Figures in dB)

| Existing Sensitive Receptor Number |                                 | Predicted L <sub>10 18hour</sub> dB(A) at the façade of the Receptor |             | Change in Noise (Scenario 1 vs Scenario 3b) | Significance of Impact |
|------------------------------------|---------------------------------|----------------------------------------------------------------------|-------------|---------------------------------------------|------------------------|
|                                    |                                 | Scenario 1                                                           | Scenario 3b |                                             |                        |
| ESR1                               | 1 Makkah Close, Manchester      | 61.5                                                                 | 64.3        | +2.9                                        | Negligible Adverse     |
| ESR3                               | 70 Mitchell Street, Manchester  | 55.1                                                                 | 59.8        | +4.7                                        | Minor Adverse          |
| ESR5                               | 190 Briscoe Lane, Manchester    | 69.0                                                                 | 69.6        | +0.6                                        | Negligible Adverse     |
| ESR6                               | 145 Mitchell Street, Manchester | 72.3                                                                 | 72.2        | +0.0                                        | No Change              |
| ESR7                               | 19 Ten Acres Lane, Manchester   | 62.2                                                                 | 64.7        | +2.5                                        | Negligible Adverse     |

8.239. The cumulative changes in noise levels have been assessed against the significance criteria contained in Table 8.11. The results show that the highest increase will be +4.7dB(A), at ESR3, when comparing the Baseline (Scenario 1) and With Development (Phase 1, Phase 2 + Proposed School + Committed Developments) scenario (Scenario 3b). The lowest impact is +0.6dB(A), at ESR5. ESR6 will experience no change in noise levels between Scenario 1, and Scenario 3b.

8.240. The sensitivity of the ESR is moderate and the magnitude of change at most ESRs is Negligible and No Change. Therefore, there is likely to be a **Negligible** (i.e. Not Significant) direct, permanent, long-term impact on ESRs 1, 5, 6, and 7. Due to the introduction of a proposed link road, through the development, the magnitude of change at ESR3 is Minor Adverse. Therefore, ESR3 is likely to experience a **Minor Adverse** (i.e. Not Significant) direct, permanent, long-term impact.

8.241. The sensitivity of the ESRs is moderate and the magnitude of change is between None to Negligible. Therefore, there is likely to be a direct, permanent, long-term residual effect on ESRs **None** (i.e. Not Significant).

## Residual Effects

8.242. **Table 8.17** below shows the residual effects with significant effects highlighted in yellow (according to the methodology).

Table 8. 17 – Summary of Receptors, Likely Significant Effects, Mitigation Measures and Residual Effects

| Receptor(s)  | Likely Significant Effects | Mitigation Measures | Residual Effects                              |
|--------------|----------------------------|---------------------|-----------------------------------------------|
| Construction |                            |                     |                                               |
| ESR1         | Moderate Adverse           | CEMP                | None (with brief periods of Moderate Adverse) |
| ESR2         | Moderate Adverse           | CEMP                | None (with brief periods of Moderate Adverse) |
| ESR3         | Moderate Adverse           | CEMP                | None (with brief periods of Moderate Adverse) |
| ESR4         | Moderate Adverse           | CEMP                | None (with brief periods of Moderate Adverse) |

| Receptor(s)        | Likely Significant Effects | Mitigation Measures | Residual Effects |
|--------------------|----------------------------|---------------------|------------------|
| <b>Operational</b> |                            |                     |                  |
| ESR1               | Negligible Adverse         | None                | Negligible       |
| ESR3               | Minor Adverse              | None                | Minor Adverse    |
| ESR5               | Negligible Adverse         | None                | Negligible       |
| ESR6               | No Change                  | None                | Negligible       |
| ESR7               | Negligible Adverse         | None                | Negligible       |

## Construction Phase

- 8.243. The activities carried out during the earthworks and construction phase of the Proposed Development will have the potential to generate short-term increases in noise levels above the recommended noise limits (set in accordance with current guidance) at existing and proposed sensitive receptors surrounding the Site. The use of heavy plant associated with the earthworks and construction works also has the potential to give rise to ground borne vibration.
- 8.244. In order to minimise the potential impact of construction works, appropriate mitigation measures (including restrictions on working hours, the implementation of temporary screening (where possible) and best working practices as detailed in the mitigation section of this Chapter) will be put in place. In addition to earthworks and construction, it is possible that piling will be required. At this stage detailed information regarding the type of piling has not been confirmed. In order to minimise the potential for vibration to be generated by piling, it is recommended that careful consideration be given to the type of piling used.
- 8.245. The sensitivity of the existing and proposed sensitive receptors is moderate and the magnitude of change with mitigation in place is small. Therefore, following the implementation of mitigation measures, there is likely to be a short-term effect on existing and proposed sensitive receptors of **Moderate Adverse (Not Significant) to None (Not Significant)**, with any moderate effects likely to be brief and localised.

## Operational Phase

### Existing Sensitive Receptors

- 8.246. The effect of the change in noise levels, at receptors, due to increase in road traffic levels, is expected to be **Negligible Adverse (Not Significant) to None (Not Significant)**, with one ESR experiencing a **Minor Adverse (Not Significant)** effect in the long term.

### Proposed Sensitive Receptors

- 8.247. The proposed sensitive areas of the Proposed Development (i.e. the future residential areas, will be subjected to noise from existing and proposed sources). The dominant source of noise at the sensitive areas of the Proposed Development is road traffic on the major roads in the vicinity of the Site. In addition to the existing sources of noise, development-generated vehicle movements on the local road network have the potential to increase noise levels across the Site. The results of the baseline noise survey and noise prediction calculations indicate that the noise levels at the Proposed Development will not be a determining factor in granting planning permission in accordance with current guidance.
- 8.248. Mitigation measures will be incorporated into the Site design in order to ensure that the required internal daytime and internal night-time noise levels are achieved at the proposed residential areas. Once these measures are implemented, the effect at ESR receptors from the future road traffic noise would be **Negligible (Not Significant)**.

## Reference List

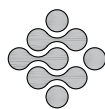
- 8.249. This ES Chapter has been prepared by reference to the following:
- Planning Practice Guidance (Noise) 2019.

- IEMA Guidelines for Environmental Noise Impact Assessment.
- BS5228:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise (BS5228-1), and Part 2: Vibration (BS5228-2).
- BS7445-2: 1991 Description & Measurement of Environmental Noise Guide to the Acquisition of Data Pertinent to Land Use.
- LA 111 - Noise and vibration.
- The Department of Transport's technical memorandum Calculation of Road Traffic Noise 1998 (CRTN).
- British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings (BS8233).
- Building Bulletin 93 Acoustic Design of Schools (BB93).
- British Standard BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound (BS4142).
- BS6472-1: 2008 Guide to Evaluation of Human Exposure to Vibration in Buildings.

# Figure 8.1: Monitoring Locations

**KEY**

-  Site Boundary  
 Noise Monitoring Locations  
 Existing Sensitive Receptors

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- ☐ BIRMINGHAM      ☐ GLASGOW  
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☐ CARDIFF      ☐ MANCHESTER  
☐ CARLISLE      ☐ SHEFFIELD  
☐ EDINBURGH      ☐ STOKE ON TRENT

**Figure:**

8.01

**Title:**

### Noise Monitoring Location and Existing Sensitive Receptor Plan

**Project:**

## Jackson's Brickworks, Manchester

Date:

**March 2021**

**Scale:**

1:5,000

# 9. Air Quality

## Introduction

- 9.1. This Chapter of the ES assesses the likely Air Quality impacts of the Proposed Development upon the Site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.
- 9.2. This Chapter of the ES has been prepared by Wardell Armstrong. The ES Chapter has been written by Rachael Stiles (Senior Environmental Scientist), Paul Threlfall (Principal Environmental Scientist) and reviewed by Malcolm Walton (Technical Director).
- 9.3. Rachael joined Wardell Armstrong in October 2021 but started her career as an air quality consultant in April 2018, after completing a BSc Physical Geography at Newcastle University and an MSc in Sustainability (Environmental Consultancy and Project Management) at the University of Leeds. Rachael has worked on a variety of transportation infrastructure projects and has developed technical experience in air quality monitoring, detailed air quality assessments using dispersion modelling software such as ADMS roads, as well as construction dust assessments to support planning assessments.
- 9.4. Paul joined Wardell Armstrong in October 2017 as an Air Quality Scientist, after completing his MSc Water, Energy and the Environment at Liverpool John Moores University. The majority of his work is carried out in support of planning applications and, therefore, he has experience of undertaking air quality assessments for a wide range of projects including residential developments, commercial developments and mixed-use developments.
- 9.5. Malcolm holds a Bachelor of Science degree in Environmental Health and the Diploma in Acoustics and Noise Control. Malcolm is a Member of the Chartered Institute of Environmental Health and an Associate Member of the Institute of Acoustics. Malcolm joined Wardell Armstrong in September 2001 following 12 years working as an Environmental Health Officer in several local authorities, responsible for the enforcement of environmental legislation and, in particular, air pollution and noise nuisance. Malcolm has experience in the technical co-ordination of environmental appraisal of large schemes to UK and international standards. Malcolm regularly carries out and co-ordinates noise and air quality assessment work associated with planning applications including EIA work and PPC permit application/compliance. He also regularly acts as expert witness in planning inquiries in respect of noise, air quality and odour.
- 9.6. This Chapter is accompanied by three technical appendices: Legislation, Policy and Guidance (**Appendix 9.1**), Assessment Methodology (**Appendix 9.2**) and Air Quality Assessment Results (**Appendix 9.3**).

## Limitations and Assumptions

- 9.7. Air quality assessments make use of official sources of information (i.e., vehicle emission factors and background concentrations), which have historically been considered to be overly optimistic. Monitoring data collected by the UK Government and local authorities over the past few years has shown that annual mean NO<sub>2</sub> concentrations remained higher than previously expected (especially in roadside locations). This was widely thought to be due to the lower-than-expected decline in NO<sub>x</sub> emissions from diesel vehicles (even though new Euro standards have been introduced), coupled with an overall increase in the number of diesel vehicles on the road.
- 9.8. The vehicle emission factors used in this assessment are from Defra's latest Emission Factor Toolkit (EFT v11.0)<sup>1</sup>, which was released in November 2021 and is the most up-to-date version available. This version supersedes the previous version, EFT v10.1.

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<sup>1</sup> Defra Local Air Quality Management webpages (<https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>)

- 9.9. A position statement was produced by the IAQM in 2018 which dealt specifically with the use of EFT v8 and the consideration of uncertainties in predicting future air quality<sup>2</sup>. The statement concluded that the approaches for dealing with this uncertainty should be decided on a case-by-case basis but may include the use of a sensitivity test in which it is assumed that NO<sub>x</sub> emissions will not reduce as quickly as within the EFT.
- 9.10. A later study provided evidence that EFT v9.0 may be relied upon to predict the 'most likely' future emissions reductions, as long as model verification has been undertaken using monitored data from 2016 or later<sup>3</sup>.
- 9.11. The IAQM has recently withdrawn their 2018 position statement on the consideration of uncertainties in predicting future air quality<sup>4</sup>. A growing body of evidence suggests that the latest COPERT vehicle emission factors used in EFT v9.0 (and later) reflect real-world NO<sub>x</sub> emissions more accurately. As a result, the IAQM judges that "an exclusively vehicle emissions-based sensitivity test is no longer necessary". This is provided that the assessment has been verified using monitoring data from 2016 or later. As EFT v11.0 uses the same emission factors and vehicle fleet compositions as EFT v10.1 up to 2030 (EFT v10.1 did not consider emissions past 2030), it is considered that the above applies to EFT v11.0.
- 9.12. In accordance with Defra guidance, the air quality assessment has been carried out using EFT v11.0. As model verification has been undertaken, following the latest guidance from the IAQM it is not considered necessary to carry out a sensitivity analysis. Further information on the vehicle emission factors used in the assessment are provided in **Appendix 9.2**.
- 9.13. Several steps have been taken to ensure the model is as accurate and representative as possible. These comprise:
- Consultation has been undertaken with Manchester City Council (MCC) to confirm their agreement with the methodology used within the assessment;
  - Detailed traffic data has been obtained from Vectos, the appointed transport consultant following extensive consultation to ensure its appropriateness and robustness;
  - The latest Defra LAQM tools have been incorporated into the assessment following their release in November 2021;
  - Meteorological data, obtained from Manchester Airport meteorological recording station, has been incorporated into the assessment;
  - Road widths and the location of ESRs in relation to each road have been measured in detail to ensure greater accuracy within the model; and
  - One Manchester City Council (MCC) diffusion tube has been included within the assessment to allow model verification to take place. Model verification factor(s) have been applied to NO<sub>x</sub> concentrations, which are then input into the Defra NO<sub>x</sub> to NO<sub>2</sub> calculator tool to predict total NO<sub>2</sub> concentrations at each receptor considered in the assessment.

## Legislative and Policy Context

- 9.14. The relevant legislation, policy and guidance are listed below, with further details provided in **Appendix 9.1**.

### Legislation

- 9.15. The applicable legislative framework is summarised as follows:
- The Environment Act, 1995;

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<sup>2</sup> Institute of Air Quality Management, Dealing with Uncertainty in Vehicle NO<sub>x</sub> Emissions within Air Quality Assessments v1.1, July 2018

<sup>3</sup> Air Quality Consultants, Performance of Defra's Emission Factor Toolkit 2013 – 2019, February 2020

<sup>4</sup> Available on the Institute of Air Quality Management website ([https://iaqm.co.uk/wp-content/uploads/2013/02/iaqm\\_uncertainty\\_vehicle\\_NOx\\_emission\\_withdrawn-02.pdf](https://iaqm.co.uk/wp-content/uploads/2013/02/iaqm_uncertainty_vehicle_NOx_emission_withdrawn-02.pdf))

- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2011;
- Directive 2008/50/EC of the European Parliament and of the Council of 21st May 2008 on Ambient Air Quality and Cleaner Air for Europe, 2008; and
- Air Quality (Standards) Regulations, 2010.

### National Planning Policy and Guidance

9.16. The applicable planning policy is summarised as follows:

- National Planning Policy Framework, 2021.

9.17. The applicable guidance is summarised as follows:

- Planning Practice Guidance: Air Quality, 2019;
- Institute of Air Quality Management (IAQM), Guidance on the Assessment of Dust from Demolition and Construction, 2016;
- Environmental Protection UK (EPUK) and IAQM, Land-Use Planning and Development Control: Planning for Air Quality, 2017; and
- Department for Environment Food and Rural Affairs (Defra), Local Air Quality Management Technical Guidance (TG16), 2021.

### Local Planning Policy

9.18. The applicable local planning policy is as follows:

- Manchester's Core Strategy Development Plan 2012 to 2027 (the key document in the Manchester's Local Development Framework), 2012.

## Assessment Methodology and Significance Criteria

### Scope of the Assessment

9.19. The scope of works to be considered in the air quality assessment, comprises the following:

- A qualitative assessment in order to consider the potential effects associated with the construction phase of the Proposed Development; and
- Detailed air dispersion modelling in order to assess the potential effects associated with the operation of the Proposed Development.

### Effects Not Considered within the Scope

9.20. According to the Multi Agency Geographic Information for the Countryside (MAGIC) resource, there are no potentially sensitive designated habitat sites within close proximity to the Proposed Development (the nearest ecological Site is Rochdale Canal - Site of Special Scientific Interest and is located 1.2km north west). Therefore, from an air quality perspective, ecological effects do not need to be considered for either the construction or operational phase of the Proposed Development.

### Extent of the Study Area

9.21. For the construction phase assessment, existing sensitive human receptors located within 350m of the Site boundary and/or within 50m of the route that construction vehicles will take have been identified.

9.22. For the operational phase assessment, the study area has been defined by the road network for which detailed traffic data is available, as part of the Transport Assessment undertaken in Chapter 7. The extent of the operational phase study area can be seen in **Appendix 9.2**. Existing Sensitive Receptor (ESR) locations have been chosen within

200m of these roads in order to assess the potential change in pollution concentrations at these locations due to the increase in vehicle movements generated by the Proposed Development. In addition, Proposed Sensitive Receptor (PSR) locations have been identified within the development Site itself.

- 9.23. These criteria and distances are taken from the relevant guidance detailed within **Appendix 9.1** and have been applied using the methodologies detailed within **Appendix 9.2**.

### Construction Phase Assessment Methodology

- 9.24. The construction phase assessment has been undertaken in accordance with guidance from the IAQM<sup>5</sup>. This guidance provides a methodology for the assessment of potential dust soiling and human health effects associated with the construction phase of the Proposed Development.
- 9.25. The assessment takes into account the risk of dust and PM<sub>10</sub> effects from construction phase activities, based on a number of factors including the scale and type of activities taking place, and the sensitivity of the local area. Based on the outcome of this, site-specific mitigation measures can be recommended.
- 9.26. The closest sensitive human receptor locations to where construction phase activities will take place are detailed in Table 9.1.

Table 9.1 – Existing Dust Sensitive Receptors – Human Receptors

| Receptor                                                                                            | Direction from the Site | Approximate Distance from Combined Phase 1 and Phase 2 Site Boundary |
|-----------------------------------------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------|
| Existing commercial/industrial buildings along Ten Acres Lane and Bower Street                      | North west              | <20m at closest point                                                |
| Existing residential properties along John Foran Close, Harold Priestnall Close and Morecambe Close | North and north west    | <20m at closest point                                                |
| Existing residential properties along Roger Byrne Close and Mitchell Street                         | East                    | <20m at closest point                                                |
| Briscoe Lane's Academy                                                                              | South                   | <20m at closest point                                                |
| Existing residential properties along Mortlake Drive                                                | South East              | <20m at closest point                                                |
| Existing residential properties along Hallam Road and Morse Road                                    | South West              | <20m at closest point                                                |
| Existing residential properties along Makkah Close                                                  | West                    | <20m at closest point                                                |

- 9.27. There are no ecological receptors, or potentially dust sensitive statutory designated habitat sites, within 50m of the Site and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the Site entrance(s). Ecological effects do not therefore need to be considered in the construction phase assessment.
- 9.28. The construction phase assessment has considered the impact of the Proposed Development in its entirety (i.e., Phase 1 and Phase 2 (including the school)) on existing sensitive receptors. As Phase 1 is to be built out before Phase 2, it is likely that new sensitive receptors (i.e., the proposed residential receptors within Phase 1) will be within 350m of construction phase activities associated with Phase 2. Cumulative impacts of the construction phase of Phase 2 on sensitive receptors within Phase 1 have therefore also been considered later in this Chapter.

<sup>5</sup> Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction, June 2016

- 9.29. The IAQM criteria used to assess the impact of the construction phase of the Proposed Development, and the associated significance of effects at existing sensitive receptor locations are included in **Appendix 9.2**.

### Operational Phase Assessment Methodology

- 9.30. A detailed assessment of the effects on human receptors during the operational phase of the Proposed Development has been undertaken in accordance with guidance from EPUK and the IAQM<sup>6</sup>.
- 9.31. Air dispersion modelling has been undertaken to consider the air quality effects associated with road traffic emissions at representative existing receptor locations. All predicted pollutant concentrations and deposition have been compared to the relevant air quality objectives, as detailed in the Air Quality (Standards) Regulations 2010.
- 9.32. There are no statutory designated habitat sites in close proximity to the roads likely to be affected by the Proposed Development, therefore, ecological effects do not need to be considered in the operational phase assessment.
- 9.33. Air quality modelling has been carried out to predict pollutant concentrations, due to road traffic emissions, for eight impact assessment scenarios:
- Scenario 1: Verification and Baseline Year (2019 base year);
  - Scenario 1i: Baseline Year traffic data (2030 opening/future year);
  - Scenario 1a: Baseline Year traffic data + Phase 1 (2030 opening/future year);
  - Scenario 1b: Baseline Year traffic data + Phase 1 + committed developments (2030 opening/future year);
  - Scenario 2a: Baseline Year traffic data + Phase 1 and School (2030 opening/future year);
  - Scenario 2b: Baseline Year traffic data + Phase 1 and School + committed developments (2030 opening/future year);
  - Scenario 3a: Baseline Year traffic data + Phase 1, School and Phase 2 (2030 opening/future year); and
  - Scenario 3b: Baseline Year traffic data + Phase 1, School and Phase 2 + committed developments (2030 opening/future year).
- 9.34. The with development scenarios (i.e., scenarios 1a-b, 2a-b and 3a-b) assume 100% occupancy. For the purpose of this assessment, 2030 has been used as the opening/future year, as this is when Phases 1 and 2 are expected to be fully operational.
- 9.35. It is understood that Phase 1 of the development, in the western half of the Site, forms the detailed planning application, and is to comprise of:
- A community hub building (Use Classes E, F1, F2); and
  - 378 dwellings, including apartments (Use Class C3).
- 9.36. It is understood that Phase 2 of the development, in the eastern half of the Site, forms the outline planning application, and is to comprise of:
- A secondary school (Use Class F1); and
  - Up to a further 338 residential units (Use Class C3).

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<sup>6</sup> Moorcroft and Barrowcliffe et al, Land-Use Planning and Development Control: Planning for Air Quality (v1.2), January 2017

- 9.37. Further information on the traffic data and scenarios used in the operational phase assessment is outlined in **Appendix 9.2**.
- 9.38. At this stage, the opening years of Phases 1 and 2 are unknown, however it is expected that the opening years will be post-2030. It is assumed that the school will open in 2026, however, to be able to assess the operational phase of the school in conjunction with the operation phases of Phase 1 and 2, 2030 has been assessed as the opening/future year across all scenarios.

#### Sensitive Receptor Locations

- 9.39. A number of existing sensitive human receptors (referred to as ESR 1 to ESR 23) have been selected for consideration in the air quality assessment. ESR locations have been chosen to represent worst case scenarios, for example, close to busy roads or junctions.
- 9.40. Details of these receptors are provided in Table 9.2, and their locations are shown on Figure 9.1.

Table 9.2 - Existing Sensitive Receptors Considered in Operational Phase Assessment

| Receptor | Address           | Grid Reference |          | Receptor Type |
|----------|-------------------|----------------|----------|---------------|
|          |                   | Easting        | Northing |               |
| ESR 1    | Monsall Road      | 386532         | 400426   | Residential   |
| ESR 2    |                   | 386460         | 400571   | Residential   |
| ESR 3    | Oldham Road       | 386925         | 400370   | Residential   |
| ESR 4    |                   | 387341         | 400572   | Residential   |
| ESR 5    | Dean Lane         | 387867         | 400683   | Residential   |
| ESR 6    | Oldham Road       | 387812         | 400666   | Residential   |
| ESR 7    | Dean Lane         | 387860         | 400723   | Residential   |
| ESR 8    |                   | 387848         | 400949   | Residential   |
| ESR 9    | St Mary's Road    | 387869         | 400954   | Residential   |
| ESR 10   | Troydale Drive    | 387387         | 400523   | Residential   |
| ESR 11   |                   | 387826         | 400630   | Residential   |
| ESR 12   | Oldham Road       | 387965         | 400700   | Residential   |
| ESR 13   | Old Church Street | 388084         | 400522   | Residential   |
| ESR 14   |                   | 388132         | 400492   | Residential   |
| ESR 15   | Culcheth Lane     | 388331         | 400320   | School        |
| ESR 16   |                   | 388305         | 400325   | Residential   |
| ESR 17   |                   | 388449         | 400039   | Residential   |
| ESR 18   | Briscoe Lane      | 388246         | 400359   | Residential   |

| Receptor | Address        | Grid Reference |          | Receptor Type |
|----------|----------------|----------------|----------|---------------|
|          |                | Easting        | Northing |               |
| ESR 19   | Ten Acres Lane | 388043         | 400233   | Residential   |
| ESR 20   |                | 387689         | 399990   | Residential   |
| ESR 21   |                | 387435         | 399816   | Residential   |
| ESR 22   |                | 387248         | 400073   | Residential   |
| ESR 23   |                | 387134         | 400238   | Residential   |

- 9.41. In addition, five proposed sensitive human receptors (referred to as PSR 1-5) have been selected for consideration in the air quality assessment. PSR 1 and 2 have been selected to represent residential dwellings included in Phase 1; PSR 1 represents a proposed residential area closest to St Mary's Road and the proposed Site access road, whilst PSR 2 represents a proposed residential area further east, along the Site access road. PSR 3 represents the proposed school area. PSR's 4 and 5 represent residential dwellings included in Phase 2; PSR 4 represents a proposed residential area along the Site access road, whilst PSR 5 represents a proposed residential area further east, where the Site access road meets Mitchell Street.
- 9.42. It is only necessary to consider the scenarios with the Proposed Development in operation as the PSRs will not experience any 'without development' conditions. It is therefore not necessary to consider the change in pollutant concentrations at the proposed receptors.
- 9.43. Details of these receptors are provided in **Table 9.3**, and their locations are shown on **Figure 9.1** included in **Appendix 9.2**. and on Figure 9.5.

Table 9.3 - Proposed Sensitive Receptors Considered in Operational Phase Assessment

| Receptor | Grid Reference |          | Receptor Type |
|----------|----------------|----------|---------------|
|          | Easting        | Northing |               |
| PSR 1    | 387212         | 400120   | Residential   |
| PSR 2    | 387394         | 400250   | Residential   |
| PSR 3    | 387571         | 400321   | School        |
| PSR 4    | 387946         | 400349   | Residential   |
| PSR 5    | 387660         | 400347   | Residential   |

## Significance Criteria

### Construction Phase

- 9.44. The construction phase assessment for Existing Sensitive Receptors (ESRs) takes into account the significance criteria used in the IAQM guidance. Step 4 of the guidance is used to determine whether significant effects are likely to arise from the construction phase.
- 9.45. Full details of the significance criteria used within the construction phase assessment are included in **Appendix 9.2**.

### Operational Phase

- 9.46. The operational phase assessment for ESRs takes into account the significance criteria detailed in the EPUK/IAQM guidance. The impact of a development is assessed at specific receptors and takes into account both the long-term background concentrations, in relation to the relevant Air Quality Assessment Level (AQAL) at these receptors, and the change with the development in place.
- 9.47. The impact descriptors for individual receptors are detailed below, in **Table 9.4**.

Table 9.4 - Impact Descriptors for Individual Receptors

| Long Term Average Concentration at Receptor in Assessment Year*                                                                                                                                                 | Percentage Change in Concentration Relative to Air Quality Assessment Level (AQAL)* |             |             |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|-------------|-------------|
|                                                                                                                                                                                                                 | 1%                                                                                  | 2-5%        | 6-10%       | >10%        |
| 75% or less of AQAL                                                                                                                                                                                             | Negligible                                                                          | Negligible  | Slight      | Moderate    |
| 76-94% of AQAL                                                                                                                                                                                                  | Negligible                                                                          | Slight      | Moderate    | Moderate    |
| 95-102% of AQAL                                                                                                                                                                                                 | Slight                                                                              | Moderate    | Moderate    | Substantial |
| 103-109% of AQAL                                                                                                                                                                                                | Moderate                                                                            | Moderate    | Substantial | Substantial |
| 110% or more of AQAL                                                                                                                                                                                            | Moderate                                                                            | Substantial | Substantial | Substantial |
| *Percentage pollutant concentrations have been rounded to whole numbers, to make it easier to assess the impact. Changes of 0% (i.e. less than 0.5% or 0.2µg/m <sup>3</sup> ) should be described as Negligible |                                                                                     |             |             |             |

- 9.48. Impacts on air quality, whether adverse or beneficial, will have an effect on human health that can be judged as either 'significant' or 'not significant'.
- 9.49. Once the impact of the Proposed Development has been assessed for the individual impacts, the overall significance is determined using professional judgement. This takes into account a number of factors such as:
- The existing and future air quality in the absence of the development;
  - The extent of the current and future population exposure to the impacts; and
  - The influence and validity of any assumptions adopted when undertaking the prediction of impacts.
- 9.50. Full details of the significance criteria used within the operational phase assessment are included in **Appendix 9.2**.

## Baseline Conditions

### Manchester City Council Local Air Quality Management

- 9.51. The Proposed Development Site is located within the administrative area of MCC, which is responsible for the management of local air quality. MCC is part of the Greater Manchester Combined Authority (GMCA) which oversees the management of air quality across the entirety of Greater Manchester.
- 9.52. GMCA currently has one declared Air Quality Management Area (AQMA), the Greater Manchester AQMA, which lies in parts of all ten districts of Greater Manchester. It should be noted this AQMA is not region-wide and is split into various areas that predominantly cover busy main roads within the GMCA including arterial routes, district centres and airport.
- 9.53. The Proposed Development Site is located in close proximity to sections of the Greater Manchester AQMA along Ten Acres Lane and A62 Oldham Road. Therefore, the Proposed Development is located in an area of known poor air quality.
- 9.54. A review of the 2020 Air Quality Annual Status Report (ASR) for GMCA (the latest report available) indicates numerous air quality monitoring locations within MCC's borough. One air quality monitoring location (REF: MAN71)

is situated close to the Proposed Development, on roads for which traffic data is available. According to the 2019 NO<sub>2</sub> diffusion tube dataset published by MCC on their website<sup>7</sup>, this tube recorded an annual mean, bias adjusted, NO<sub>2</sub> concentration of 45.30 µg/m<sup>3</sup> in 2019. This monitoring location therefore exceeds the NO<sub>2</sub> annual mean objective of 40 µg/m<sup>3</sup>. This tube has been used to undertake model verification (see **Appendix 9.2** for further details).

### Background Air Pollutant Concentrations

- 9.55. The air quality assessment needs to take into account background pollutant concentrations upon which local, traffic derived pollution is superimposed.
- 9.56. As there are currently no representative NO<sub>2</sub>, PM<sub>10</sub> or PM<sub>2.5</sub> background monitoring locations in the vicinity of the Proposed Development Site, background concentrations for these pollutants have been obtained from the 2018-based Defra default concentration maps, for the appropriate grid squares.
- 9.57. The background pollutant concentrations used in this assessment are detailed in **Table 9.5**.

Table 9.5 – Background Pollutant Concentrations Used in the Air Quality Assessment

| Receptors                                                                                  | Oxides of Nitrogen (NO <sub>x</sub> )* | Nitrogen Dioxide (NO <sub>2</sub> )* | Particulate Matter (PM <sub>10</sub> )* | Particulate Matter (PM <sub>2.5</sub> )* |
|--------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------|-----------------------------------------|------------------------------------------|
| <b>2019 Annual Mean Concentrations (µg/m3)</b>                                             |                                        |                                      |                                         |                                          |
| ESR 1-3<br>(386500, 400500)                                                                | 27.30                                  | 19.05                                | 12.36                                   | 8.24                                     |
| ESR 4-12 & 22-23<br>(387500, 400500)                                                       | 27.27                                  | 19.03                                | 12.46                                   | 8.37                                     |
| ESR 13 -19<br>(388500, 400500)                                                             | 27.33                                  | 19.04                                | 12.56                                   | 8.65                                     |
| ESR 20-21<br>(387500, 399500)                                                              | 25.63                                  | 18.02                                | 11.84                                   | 8.09                                     |
| <b>2030 Annual Mean Concentrations (µg/m3)</b>                                             |                                        |                                      |                                         |                                          |
| ESR 1-3<br>(386500, 400500)                                                                | 18.87                                  | 13.74                                | 11.53                                   | 7.63                                     |
| ESR 4-12, ESR 22-23 & PSR 1-5<br>(387500, 400500)                                          | 18.59                                  | 13.56                                | 11.61                                   | 7.75                                     |
| ESR 13 -19<br>(388500, 400500)                                                             | 19.24                                  | 13.97                                | 11.70                                   | 8.04                                     |
| ESR 20-21<br>(387500, 399500)                                                              | 18.46                                  | 13.47                                | 10.88                                   | 7.36                                     |
| <i>*Obtained from the Defra 2018-based background maps for the appropriate grid square</i> |                                        |                                      |                                         |                                          |

<sup>7</sup> [https://www.manchester.gov.uk/downloads/download/6992/monitoring\\_data\\_reports](https://www.manchester.gov.uk/downloads/download/6992/monitoring_data_reports)

## Modelled Baseline Concentrations at Receptors

9.58. The baseline operational assessment (i.e. scenarios 1 and 1i) has been carried out for the existing sensitive receptors considered, in accordance with Defra guidance (i.e. using EFT v11.0). The adjusted NO<sub>2</sub> and unadjusted PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are detailed in **Table 9.6**.

Table 9.6 - Predicted Adjusted NO<sub>2</sub> and Unadjusted PM<sub>10</sub> and PM<sub>2.5</sub> Concentrations at Existing Sensitive Receptors for Scenarios 1 and 1i

| Receptor | Calculated Annual Mean Concentrations (µg/m <sup>3</sup> ) |                  |                   |                                                            |                  |                   |
|----------|------------------------------------------------------------|------------------|-------------------|------------------------------------------------------------|------------------|-------------------|
|          | Scenario 1: 2019 Base Year                                 |                  |                   | Scenario 1i: 2030 Opening/Future Year, Without Development |                  |                   |
|          | NO <sub>2</sub> *                                          | PM <sub>10</sub> | PM <sub>2.5</sub> | NO <sub>2</sub> *                                          | PM <sub>10</sub> | PM <sub>2.5</sub> |
| ESR 1    | 24.43                                                      | 12.91            | 8.56              | 15.52                                                      | 12.05            | 7.91              |
| ESR 2    | 25.18                                                      | 13.00            | 8.61              | 15.77                                                      | 12.14            | 7.96              |
| ESR 3    | 37.04                                                      | 14.31            | 9.37              | 19.92                                                      | 13.37            | 8.65              |
| ESR 4    | 39.32                                                      | 14.58            | 9.61              | 20.57                                                      | 13.60            | 8.85              |
| ESR 5    | <u>44.06</u>                                               | 14.74            | 9.73              | 22.30                                                      | 13.71            | 8.93              |
| ESR 6    | 36.10                                                      | 14.26            | 9.42              | 19.41                                                      | 13.30            | 8.69              |
| ESR 7    | 37.46                                                      | 14.18            | 9.39              | 19.89                                                      | 13.21            | 8.64              |
| ESR 8    | 31.92                                                      | 13.87            | 9.18              | 17.95                                                      | 12.94            | 8.48              |
| ESR 9    | 26.76                                                      | 13.27            | 8.84              | 16.15                                                      | 12.38            | 8.18              |
| ESR 10   | 25.96                                                      | 13.13            | 8.76              | 15.86                                                      | 12.23            | 8.10              |
| ESR 11   | 29.08                                                      | 13.42            | 8.93              | 16.93                                                      | 12.51            | 8.25              |
| ESR 12   | 39.37                                                      | 14.66            | 9.65              | 20.60                                                      | 13.67            | 8.89              |
| ESR 13   | 27.85                                                      | 13.39            | 9.14              | 16.87                                                      | 12.48            | 8.47              |
| ESR 14   | 39.91                                                      | 14.63            | 9.86              | 21.09                                                      | 13.62            | 9.11              |
| ESR 15   | 25.32                                                      | 13.14            | 8.99              | 16.04                                                      | 12.25            | 8.34              |
| ESR 16   | 25.23                                                      | 13.13            | 8.99              | 16.01                                                      | 12.24            | 8.34              |
| ESR 17   | 25.51                                                      | 13.17            | 9.01              | 16.10                                                      | 12.27            | 8.36              |
| ESR 18   | <u>41.54</u>                                               | 14.54            | 9.83              | 21.67                                                      | 13.52            | 9.06              |
| ESR 19   | 35.48                                                      | 14.15            | 9.59              | 19.52                                                      | 13.18            | 8.87              |
| ESR 20   | 28.79                                                      | 12.85            | 8.68              | 17.03                                                      | 11.83            | 7.88              |
| ESR 21   | 28.90                                                      | 12.83            | 8.67              | 17.06                                                      | 11.81            | 7.87              |
| ESR 22   | 22.99                                                      | 12.86            | 8.60              | 14.85                                                      | 11.99            | 7.96              |

| Calculated Annual Mean Concentrations ( $\mu\text{g}/\text{m}^3$ )                                                                                                                                                                                                           |                            |                  |                   |                                                            |                  |                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------|-------------------|------------------------------------------------------------|------------------|-------------------|
| Receptor                                                                                                                                                                                                                                                                     | Scenario 1: 2019 Base Year |                  |                   | Scenario 1i: 2030 Opening/Future Year, Without Development |                  |                   |
|                                                                                                                                                                                                                                                                              | NO <sub>2</sub> *          | PM <sub>10</sub> | PM <sub>2.5</sub> | NO <sub>2</sub> *                                          | PM <sub>10</sub> | PM <sub>2.5</sub> |
| ESR 23                                                                                                                                                                                                                                                                       | 22.88                      | 12.85            | 8.60              | 14.82                                                      | 11.98            | 7.96              |
| <i>*NO<sub>2</sub> concentrations obtained by inputting predicted NO<sub>x</sub> concentrations into the NO<sub>x</sub> to NO<sub>2</sub> calculator<sup>8</sup> in accordance with LAQM.TG(16).<br/> <u>Underlined values indicate an exceedance of the objective.</u> </i> |                            |                  |                   |                                                            |                  |                   |

- 9.59. The results show that all predicted NO<sub>2</sub> PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are below the relevant objectives and limit values, with the exception of ESR 5 and 18 (both of which are located in Greater Manchester AQMA), which exceed the NO<sub>2</sub> annual mean objective in the 2019 base year. As these ESR's are located within the Greater Manchester AQMA, it is not considered unusual for these locations to exceed the NO<sub>2</sub> annual mean objective.
- 9.60. There are no exceedances predicted at any ESR locations in the 2030 Opening/Future Year without development scenario and all predicted pollutant concentrations are below the relevant objectives and limit values.

## Identification and Evaluation of Significant Effects

### Construction Phase Assessment

#### Step 1 – Assessment Screening

- 9.61. In line with the IAQM guidance, a construction phase assessment has been carried out as there are human receptors within 350m of the Site boundary.

#### Step 2 – Impact Assessment

- 9.62. The construction phase assessment has considered the impact of the Proposed Development in its entirety (i.e., Phase 1 and Phase 2 (including the school)) on existing sensitive receptors. As Phase 1 is to be built out before Phase 2, it is likely that new sensitive receptors (i.e., the proposed residential receptors within Phase 1) will be within 350m of construction phase activities associated with Phase 2. Cumulative impacts of the construction phase of Phase 2 on receptors within Phase 1 is considered later in this ES Chapter.
- 9.63. In accordance with the IAQM guidance, the main activities to be considered during the construction phase of a Proposed Development are demolition, earthworks, construction and trackout.
- 9.64. An Air Quality Statement was prepared by Wardell Armstrong (dated 7<sup>th</sup> January 2021) in support of the remediation application. The Air Quality Statement was approved as part of the remediation works planning permission (ref: 129197/FO/2021). The statement considers emissions associated with the supporting traffic and remediation activities during this phase along with appropriate mitigation measures.
- 9.65. When considering the construction phase of the Proposed Development, there are no planned demolition works, therefore, this has been scoped out of the assessment. Earthworks cover the processes of soil-stripping, ground-leveling, excavation and landscaping. Construction activities will focus on the proposed buildings, access roads and car parking areas. Trackout is defined as the transport of dust and dirt by vehicles travelling from a construction Site onto the public road network. This may occur through the spillage of dusty materials onto road surfaces or through the transportation of dirt by vehicles that have travelled over muddy ground on the site. This dust and dirt can then be deposited and re-suspended by other vehicles.

#### Step 2A

<sup>8</sup> Defra Local Air Quality Management webpages (<http://laqm.defra.gov.uk/tools-monitoring-data/no-calculator.html>)

- 9.66. Step 2A of the construction phase assessment defines the potential dust emission magnitude from earthworks, construction and trackout in the absence of site-specific mitigation.
- 9.67. Examples of the criteria for the dust emission classes are detailed in **Appendix 9.2**. The results of this step are detailed in Table 9.6.

### Step 2B

- 9.68. Step 2B of the construction phase dust assessment defines the sensitivity of the area, taking into account the significance criteria detailed in **Appendix 9.2** for earthworks, construction and trackout. The sensitivity of the area to each activity is assessed for potential dust soiling and human health.
- 9.69. For earthworks and construction, there are currently between 10 and 100 residential receptors within 20m of where these activities may take place, which is assumed to be the red line boundary, for the purpose of this assessment.
- 9.70. The routing of construction vehicles used in the construction of the Proposed Development is currently unknown, although a Construction Environmental Management Plan (CEMP) is expected to deal with this. At this stage, a worst-case approach has been adopted in the assessment. As a result, for trackout, there are currently 10-100 residential receptors within 20m of where trackout may occur for a distance of up to 500m from the Site entrance.

### Step 2C

- 9.71. Step 2C of the construction phase dust assessment defines the risk of impacts from each activity, by combining the dust emission magnitude with the sensitivity of the surrounding area.
- 9.72. The risk of dust impacts from each activity, with no mitigation in place, has been assessed in accordance with the criteria detailed in **Appendix 9.2**. The results of this step are detailed in **Table 9.6**.

### Summary of Step 2

- 9.73. **Table 9.7** details the results of Step 2 of the construction phase assessment for human receptors.

Table 9.7 – Construction Phase Dust Assessment for Human Receptors

|                                                                                                                                                                                                | Activity   |                    |                    |                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|--------------------|--------------------|
|                                                                                                                                                                                                | Demolition | Earthworks         | Construction       | Trackout           |
| <b>Step 2A</b>                                                                                                                                                                                 |            |                    |                    |                    |
| Dust Emission Magnitude                                                                                                                                                                        | N/A        | Large <sup>a</sup> | Large <sup>b</sup> | Large <sup>c</sup> |
| <b>Step 2B</b>                                                                                                                                                                                 |            |                    |                    |                    |
| Sensitivity of Closest Receptors                                                                                                                                                               | N/A        | High               | High               | High               |
| Sensitivity of Area to Dust Soiling Effects                                                                                                                                                    | N/A        | High               | High               | High               |
| Sensitivity of Area to Human Health Effects                                                                                                                                                    | N/A        | Low <sup>e</sup>   | Low <sup>e</sup>   | Low <sup>e</sup>   |
| <b>Step 2C</b>                                                                                                                                                                                 |            |                    |                    |                    |
| Dust Risk: Dust Soiling                                                                                                                                                                        | N/A        | High Risk          | High Risk          | High Risk          |
| Dust Risk: Human Health                                                                                                                                                                        | N/A        | Low Risk           | Low Risk           | Low Risk           |
| <p>a. Total Site area estimated to be more than 10,000m<sup>2</sup></p> <p>b. Total building volume estimated to be &gt;100,000m<sup>3</sup> with potentially dusty construction materials</p> |            |                    |                    |                    |

|    | Activity                                                                                                                                                |            |              |          |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|----------|
|    | Demolition                                                                                                                                              | Earthworks | Construction | Trackout |
| c. | Number of construction phase vehicles estimated to be >50 movements per day                                                                             |            |              |          |
| d. | Background annual mean PM <sub>10</sub> concentration is taken from the LAQM Defra default concentration maps, for the appropriate grid square for 2022 |            |              |          |

### Construction Phase Significance

9.74. Step 2C of the construction phase assessment has identified that:

- The risk of dust soiling effects is classed as high for earthworks, construction and trackout; and
- The risk of human health effects is classed as low for demolition, earthworks, construction and trackout.

9.75. This assumes that no mitigation measures are applied, except those required by legislation. Site-specific mitigation measures do not need to be recommended if the risk category is 'negligible'.

9.76. The risk of dust soiling and human health effects are not negligible for all activities. Therefore, site-specific mitigation will be implemented to ensure dust effects from these activities will be '**not significant**'. These mitigation measures are outlined later in the chapter.

### Operational Phase Assessment

#### Existing Sensitive Receptors

- 9.77. The impact assessment has been carried out for the representative existing sensitive receptors considered (i.e. ESR 1 to ESR 23), using the latest Emission Factor Toolkit (EFT) (Defra, version 11.0). The impact of each with development scenario (i.e. scenarios 1a-b, 2a-b and 3a-b) have been assessed against the without development scenario (i.e. scenario 1i).
- 9.78. The results of the assessment are outlined in Tables 9.24 to 9.41 of **Appendix 9.3** and the impact has been assessed in accordance with the descriptors included in **Appendix 9.2**.
- 9.79. The results of the assessment suggest that all predicted NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations, in all scenarios considered, are below the relevant objectives and limit values; the impact of the development is 'negligible' at existing sensitive receptors all scenarios, with the exception of NO<sub>2</sub> at ESR 4 in scenarios 1b, 2a-b and 3a-b, where a 'slight adverse' impact is predicted.

#### Proposed Sensitive Receptors

- 9.80. Pollutant concentrations (NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>) have also been predicted at five PSR locations; two locations for scenarios 1a-b (PSR 1-2), three locations for scenarios 2a-b (PSR 1-3) and five locations for scenarios 3a-b (PSR 1-5). The modelled NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are included in Table 9.42 of **Appendix 9.3**.
- 9.81. All predicted pollutant concentrations are below the relevant objectives/limit values, at all PSRs considered, in all scenarios.

### Operational Phase Significance

- 9.82. The significance the effects of each of the scenarios considered have been assessed in accordance with the EPUK/IAQM guidance and are detailed below, in **Table 9.8**.

Table 11.8 – Summary of Likely Significant Effects for Scenarios Considered

| Scenario | Likely Significant Effects    |
|----------|-------------------------------|
| 1a       | No likely significant effects |

|    |                               |
|----|-------------------------------|
| 1b | No likely significant effects |
| 2a | No likely significant effects |
| 2b | No likely significant effects |
| 3a | No likely significant effects |
| 3b | No likely significant effects |

9.83. The significance of the overall effects of the Proposed Development has been assessed in accordance with the EPUK/IAQM guidance. This assessment is based on professional judgement and takes into account a number of factors, including:

- Baseline pollutant concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> in the 2019 Base Year are below the relevant annual mean objectives and limit value for all of the existing receptors considered, with the exception of ESRs 5 and 18 which exceed the NO<sub>2</sub> annual; mean objective. These receptors are located within the Greater Manchester AQMA, and therefore it is not considered unusual for these locations to exceed the NO<sub>2</sub> annual mean objective;
- Baseline pollutant concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> in the 2030 Opening/Future Year without development scenario are below the relevant annual mean objectives and limit values at all of the existing sensitive receptors considered;
- The results of the assessment suggest that all predicted NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations, in all scenarios considered, are below the relevant objectives and limit values. The impact of the Proposed Development is classed as 'negligible' at all existing sensitive receptors in all scenarios, with the exception of predicted NO<sub>2</sub> concentrations at ESR 4 in scenarios 1b, 2a-b and 3a-b, where a slight adverse impact is predicted. It should be noted that in accordance with IAQM guidance, a slight adverse impact corresponds to an overall 'not significant' impact; and
- Pollutant concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are predicted to be below the objective and limit values at the assessed proposed sensitive receptor locations representing the planned residential and school uses within the Proposed Development.

9.84. Based on the above factors, in accordance with the EPUK/IAQM guidance, the overall effect of the Proposed Development on human receptors is considered to be '**not significant**'.

## Mitigation Measures

### Construction Phase

#### Step 3 – Site-Specific Mitigation

9.85. During the construction phase, the implementation of effective mitigation measures will substantially reduce the potential for nuisance dust and fine particulate matter to be generated.

9.86. Site-specific mitigation will be implemented to ensure dust effects from these activities will be '**not significant**', which may include but are not limited to the following:

- Re-vegetation of earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Protection of surfaces and exposed material from winds until disturbed areas are sealed and stable;
- Dampening down of exposed stored materials, which will be stored as far from sensitive receptors as possible;
- Ensuring 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;
- Avoiding activities that generate large amounts of dust during windy conditions;

- Ensuring 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;
- Avoiding dry sweeping of large areas;
- Using 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;
- Ensuring vehicles entering and leaving the Site are covered to prevent escape of materials during transport;
- Implementing a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Site where reasonably practicable);
- Minimising of vehicle movements and limitation of vehicle speeds – the slower the vehicle speeds, the lower the dust generation;
- Ensuring there is an adequate area of hard surfaced road between the wheel wash facility and the Site exit, wherever the Site size and layout permits; and
- Access gates to be located at least 10m from receptors, where possible.

9.87. Any dust and air quality complaints should be recorded and appropriate measures should be taken to identify causes and reduce emissions in a timely manner. Exceptional incidents which cause dust and/or emissions, and the action taken to resolve the situation, should be recorded in a logbook and made available to MCC on request.

9.88. It is recognised that the final design solutions will be developed with the input of the contractor to maximise construction efficiencies, to use modern construction techniques and sustainable materials and to incorporate the particular skills and experience offered by the appointed contractor.

## Operational Phase

9.89. The effect of the Proposed Development on human receptors is considered '**not significant**', therefore, no mitigation measures are required. However, specific measures proposed as part of the hybrid application to futureproof the Proposed Development will help to mitigate air quality impacts. These mitigation measures include the planned access and highway improvements in the local area (which will reduce congestion generated by the Proposed Development), as well as the provision of electric vehicle charging infrastructure and cycle parking at the proposed dwellings. Further mitigation measures to reduce pollution from the buildings within the Proposed Development could include installing low NO<sub>x</sub> boilers at the proposed dwellings.

## Cumulative Effects

### Construction Phase

9.90. As Phase 1 is to be built out before Phase 2, there is potential for the construction phase of Phase 2 to impact the new sensitive receptors (i.e. the Phase 1 proposed residential receptors). Cumulative effects of the construction phase of Phase 2 on receptors within Phase 1 have therefore been considered.

9.91. A construction phase assessment for these receptors has been undertaken, following Step 2 in the IAQM guidance, to specifically determine to impact of the construction of Phase 2 on the Phase 1 sensitive receptors.

9.92. The routing of construction vehicles used in the construction of the Phase 2 is currently unknown, therefore, a worst-case approach has been adopted. As a result, for trackout, there will probably be 10-100 Phase 1 residential receptors within 20m of where trackout may occur for a distance of up to 500m from the Site entrance.

9.93. There are no ecological receptors, or potentially dust sensitive statutory designated habitat sites, within 50m of the Site and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the Site entrance(s). Ecological effects do not therefore need to be considered in the cumulative construction phase assessment.

Table 9.9 – Construction Phase Dust Assessment – Impact of the Construction of Phase 2 on the Phase 1 Sensitive Receptors

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Activity   |                    |                    |                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|--------------------|--------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Demolition | Earthworks         | Construction       | Trackout           |
| Step 2A                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                    |                    |                    |
| Dust Emission Magnitude                                                                                                                                                                                                                                                                                                                                                                                                                                           | N/A        | Large <sup>a</sup> | Large <sup>b</sup> | Large <sup>c</sup> |
| Step 2B                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                    |                    |                    |
| Sensitivity of Closest Receptors                                                                                                                                                                                                                                                                                                                                                                                                                                  | N/A        | High               | High               | High               |
| Sensitivity of Area to Dust Soiling Effects                                                                                                                                                                                                                                                                                                                                                                                                                       | N/A        | High               | High               | High               |
| Sensitivity of Area to Human Health Effects                                                                                                                                                                                                                                                                                                                                                                                                                       | N/A        | Low <sup>e</sup>   | Low <sup>e</sup>   | Low <sup>e</sup>   |
| Step 2C                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                    |                    |                    |
| Dust Risk: Dust Soiling                                                                                                                                                                                                                                                                                                                                                                                                                                           | N/A        | High Risk          | High Risk          | High Risk          |
| Dust Risk: Human Health                                                                                                                                                                                                                                                                                                                                                                                                                                           | N/A        | Low Risk           | Low Risk           | Low Risk           |
| <i>a. Total Site area estimated to be more than 10,000m<sup>2</sup></i><br><i>b. Total building volume estimated to be &gt;100,000m<sup>3</sup> with potentially dusty construction materials</i><br><i>c. Number of construction phase vehicles estimated to be &gt;50 movements per day</i><br><i>d. Background annual mean PM<sub>10</sub> concentration is taken from the LAQM Defra default concentration maps, for the appropriate grid square for 2022</i> |            |                    |                    |                    |

9.94. Cumulative effects of the construction phase of Phase 2 on receptors within Phase Step 2C of the construction phase assessment has identified that:

- The risk of dust soiling effects is classed as high for earthworks, construction and trackout; and
- The risk of human health effects is classed as low for demolition, earthworks, construction and trackout.

9.95. This assumes that no mitigation measures are applied, except those required by legislation. Site-specific mitigation measures do not need to be recommended if the risk category is 'negligible'.

9.96. The risk of dust soiling and human health effects are not negligible for all activities. Therefore, the site-specific mitigation previously outlined will be implemented to ensure dust effects from these activities will be '**not significant**'.

### Operational Phase

9.97. The cumulative impacts of the operation of each of the phases of the Proposed Development on existing and proposed sensitive receptors has been considered in the traffic data used when modelling the different scenarios. Some scenarios have also incorporated committed developments within the traffic data, such that the cumulative impact of the scheme along with other developments has been assessed.

9.98. The online Multi-Agency Geographic Information for the Countryside (MAGIC) resource shows that there are no potentially sensitive designated habitat sites within close proximity to the Proposed Development. Therefore, from an air quality perspective, ecological effects do not need to be considered for the operational phase of the Proposed Development.

## Residual Effects

### Construction Phase

#### Step 4 – Residual Effects

- 9.99. Step 4 of the construction phase dust assessment has been undertaken to determine the significance of the dust effects arising from earthworks, construction and trackout associated with the Proposed Development.
- 9.100. The implementation of effective mitigation measures during the construction phase, such as those detailed in Step 3, will substantially reduce the potential for nuisance dust and fine particulate matter to be generated and any residual impact should be direct, temporary, medium-term and **'not significant'**.

### Operational Phase

- 9.101. Taking into account that there are no predicted exceedances of relevant air quality objectives and target levels and negligible impacts, the residual effect of the Proposed Development on human receptors during the operational phase is considered to be direct, permanent, long-term and **'not significant'**.

### Summary

- 9.102. The summary of receptors considered in the construction and operational phase assessments, the likely significant effects at these receptors, the proposed mitigation measures and residual effects post-mitigation are outlined in **Table 9.10**.

Table 9.10 – Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

| Receptor(s)                                                                                        | Likely Significant Effects                    | Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                          | Residual Effects                                                                                                            |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Construction Phase</b>                                                                          |                                               |                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                             |
| <b>Sensitive human receptors within 350m of the Phase 1 and 2 Site boundary</b>                    | Risk of dust soiling and human health effects | Site-specific mitigation measures previously outlined, as per Step 3 of the IAQM guidance                                                                                                                                                                                                                                                                                                    | After mitigation, residual effects from the construction phase will be direct, temporary, medium-term and 'not significant' |
| <b>Phase 1 sensitive human receptors within 350m of Phase 2 Site boundary (cumulative effects)</b> | Risk of dust soiling and human health effects | Site-specific mitigation measures previously outlined, as per Step 3 of the IAQM guidance                                                                                                                                                                                                                                                                                                    | After mitigation, residual effects from the construction phase will be direct, temporary, medium-term and 'not significant' |
| <b>Operational Phase</b>                                                                           |                                               |                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                             |
| <b>Sensitive human receptors considered in assessment (i.e. ESRs 1-23)</b>                         | No likely significant effects                 | No significant effects are predicted, however, best practice mitigation measures are suggested to futureproof the Proposed Development. Mitigation measures include the planned access and highway improvements (which will reduce congestion generated by the Proposed Development), as well as the provision of electric vehicle charging infrastructure and cycle parking at the proposed | Effects from the operational phase assessment will be direct, permanent, long-term and 'not significant'                    |

|  |  |                                                                                                                                                                                     |  |
|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  |  | <p>dwelling. Further mitigation measures to reduce pollution from the buildings within the Proposed Development may include installing low NOx boilers at the proposed dwelling</p> |  |
|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

## Reference List

9.103. This ES Chapter has been prepared by reference to the following:

- 2020 Greater Manchester Combined Authority Air Quality Annual Status Report, June 2021;
- Defra Local Air Quality Management webpages;
- Department of Environment, Food and Rural Affairs (Defra), The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, July 2007;
- Department for Environment, Food and Rural Affairs (Defra), Local Air Quality Management Technical Guidance (LAQM.TG(16)), 2016;
- Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on Ambient Air Quality and Cleaner Air for Europe;
- Institute of Air Quality Management (IAQM), Guidance on the Assessment of Dust from Demolition and Construction, June 2016;
- Manchester City Council, Manchester Core Strategy Development Plan 2012 to 2027, July 2019;
- Ministry of Housing, Communities & Local Government, National Planning Policy Framework, July 2021
- Moorcroft and Barrowcliffe et al, Land-Use Planning and Development Control: Planning for Air Quality (v1.2), January 2017; and
- Statutory Instruments 2010 No. 1001, The Air Quality Standards Regulations, 2010

# Figure 9.5: Sensitive Receptor Location Plan

# KEY

- Site Boundary
- Existing Sensitive Receptors
- Proposed Sensitive Receptors



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|          |                                  |        |          |
|----------|----------------------------------|--------|----------|
| Figure:  | 9.5                              |        |          |
| Title:   | Sensitive Receptor Location Plan |        |          |
| Project: | Jackson's Brickworks, Manchester |        |          |
| Date:    | March 2022                       | Scale: | 1:12,000 |

# 10. Ground Conditions

## Introduction

- 10.1. This Chapter of the ES assesses the likely significant effects of the construction and operational phases of the Proposed Development with respect to ground conditions focusing on land contamination. The Proposed Development is to be split into two phases (Phase 1 and Phase 2) with the construction works being undertaken for Phase 2, possibly after Phase 1 has been occupied / is in operation. Consequently, the potential impacts to Phase 1 from the construction works of Phase 2 also need to be considered. It has been assumed that remediation would have been undertaken in a single phase.
- 10.2. This Chapter describes the methods used to assess the impacts; the baseline conditions currently existing at the Site and surrounding area and post remediation; the mitigation measures required to prevent, reduce or offset any significant negative impacts; and the likely residual impact after these measures have been adopted.
- 10.3. This Chapter has been completed by Wardell Armstrong (WA) LLP, with the reviewer having an MSc Engineering Geology, a BSc (Hons) Civil Engineering and is a Technical Director at WA with over 12 years' consultancy experience; specialising in ground investigation and geotechnical design for private and public sector development projects. The author has an MGeol in Applied and Environmental Geology and is a Principal Engineering Geologist at WA with over eight years consultancy experience; specialising in ground investigation, contaminated land and geotechnical design for public and private sector projects.
- 10.4. This Chapter has been written following a review of publicly available third-party reporting (Celtic Technologies Ltd) and several WA reports that has been undertaken for the Site as outlined below:
- **Appendix 10.1** – Celtic Technologies Ltd (July 2006), Desk Study - Ten Acres Lane, Newton Heath, Greater Manchester (report ref. R1077/06/2958);
  - **Appendix 10.2** – Celtic Technologies Ltd (February 2008), Interpretative Report (Geoenvironmental Assessment) - Former Jacksons Brick Works, Ten Acres Lane, Newton Heath, Greater Manchester (report ref. R1077/08/3328);
  - **Appendix 10.3** – WA (July 2019), Factual Site Investigation Report – Land Between Ten Acres Lane and Mitchel Street, Newton Heath, Manchester (report ref. SH12254 RPT-001);
  - **Appendix 10.4** – Deloitte Real Estate (January 2021), Jacksons Brickworks Remediation Environmental Statement: Volume 1 (Chapter 8 – Ground Conditions);
  - **Appendix 10.5** – WA (June 2020), Land at Ten Acres Lane, Newton Heath, Gap Analysis and Indicative Scope of Further Works;
  - **Appendix 10.6** – WA (December 2020), Land at Ten Acres Lane, Newton Heath, Outline / Preliminary Remediation Strategy;
  - **Appendix 10.7** – WA (May 2021) Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation Report;
  - **Appendix 10.8** – WA (June 2021) Outline Construction and Environmental Management Plan.

## Legislative and Policy Context

### National Legislation and Guidance

- 10.5. The main legislation with regard to the clean-up of historical contamination is set out in Part 2A of the Environmental Protection Act (EPA) 1990 (HMSO, 1990). Section 78A(2), EPA 1990, provides the definition of contaminated land for the purposes of Part 2A, which is: 'any land which appears to the Local Authority in whose

area it is situated to be in such a condition by reason of substances in, on or under the land, that significant harm is being caused or there is a significant possibility of such harm being caused; or significant pollution of controlled water is being caused; or there is a significant possibility of such pollution being caused'. In Section 78A (4), EPA 1990, harm is defined as meaning 'harm to the health of living organisms or other interference with the ecological systems of which they form part and in the case of man includes harm to his property'.

- 10.6. The statutory government guidance to Part 2A (DEFRA, 2012), describes the concept of the 'contaminant linkage' in Sections 3.8 to 3.11. A contaminant linkage is formed when there is a linkage between a contaminant source and a receptor by means of a pathway. If any one aspect is missing no linkage is formed. A contaminant linkage which gives rise to a level of risk sufficient to justify a piece of land being determined as contaminated land is termed a 'significant contaminant linkage' with the 'significant contaminant' forming part of a significant contaminant linkage. The guidance also mentions that its broader approach may include using the planning system to ensure land is made 'suitable for use'.
- 10.7. The government guidance Land Contamination: Risk Management (October 2020), sets out the method by which a risk management process for contaminated land should be undertaken and has replaced CLR11. Land Contamination: Risk Management sets out the staged assessment process for land contamination as follows: Stage 1 Risk Assessment, Stage 2 Options Appraisal and Stage 3 Remediation and Verification.
- 10.8. The government website for 'Land affected by contamination', updated in July 2019, provides guiding principles on how planning can deal with land affected by contamination, essentially when a Site is not covered by other legislation (such as Part 2A, Building Regulations and Environmental Permitting Regulations). As well as causing harm to human health, property and the wider environment, it mentions that land contamination can 'undermine compliance with the Water Environment Regulations 2017'. Guidance is provided as to how to determine if land is contaminated through the use of several recommended data sources (such as River Basin Management Plans, National Land Use Database, Historical Ordnance Survey Maps, Local Planning Authority Records and Natural England's MAGIC site).
- 10.9. In addition to the above, Sections 161 to 161D of the Water Resources Act 1991 gave powers to the Environment Agency (EA) to take action to prevent or remedy the pollution of controlled waters. The normal enforcement mechanism is a "works notice" served under Section 161A, which specifies what actions have to be taken and in what time periods. This is served on any person who has "caused or knowingly permitted" the potential pollutant to be in the place from which it is likely to enter controlled waters, or to have caused or knowingly permitted a pollutant to enter controlled waters.
- 10.10. The EA's 'Managing and reducing land contamination: guiding principles', issued in March 2010 and updated in April 2016, sets out how to undertake a risk assessment focusing on risks to water, how to undertake a remediation options appraisal and how to implement remediation.

## National Planning Policy

- 10.11. Chapter 15 of the National Planning Policy Framework (NPPF) (2021) discusses 'Conserving and enhancing the natural environment'. The following key issues associated with soil and groundwater contamination are stated within this Chapter:
- 10.12. Paragraph 174(f) states that 'planning policies and decisions should contribute to and enhance the natural and local environment by remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.
- 10.13. Paragraph 183 states that 'planning policies and decisions should ensure that: (a) a Site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation); (b) after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and (c) adequate Site investigation information, prepared by a competent person, is available to inform these assessments'; and
- 10.14. Paragraph 184 states that 'where a Site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and / or landowner'.

## Regional and Local Planning Policy

- 10.15. Manchester City Council currently use the Manchester Core Strategy adopted in July 2012, alongside national planning guidance set out in the NPPF and local planning guidance, to determine planning applications.
- 10.16. The Policy EN 18 Contaminated Land and Ground Stability, contained within the Core Strategy 2012-2027 of Manchester's Local Development Plan, states that:
- The Council will give priority for the remediation of contaminated land to strategic locations, outlined within the Core Strategy and that any proposal for development of contaminated land must be accompanied by a health risk assessment.
  - The policy references the industrial past of the city and the resultant considerable levels of contamination and makes specific reference to Newton Heath as an area of concentrated industrial use.
  - The Council states that it will be seeking to ensure that where resources are limited priority for land remediation is given to strategic sites which are key in terms of delivering the economic, housing and regeneration objectives for the City.
  - The policy also states that all new development within former mining areas shall undertake an assessment of any associated risk to the Proposed Development and, if necessary, incorporate appropriate mitigation measures to address them.

## Assessment Methodology and Significance Criteria

- 10.17. Available reports and published information have been reviewed with the aim of identifying the ground conditions within and surrounding the Proposed Development. This data review has established the geological situation beneath the Site, identified areas of potentially contaminated land and of potential land instability, and assessed the engineering properties of the soils and rocks. It also identified potential contaminant linkages and facilitated a risk assessment for each of the identified contaminant linkages.
- 10.18. The baseline conditions associated with soil and groundwater have been established by reviewing the following sources:
- A Landmark Envirocheck report dated November 2020;
  - Ordnance Survey County and National Grid Series Plans;
  - British Geological Survey (BGS) published maps and memoirs;
  - BGS borehole database;
  - Environment Agency;
  - Other Mining Archives including the Mining Instability Study of GB prepared by Ove Arup (1990);
  - Celtic Technologies Ltd (July 2006), Desk Study - Ten Acres Lane, Newton Heath, Greater Manchester (report ref. R1077/06/2958) contained at **Appendix 10.1**;
  - Celtic Technologies Ltd (February 2008), Interpretative Report (Geoenvironmental Assessment) - Former Jacksons Brick Works, Ten Acres Lane, Newton Heath, Greater Manchester (report ref. R1077/08/3328) contained at **Appendix 10.2**;
  - WA (July 2019), Factual Site Investigation Report – Land Between Ten Acres Lane and Mitchell Street, Newton Heath, Manchester (report ref. SH12254 RPT-001) contained at **Appendix 10.3**;
  - WA (June 2020), Land at Ten Acres Lane, Newton Heath, Gap Analysis and Indicative Scope of Further Works contained at **Appendix 10.5**;

- WA (December 2020), Land at Ten Acres Lane, Newton Heath, Outline / Preliminary Remediation Strategy contained at **Appendix 10.6**;
- Deloitte Real Estate (January 2021), Jacksons Brickworks Remediation Environmental Statement: Volume 1 & 2 contained at **Appendix 10.4**;
- WA (May 2021) Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation Report contained at **Appendix 10.7**;
- WA (June 2021) Outline Construction and Environmental Management Plan (CEMP) contained at **Appendix 10.8**.

- 10.19. The above has been used to develop the Conceptual Site Model (CSM) and this is included in full within the Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation Report contained within **Appendix 10.7**. Any further works undertaken that result in any changes to the CSM may necessitate an update to this ES Chapter.
- 10.20. The impact magnitude has been determined by considering the nature of change (including whether it is temporary or permanent), its severity, the duration of an effect (e.g. short/ medium/ long term) and the likelihood of an effect occurring, and the relative extent of the effects of contamination to the receptor (receptors are discussed in full at 10.60), therefore, the risk assessment has been based on a qualitative assessment and professional judgement. Potential effects in terms of ground conditions tend to be local, therefore, the effects have not been considered in relation to different geographical contexts. The following scale has been used in terms of Impact Magnitude.

Table 10.1 Impact Magnitude Criteria

| Level of Magnitude | Definition                                                                                                                                                                                                                                                                                                                                                               |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Major              | The proposals will cause the release of large areas of contaminants which are significantly above guideline values or release hazardous contaminants for the operational timescale of the development. Remediation will be required. Or for a positive impact, the proposals will significantly reduce large areas of contaminants.                                      |
| Moderate           | The proposals will cause the release of small areas of contamination close to the guideline values during the construction or operational timescale of the development. Remediation may be required. Or for a positive impact, small areas of contamination will be reduced.                                                                                             |
| Minor              | The proposals will cause the release of contaminants that are below the guideline values for a short period of time.<br><br>Remediation will not be required; however, mitigation measures may be used to reduce the potential impact. Or for a positive impact, contaminants will be reduced, however, only from levels that were not originally above guidance values. |
| Negligible         | Contaminants found at very low concentrations. Remediation will not be required.                                                                                                                                                                                                                                                                                         |

- 10.21. The sensitivity is based on the relative importance of the receptor using the scale in **Table 10.2**.

Table 10.2 Sensitivity Criteria

| Level of Sensitivity | Definition                                                                                                                                                                                          |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High                 | Land to be used for human consumption (e.g. agricultural, allotments), residential properties, highly sensitive ecosystems (e.g. SPA, SAC, SSSI, NNR) and the receptor being a public water supply. |
| Moderate             | Parks and open spaces, regionally or locally sensitive ecosystems and water bodies of medium quality.                                                                                               |
| Low                  | Commercial or industrial land uses, low to non-sensitive ecosystems (e.g. derelict land), water bodies of low quality and not a public water supply.                                                |

- 10.22. The significance of an environmental effect is determined by the interaction of magnitude and sensitivity, whereby the impacts can be positive or negative. The Impact Significance Matrix is set out in **Table 10.3**. Moderate and above are considered significant in terms of an Environmental Impact Assessment (EIA).

Table 10.3 Impact Significance Matrix

| Magnitude         | Sensitivity                            |                                        |                                        |
|-------------------|----------------------------------------|----------------------------------------|----------------------------------------|
|                   | High                                   | Moderate                               | Low                                    |
| <b>Major</b>      | Major<br>Adverse/Beneficial            | Major – Moderate<br>Adverse/Beneficial | Moderate – Minor<br>Adverse/Beneficial |
| <b>Moderate</b>   | Major – Moderate<br>Adverse/Beneficial | Moderate - Minor<br>Adverse/Beneficial | Minor<br>Adverse/Beneficial            |
| <b>Minor</b>      | Moderate – Minor<br>Adverse/Beneficial | Minor<br>Adverse/Beneficial            | Minor - Negligible                     |
| <b>Negligible</b> | Negligible                             | Negligible                             | Negligible                             |

## Limitations and Assumptions

- 10.23. Additional works have been conditioned as part of the remediation application for the Site (ref: 129197/FO/2021), a Detailed Quantitative Risk Assessment (DQRA), Options Appraisal and Detailed Remediation Strategy have yet to be completed and discussions with the regulators are currently ongoing for the Site. This Chapter has been written prior to the completion of these works and relies on the findings from the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation report dated May 2021 contained within **Appendix 10.7** and those other reports noted at 10.14 and also contained within **Appendix 10.1 to 10.8**. This Chapter has also been written prior to the completion / validation of the remediation works at which point the true remediation baseline would be known.

## Pre-Remediation Baseline Conditions

### Desk Study Information

- 10.24. At the time of the Site walkover survey undertaken as part of the Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation Report contained within **Appendix 10.7**, the Site was roughly rectangular in shape and comprised approximately 19 Ha of derelict and densely vegetated land, that fell gently from the northeast (approximately 85m Above Ordnance Datum (AOD) to the southwest (approximately 75m AOD). The eastern two thirds of the Site were densely vegetated / overgrown with mature trees and shrubs. In comparison the western section of the Site comprised rough grassland with thickets of semi-mature trees. No buildings were present on-site, although a large concrete slab was present within the north easternmost section of the Site. Fly tipping and surface debris are widespread across the Site. The Site is bound by the Rochdale Canal to the north, Mitchell Street and residential properties to the east, residential properties and a school to the south and Ten Acres Lane and a sports centre to the west.
- 10.25. Since the late 1890's it is understood that the Site has historically operated as a brickworks with two large clay extraction pits, which culminated into two large excavations that occupied approximately 85% of the Site. From the late 1940's onwards the clay extraction pits are indicated to have been infilled and during this period the Site was recorded as a both a Historical and Registered Landfill that was licensed to receive inert, industrial, commercial and household wastes for the former, and construction and demolition waste, foundry sand, industrial non-hazardous waste, slag and boiler/flue cleanings for the latter. From the 1990's onwards, the Site has remained largely derelict.
- 10.26. According to published BGS mapping, the geology beneath the Site is recorded to comprise Made Ground, underlain by Glacial Till, which is in turn underlain by various solid geological strata that includes the Chester Formation and Manchester Marls Formation within the westernmost section of the Site and the Collyhurst Sandstone Formation across the remainder of the Site. A northeast to south west trending fault crosses the westernmost section of the Site and the Site is recorded to lie within a BGS buried glacial valley where deep drift deposits are known to be present.
- 10.27. Hydrogeology information indicates that most of the Site is underlain by natural superficial deposits, which are classified as a Secondary Undifferentiated Aquifer and bedrock, which is classified as a Principal Aquifer. However, a superficial Secondary A Aquifer encroaches into the westernmost section of the Site and a bedrock Secondary B Aquifer is recorded within the westernmost section of the Site. The Site does not lie within a groundwater source protection zone. There are no potable groundwater abstractions within 2km of the Site.
- 10.28. The nearest graded surface watercourse is the Rochdale Canal which forms the northern boundary of the Site. Moston Brook lies approximately 590m to the north west of the Site and the River Medlock lies approximately 700m to the south of the Site. There are no potable surface water abstractions within influencing distance of the Site. The potential for flooding is discussed in subsequent Chapters.
- 10.29. The Site lies within a Coal Authority Coal Mining Reporting Area but is not located within a Coal Authority development high risk area. A third-party mining report suggests that the Site is within the likely zone of influence on the surface from workings in one coal seam at a depth of 1,040m, the last date of working being 1954. However, any ground movement from these workings should now have ceased. There are also no mine entries recorded on-site or within 20m of the Site.
- 10.30. The Site is not recorded to lie within a BGS Non-Coal Mining Area. However, the Site has historically been a brickworks with associated clay pits and there have been numerous such features within the surrounding area. It is possible that unrecorded surface clay extraction has occurred beyond that which has been recorded at the Site.
- 10.31. An Unexploded Ordnance (UXO) Detailed Risk Assessment was carried out for the Site in 2020 by a third party and an overall low UXO hazard was indicated. However, several bomb strikes were recorded within the surrounding area and the former Parks Engineering Works (located approximately 0.1km to the southwest of the Site and a strategic target) is indicated to have been manufacturing military aircraft and parts and also possibly producing munitions during both wars so a reassessment will be required for any construction / development works (e.g. piling) that are to be undertaken at the site.
- 10.32. An Envirocheck report indicates that the Site is in a Lower (less than 1% of homes estimated to be at or above the Action Level) to Intermediate (1 to 3% of homes estimated to be at or above the Action Level) probability radon area and that no radon protective measures are necessary in the construction of new dwellings or extensions.

- 10.33. The Site is significantly impacted by Japanese Knotweed and rhizomes could be present within soils. A third-party survey undertaken in 2012 indicates that approximately 10-15% of the Site is infested / impacted.

### Site Investigation Information

- 10.34. The following information is a summary of the available information up to 2021, and where noted, has been supplemented with information from those ongoing Site investigation works that are being undertaken.

### Ground Conditions

- 10.35. A review of all of the available information indicates that ground conditions are highly variable and comprise significant thicknesses of variable Made Ground to depths of between 0.3m and >14.8m below ground level (bgl). This is underlain by Glacial Till comprising firm to stiff, fissured, dark brown and grey mottled, slightly sandy to sandy, gravelly Clay and to a lesser extent yellow and grey, gravelly, coarse Sand to depths of between 15.0m and 40.0m bgl. The Glacial Till is underlain by solid geology comprising weathered Mudstone and Sandstone to depths of between at least 21m and 41.5m bgl. The relationship between the various strata can be seen within the cross sections and 3D ground Model as shown in Drawing LD10162-22 contained within the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation report contained within **Appendix 10.7**.

### Made Ground

- 10.36. The Made Ground was generally found to be highly variable over small lateral distances and comprised a mixture of predominantly granular (reddish brown, sandy, clayey Gravel with occasional cobbles and boulders) and to a lesser extent cohesive soils (soft to firm, sometimes stiff, brown, sandy and / or gravelly Clay with high cobble content and medium boulder content locally); all of which included various anthropogenic constituents of varying proportions and quantities (e.g. brick, concrete, timber beams / laths, suspected ash, suspected clinker, fabrics, glass, metal, suspected slag, plastics, and slate / tile fragments). The Made Ground can broadly be subdivided and zoned as follows:
- **Suspected Colliery Spoil:** Predominantly present within the central north eastern section of the Site to depths of between 0.6m bgl and 6.8m bgl. The material was typically recovered as a dark grey, weathered orangish brown in places, sandy, clayey Gravel with high cobble and boulder content. Gravel and cobble sized fragments were predominantly of mudstone and siltstone and to a lesser extent of coal, sandstone, and brick. Ash, slag, and clinker gravel were intermittently encountered at some of the positions.
  - **Suspected Combustion Waste:** Mainly present within the north western, south western, and easternmost sections of the Site to maximum depths of between 0.4m bgl and 6.0m bgl. The material was typically recovered as a black to reddish brown, sandy / ashy Gravel with a high cobble content. In order of decreasing abundance, the gravel and cobble sized fragments were predominantly of suspected slag and clinker and to a lesser extent brick and timber. Occasional glass, slate, concrete, metal, plastic, acetate flakes, ceramics and tile were also noted in places.
  - **Suspected Construction and Demolition Waste:** Mainly present within the central area of the Site and to a lesser extent in the north western and easternmost sections of the Site to depths of between 0.35m and 13.85m bgl. The material was typically recovered as cobble to boulder sized constituents of red brick and concrete in a matrix of reddish brown, sandy Gravel of the above. In order of decreasing abundance, the other very coarse to gravel sized constituents mainly included timber, metal, ceramics, glass, plastic, pipe fragments, building stone and slate. Exotic constituents in order of decreasing abundance mainly included plastic sheeting / bags, bottles, and suspected slag / clinker with rare occurrences of polystyrene, car tyres, paint tins, plastic drums, cement bags, fabrics, rope etc.
  - **Suspected Household Waste:** Isolated occurrences and mixed in with the above Made Ground types within the central section of the Site and to a lesser extent elsewhere at the Site (mainly within the clay pit excavations) to depths of between 0.2m and 9.0m bgl. The material was typically recovered as cobble to boulder sized constituents in a matrix of dark reddish brown, sandy, clayey Gravel. Various anthropogenic constituents were noted and in order of decreasing abundance this included plastics, brick, concrete, glass, timber, metal, plastic bags, plastic sheeting, fabric, ceramics, carpet, suspected slag / clinker, bottles, rags, foam, hardboard, paving slabs, bin bags, cardboard, containers / drums, flooring, polystyrene, rubber, disposable cups, toys etc.

- 10.37. Made Ground thickness contours and the spatial distribution of the various Made Ground types is shown in Drawings LD10162-007 and LD10162-009 contained within the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation report contained within **Appendix 10.7**.

#### Glacial Till

- 10.38. The underlying natural Glacial Till was noted to be variable and comprised predominantly cohesive and to a lesser extent granular material of varying thicknesses as noted below:
- The cohesive Glacial Till deposits predominantly comprised firm to stiff (locally soft), brown, slightly gravelly, slightly sandy Clay with varied cobble content and boulder content. Occasional lenses of a firm to stiff, laminated, brown, silty Clay were also encountered at varying depths.
  - The granular Glacial Till deposits predominantly comprised loose to medium dense, wet, brown, gravelly, clayey Sand and locally, a medium dense, brown, sandy Gravel. The granular Glacial Till was generally encountered at shallow depth as lenses between 0.1m and 2.2m thick at shallow depths but were proven to a maximum thickness of 12.0m within deeper boreholes.
- 10.39. For the south western, easternmost and peripheral areas of the Site, areas of shallow natural ground generally within 1m bgl were encountered as shown in Drawing LD10162-007 within the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation report contained within **Appendix 10.7**. Overlying Made Ground generally comprised those suspected combustion wastes noted above.

#### Bedrock

- 10.40. Bedrock of the Collyhurst Sandstone Formation was typically recovered as damp, reddish brown, slightly gravelly Sand. Where solid core was obtained, the rock was recovered as medium strong to strong, light grey, coarse grained Sandstone and cobble sized fragments of medium strong, greenish grey to reddish-brown, fine-grained Sandstone. Coring was regularly undertaken during the WA 2020 Site investigation and recovered materials that generally comprised stiff "Boulder Clay" where Celtic Technologies Ltd had recorded bedrock. Rockhead contours are shown on Drawing LD10162-008 contained within the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation report contained within **Appendix 10.7**.

#### Groundwater Conditions

- 10.41. Numerous shallow perched waters were encountered within Made Ground during the construction of exploratory holes at depths of between 0.1m and 8.2m bgl. Shallow perched groundwater strikes within the underlying natural superficial deposits were also encountered between 1.1m and 13.5m bgl. Water strikes within bedrock are suspected to have been encountered, but this could not be accurately determined due to the drilling techniques used. Sub artesian conditions within deeper groundwaters within the natural superficial deposits and bedrock were indicated by groundwater levels rising within boreholes to depths of between 0.7m and 5.5m bgl.
- 10.42. Groundwater monitoring indicates that perched / shallow groundwater elevations within Made Ground and Glacial Till were recorded between ground level and 7.1m bgl (between 85.54m and 71.12m AOD). Groundwater monitored within bedrock was recorded at depths of between 1.78m and 25.35m bgl (between 76.81m and 54.21m AOD). Groundwater elevations for perched groundwater within the Made Ground are indicative of a hydraulic gradient to the southwest and groundwater elevations for groundwater within bedrock are indicative of a hydraulic gradient to the west southwest as shown on respective Drawings LD10162-024 and LD10162-025 contained within the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation report within **Appendix 10.7**. The hydraulic gradient for the perched groundwater within the Glacial Till is variable, largely due to the discontinuous nature of the various granular lenses encountered within this strata.
- 10.43. Following a sustained period of heavy rainfall, a temporary upwelling of groundwater with associated groundwater flooding at the surface was noted as shown on Drawing LD10162-026 contained within the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation report within **Appendix 10.7**. The seepage was recorded to be occurring close to one of the buried highwalls of the former clay pit excavations, from an area where perched groundwater elevations are indicated to be high and where perched shallow groundwaters are indicated to be flowing towards (see Drawing LD10162-024).

- 10.44. The findings to date indicate that there are typically three main groundwater bodies beneath the Site; perched groundwater within Made Ground, perched shallow and deeper groundwater within the Glacial Till and groundwater within bedrock. The CSM indicates that the perched groundwaters within the Made Ground are laterally constrained by a significant thickness (typically between 25.0m and 40m thick) of underlying cohesive natural Glacial Till. While localised pathways from Made Ground to underlying granular lenses within the Secondary Undifferentiated Aquifer are present, these granular layers are indicated to be discontinuous and not in continuity with sensitive groundwater or surface water bodies. Sub artesian conditions within deeper groundwaters are also indicated and it is expected that this would further reduce any downward migration of contaminants through groundwater. Further evidence for limited vertical migration to the sensitive Principal Aquifer, as outlined in 12.60, is indicated by a localised groundwater upwelling that has been observed within the south western section of the Site. If groundwaters within the backfilled clay pits were infiltrating into the underlying natural strata at a significant rate then this relationship is unlikely to have been observed.

## Contamination

### Soils

- 10.45. Visual and / or olfactory evidence of contamination noted during the various stages of ground investigation are detailed in Table 10.2 and illustrated in Drawing LD10162-027, both of which are contained within the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation report within **Appendix 10.7**. However, visual and olfactory evidence generally included frequent hydrocarbon odours and staining, occasional iridescent sheens to soils, rare white spirit odours, occasional acrid odours, rare putrid odours, rare chemical and solvent odours, rare sulphurous odours, occasional organic odours, rare stagnant odours and rare dye (red and yellow) staining.
- 10.46. Specific details regarding exceedances of the screening criteria from soil samples and their spatial distribution are shown with Table 13.1, within Appendix I and illustrated in Drawings LD10162-010 to 021; all of which are contained within the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation report within **Appendix 10.7**. A brief summary of the exceedances of the screening criteria is outlined below:
- Metal exceedances (notably lead and arsenic) are indicated to be widespread and are predominantly associated with the shallow (<3.0m bgl) Made Ground. Nickel exceedances were relatively localised. Chromium VI, copper and zinc exceedances are indicated to be relatively isolated and are restricted to single locations, as are arsenic and lead within natural ground (possibly reworked).
  - Cyanide (total cyanide) is indicated to be relatively localised and is predominantly associated with the shallow (<3.0m bgl) Made Ground. Cyanide was also recorded at a single location within natural ground (possibly reworked ground).
  - Total Petroleum Hydrocarbon (TPH) contamination (notably aliphatics <EC16-35) is indicated to be relatively localised and is predominantly associated with the shallow (<3.0m bgl) Made Ground. Most of other TPH fractions (aliphatic >C8-C10 and aromatic <EC8-16) within Made Ground are indicated to be relatively isolated. TPH contamination was recorded at a single location within shallow (<3.0m bgl) natural ground at the interface between the overlying Made Ground.
  - Polyaromatic Hydrocarbon (PAH) contamination (notably naphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, chrysene and dibenzo(a,h)anthracene) is indicated to be widespread and is predominantly associated with the shallow (<3.0m bgl) Made Ground. Other PAH compounds within Made Ground and natural ground are indicated to be relatively isolated and were generally encountered at depth (>3.0m bgl).
  - Benzene, Toluene, Ethylbenzene and Xylene (BTEX) contamination is indicated to be isolated and was recorded at a single location within shallow (<3.0m bgl) Made Ground.
  - Phenol contamination is indicated to be isolated and was recorded at a single location within shallow (<3.0m bgl) Made Ground.
  - Volatile Organic Compound (VOC) and Semi Volatile Organic Compound (SVOC) contamination is generally indicated to be isolated and restricted to specific locations within shallow (<3m bgl) Made Ground.

Dibenzofuran is indicated to be slightly more widespread but within deep (>3.0m bgl) Made Ground. Isolated VOC and SVOC compounds were also noted at a single location within shallow (<3.0m bgl) natural ground.

- Relatively localised Polychlorinated Biphenyl (PCB) contamination is indicated at specific locations within the shallow (<3.0m bgl) and deeper (>3.0m bgl) Made Ground.
- Asbestos fibres and debris were generally encountered within shallow (<3.0m bgl) Made Ground. The concentrations recorded ranged from <0.001% to 5.11%.
- Soil samples obtained from Made Ground and tested for leachate recorded exceedances of the screening values for metals (nickel, chromium IV, cadmium, chromium, copper, zinc, arsenic and lead), TPH, PAH compounds, total cyanide, sulphate and phenol.

### Groundwater

- 10.47. Visual and olfactory evidence of contamination recorded within waters are detailed within Table 10.3 of the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation report within **Appendix 10.7**, but generally included frequent hydrocarbon odours, occasional iridescent sheens, occasional white spirit odours, rare chemical / solvent odours and occasional sulphurous odours.
- 10.48. Specific details regarding exceedances of the screening criteria from samples obtained from the various groundwater bodies at the Site are shown with **Table 10.1** and within Appendix I of the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation report within **Appendix 10.7**. A brief summary of the exceedances of the screening values are outlined below:
- In perched groundwater within the Made Ground there were widespread exceedances of the screening values for metals (arsenic, boron, cadmium, manganese, nickel, and iron), relatively widespread exceedances for PAH and TPH, relatively isolated exceedances for phenol and benzene, and an isolated exceedance for cyanide.
  - In perched groundwater sampled from response zones that screened both Made Ground and Glacial Till, there were relatively widespread exceedances of the screening values for metals (boron, manganese and iron), relatively widespread exceedances for PAH and TPH, and isolated exceedances of phenol and benzene.
  - In perched groundwater within sampled from response zones that only screened Glacial Till, there were exceedances of the screening values for metals (arsenic, boron, manganese, selenium and iron), PAH compounds and phenol.
  - In perched groundwaters within bedrock, there were exceedances of the screening values for metals (manganese, selenium and iron), PAH compounds, TPH and sulphate.
  - From the sample obtained from the perched groundwater seepage, there were exceedances were similar to those observed for the perched groundwater within the Made Ground. However, exceedances of 1,4-Dichlorobenzene, Chlorobenzene and 1,2-Dichlorobenzene were also detected.

### Surface Water

- 10.49. In surface water samples taken from the Rochdale Canal from upstream, midstream and downstream, there were exceedances of screening values for chromium, lead, TPH and PAH compounds (benzo(a)pyrene and fluoranthene).

### Ground Gas

- 10.50. The gas monitoring results from WA ground gas monitoring undertaken between 30th November 2020 to 25th March 2021 have recorded concentrations of methane up to 5.8% by volume and concentrations of carbon dioxide up to 20.2% by volume, and variable flow rates ranging from -3.7l/hr to 20.9/hr. The gas monitoring from the Celtic Technologies Ltd 2007 investigation undertaken between 27th June 2007 to 23rd July 2007 recorded concentrations of carbon dioxide between <0.1% and 14.3% (typically between <0.1% and 9.8%), methane concentrations up to 30.5% (typically <0.1%) and gas flow rates of up to 2.3 l/hr.

- 10.51. A ground gas risk assessments was undertaken by calculating Gas Screening Values (GSV) for each location and the Site as a whole and comparing the results to Characteristic Gas Situations (CS) as outlined in BS8485. The assessment indicates that the Site should be classified as CS2 and that ground gas protection measures would be required for new buildings. Protection measures are likely to comprise a gas resistant membrane and passive subfloor dispersal layer. While a highly conservative, worst possible CS4 situation has been calculated for the Site, this is not consistent with the conceptual model for the Site (i.e. an old landfill with mostly inert wastes from a ground gas perspective) and is deemed to be unrepresentative.

## Vapours

- 10.52. Soil and groundwater vapours could pose a risk to those identified receptors and at this early stage it is envisaged that passive vapour protection measures may be required in new buildings, which is line with third party assessments. However, further detailed quantitative risk assessment (DQRA) will be required in line with current guidance to specify the precise requirements for vapour protection and / or confirm if remediation is necessary. The final choice for mitigation will be in conjunction with specialist remediation contractors and will be subject to agreement with relevant regulators.
- 10.53. Depending on the outcome of the vapour assessment from the DQRA, there may be a requirement for vapour monitoring in line with BS8576. To allow for a more representative / pragmatic assessment to be undertaken, additional shallow monitoring wells should be installed post remediation with subsequent vapour monitoring being undertaken.

## Conceptual Site Model

- 10.54. In line with EA guidance, plausible source, pathway, and receptor linkages are to be identified for the Site. A preliminary CSM has been compiled based on our current understanding of the Site conditions from third party data and the assessments that we have currently undertaken.

## Sources

- 10.55. Based on our current understanding of the Site, potentially significant contamination sources on-site and off-site have been identified and these sources of contamination are outlined below:
- Key sources of on-site contamination include but are not limited to brickworks, historical landfill, registered landfill and associated Made Ground, fly-tipped materials, potentially infilled ponds, reservoir etc.
  - Key sources of off-site contamination include historical surrounding industrial uses within the immediate surrounding area that include but are not limited to; Park Engineering Works, Avro Works, Brickworks and associated clay pits, Ten Acres Mill, Bleach Works, Livingston Mills (cotton), Galvanising Works, Glass Works, Dye Works, Tannery, Laundry, Timber Yard etc.
  - Off-site possible ground gas sources include surrounding historical landfills, areas of potentially infilled ground (e.g. ponds and excavations), surrounding Made Ground deposits and a cemetery.
  - Identified contamination within soils included a range of localised to widespread exceedances of the screening values for metals (notably lead and arsenic), TPH fractions, PAH compounds, BTEX, Phenols, PCB's, VOC's, SVOC's and total cyanide within shallow Made Ground (<3m bgl) and occasionally within deeper Made Ground (>3m bgl). Localised asbestos fibres and debris above the laboratory detection limit of 0.001% were also identified within shallow Made Ground.
  - Identified contamination within the various perched groundwater bodies includes isolated to widespread exceedances of the screening values for metals (arsenic, boron, cadmium, selenium, manganese, nickel, and iron), PAH, TPH, phenol, benzene, cyanide and sulphate. Most of the exceedances have been recorded within the perched groundwater within the Made Ground and to a lesser extent the perched groundwaters within the underlying Glacial Till that are in localised continuity with the Made Ground.
  - In surface water samples taken from the Rochdale Canal from upstream, midstream and downstream, there were exceedances of screening values for chromium, lead, TPH and PAH compounds (benzo(a)pyrene and fluoranthene).

- From the sample obtained from the perched groundwater seepage there were exceedances were similar to those observed for the perched groundwater within the Made Ground. However, exceedances of 1,4-Dichlorobenzene, Chlorobenzene and 1,2-Dichlorobenzene were also detected.
- No non-aqueous phase liquids (NAPL) have been detected to date, but free product was observed within shallow perched groundwater during trial pit excavations and has been indicated from subsequent investigations. Further works are ongoing.
- Proven on-site ground gas sources include Made Ground of significant thickness (up to 14m) within the historical landfill with abundant degradable constituents. A low to moderate ground gas generation potential is envisaged and this is supported by the ground gas risk assessment which has characterised the Site as CS2. Former infilled reservoir with a very low ground gas generation potential envisaged and this is also supported by the ground as data collected to date.
- Soil and groundwater vapours could pose a risk to those identified receptors. However, further DQRA will be required in line with current guidance to specify the precise requirements for vapour protection and / or confirm if remediation is necessary.

### Potential Pathways

- 10.56. Based on our current understanding the Site and the proposed end use, the following potential pathways (without mitigation) are envisaged:
- 10.57. In terms of human health, the main potential exposure pathways are considered to be inhalation of soil dust and vapours / ground gas, dermal contact and ingestion of soils, dust, and waters. Possible consumption of homegrown vegetables and ingestion of soil attached to vegetables following development of the Site. However, the viability of these pathways varies as follows:
- Construction workers and to a lesser extent current Site users are likely to have acute interaction with soil and materials, so they are likely to be at risk from all three potential pathways whilst working on the Site (i.e. dermal contact, ingestion and inhalation).
  - Contaminated soils need to be windblown to adjacent Site users before the inhalation, dermal contact and ingestion pathways become relevant. Windblown pathways are most likely during construction of the Site.
  - Following development of the Site there is expected to be an increase in hardstanding areas, which would help to minimise the dermal, ingestion and inhalation pathways (excluding vapours).
  - Seepage of groundwater at the surface and migration to off-site receptors was noted during one of the ground gas and groundwater monitoring visits. This has since been mitigated in the short term.
- 10.58. The main pathways by which contaminants are likely to reach groundwaters on-site is through the infiltration of rainwater causing vertical movement through the unsaturated zone followed by vertical and lateral movement of contaminants within groundwater as follows:
- At the time of the Site walkover undertaken as part of the Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation Report contained within **Appendix 10.7**, most of the Site was densely vegetated and derelict land with only a limited thickness of clayey and / or sandy topsoil, so vertical migration pathways were likely. During development, vertical migration pathways are likely to increase following removal of vegetation and during earthworks. Following development, vertical migration pathways are likely to be significantly reduced from the baseline due to an increase in hardstanding areas and the possible use of low permeability clean cover systems. Surface waters are also more likely to be captured by drainage before soaking into the ground.
  - Due to the predominantly granular nature of the Made Ground materials within the backfilled clay pits, vertical migration pathways are likely. However, further vertical migration to deeper groundwaters within the underlying natural superficial deposits and bedrock is limited due to the predominantly low permeability nature of the underlying Glacial Till. This is supported by the observed groundwater seepage within the south western

section of the Site, which indicates that the perched groundwaters within the backfilled clay pits are relatively self-contained.

- Lateral migration pathways are also indicated to be limited within the backfilled clay pits due extent and geometry of the various excavations that are indicated, the variability encountered within the backfilled materials and surrounding low permeability Glacial Till. Limited lateral migration connectivity is also indicated between the clay pit within the north west of the Site and the larger clay pit within the centre of the Site.
- Within the centre of the Site, there are localised areas of deep Made Ground that directly overlie natural granular deposits. This indicates that vertical migration pathways are present in places to the underlying granular layers within the Glacial Till. However, these granular layers are indicated to have limited vertical and lateral connectivity and the various lines of evidence indicate that they are confined and perched (i.e. discontinuous groundwater bodies not in hydraulic continuity as indicated by the groundwater monitoring elevation data). Sub artesian conditions are also indicated, and this suggests that these water bodies are confined.
- Lateral migration of perched groundwaters through the ground to the Rochdale Canal is considered unlikely due to the clay lining that would be present along the canal and the natural clay deposits that are indicated along the Site boundaries and outside the extent of the former clay pit excavations.
- Analysis of groundwater levels within the perched groundwaters within the Made Ground / landfill are variable but are generally indicated to be towards the south west and towards those deepest parts of the clay pit excavations. Groundwater flow within bedrock groundwater is indicated to be to the south west. Groundwater flow within Glacial Till is difficult to ascertain due to the lack of interconnectivity between the various sand and gravel layers, but a groundwater flow to the south west and east is indicated.
- Sub artesian conditions within deeper groundwaters within the natural superficial deposits and bedrock are indicated. It is expected that sub artesian conditions would further reduce the downward migration of contaminants through groundwater.
- Vertical migration via the faults that are recorded beneath the Site. However, mudstone bedrock is indicated to the west of the fault, and this could be acting as a barrier to lateral groundwater migration within bedrock. The fault is also overlain by a significant thickness of predominantly low permeability Glacial Till.
- Interception of rainwater by the dense vegetation that is present at the Site, the uptake of shallow perched water by roots and evaporation are also a mechanism by which the infiltration of rainwater/surface waters into the backfilled clay pit excavations is reduced.
- Vertical and lateral migration pathways may also exist via historic man-made features such as relic foundations, underground infrastructure / voids, excavations and buried services. However, the presence of these features is indicated to be limited from the various Site investigations that have been undertaken. There is no evidence of any outfalls to the Rochdale Canal.

10.59. The main pathway by which contaminants are likely to reach surface water receptors is through surface water run-off / overland flow as follows:

- The Site and the surrounding topography generally falls to the south west and away from the Rochdale Canal. However, there are areas immediately adjacent to the canal where the Site is elevated and surface water run-off / very shallow perched groundwater migration towards the canal could occur.
- During development of the Site, surface water run-off is likely to increase due to the removal of vegetation and topsoil. However, management of these surface waters would be required, and this should limit pathways to the canal.
- Following the development of the Site, it is envisaged that surface water pathways will be reduced as any waters will likely to be captured within on-site drainage before they encounter any surface water receptors or soils.

- 10.60. With the exception of downward migration, the main ground gas pathways are similar to those lateral and vertical migration pathways envisaged for groundwater. However, ground gas generation of the source is the main factor in the potential for the lateral migration of any ground gases and groundwater itself can sometimes facilitate lateral migration of dissolved ground gases. Ingress and accumulation then occurs once the ground gas has reached a valid receptor (e.g. a building). Inhalation is the main pathway for human health receptors.
- 10.61. Buildings/infrastructure – direct contact of contaminated soils / groundwater with building materials and ground gas ingress / accumulation.
- 10.62. Flora and Fauna – ingestion and root uptake.

## Key Receptors

- 10.63. Based on our current understanding of the Site, potential receptors include:
- Human health – current Site users, future Site users / occupiers, construction workers, and the general public / adjacent Site users (includes residential properties and the school to the south).
  - Groundwater – groundwater within superficial Secondary A and Secondary Undifferentiated Aquifers, groundwaters within bedrock Principal Aquifer and Secondary B Aquifer. Groundwater within the deeper Principal Aquifer is considered to be the most sensitive groundwater receptor. Furthermore, the superficial Secondary A and Undifferentiated Aquifers are indicated to comprise several minor aquifers restricted to individual high permeability strata (e.g. sand and gravel layers) and separated from each other by low permeability strata (e.g. clay strata). Consequently, groundwater tables are likely to be perched and isolated from one another.
  - Surface Water – The Rochdale Canal is considered to be the most sensitive surface water receptor due to its immediate proximity to the Site. While the River Medlock is technically more sensitive it is located 650m to the south of the Site.
  - Buildings / infrastructure – Historical, current and future buildings and service infrastructure (including those adjacent to the Site) are also potential receptors.

## Post Remediation Baseline

- 10.64. Post remediation changes to the CSM are envisaged and have been discussed briefly above and / or within the updated ES Chapter for the remediation application contained within **Appendix 10.4**.
- 10.65. The sources from the original CSM remain largely unchanged expect that post remediation the extent of the recorded contamination at the Site would have been reduced somewhat and ground conditions will have changed.
- 10.66. Pathways also largely remain the same expect for the following:
- Windblown pathways to off-site receptors are likely to have been temporarily increased due to the removal of vegetation and topsoil.
  - Infiltration of rainwater and vertical migration are likely to have been temporality increased due to the recent earthworks and the removal of vegetation which would have reduced interception.
  - Vertical and lateral migration pathways for groundwater via historical man-made features such as relic foundations, underground infrastructure / voids, excavations and buried services is likely to have been reduced as these will have been grubbed out during remediation works.
  - Following remediation surface water run-off is also likely to increase due to the removal of vegetation and topsoil.
- 10.67. Receptors also largely remain the same except that current Site users are less likely to access the Site and that buildings / infrastructure are unlikely to be present.

## Identification and Evaluation of Potential Effects

10.68. The key receptors have been identified as outlined above in 10.63.

10.69. The development of the Site is to be phased (Phase 1 and Phase 2) with the construction works being undertaken for Phase 2, possibly after Phase 1 has been occupied / is in operation. Consequently, the potential impacts to Phase 1 from the construction works of Phase 2 also need to be considered. Given the temporary nature of construction works and the timescales involved, it is considered that all potential impacts will be temporary and in the short to medium term only. The potential impact magnitude to future residents / users within both Phase 1 and Phase 2 could potentially be permanent and over a long period.

### Potential Impacts During the Construction of Phase 1 and Phase 2

10.70. The potential impacts that may occur during the construction of Phase 1 and Phase 2 (post remediation) include the following. The construction impacts to those potential occupiers at Phase 1 during the construction of Phase 2 have also been considered:

- The risk of significant widespread contamination being present at Phase 1 and Phase 2 is reduced as post remediation it is expected that most contaminants would be reduced somewhat. Regardless, without other forms of mitigation there is still the potential for the impact to the health of future Site users / occupiers within Phase 1, groundworkers and adjacent Site users through direct contact, ingestion or inhalation of contaminated soil / dust. For the construction phase, the impact to groundworkers and adjacent Site users would only be in the short to medium term. Overall, the impact magnitude has been considered as moderate.
- It is possible that construction methodologies could create pathways for contamination to migrate to off-site receptors (e.g. Rochdale Canal, adjacent users and deeper groundwaters) via surface waters, groundwaters or dust. Ground gas pathways may also be created. The potential impact magnitude has been considered as moderate as post remediation it is expected that most contaminants near surface and shallow perched groundwaters would be reduced somewhat
- Fuels and chemicals used / stored during construction have the potential to be spilled and if this occurs there could be potential future impacts to receptors at Phase 1 and all other receptors, however, considering the probability of this occurring or of it being significant, the impact magnitude is considered to be moderate.
- There is a risk that the built environment at Phase 1 could be impacted in the short to medium term by construction works undertaken at Phase 2 and this could result in damage to structures, external areas and services. A moderate impact magnitude has been considered.

10.71. The following table provides a summary of the potential impacts during construction as outlined above and outlines the receptor sensitivities along with the overall significance (by using the matrix as previously described in Table 10.3).

Table 10.5 Impact Significance – Construction

| Receptor<br>(Sensitivity)                      | Nature of Impact/ Comments                                                                                                                               | Magnitude | Significance             |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------|
| Construction Workers<br>(High)                 | Direct contact, ingestion or inhalation of contaminants/dust/groundwaters/gases                                                                          | Moderate  | Major – Moderate Adverse |
| Adjacent Site Users / General Public<br>(High) | Direct contact, ingestion (including consumption of vegetables and ingress via water supply pipes) or Inhalation of contaminants/dust/groundwaters/gases | Moderate  | Major – Moderate Adverse |

| Receptor<br>(Sensitivity)                                                       | Nature of Impact/ Comments                                                                                                                                 | Magnitude       | Significance                                     |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------|
| <b>Future Residents / Site Occupiers at Phase 1 Only</b><br>(High)              | Direct contact, ingestion (including consumption of vegetables and ingress via water supply pipes) or Inhalation of contaminants/dust/groundwaters/gases   | <b>Moderate</b> | <b>Major – Moderate Adverse</b>                  |
| <b>Groundwaters within superficial and bedrock Aquifers</b><br>(Low to High)    | Migration of groundwater through the ground (vertical and lateral) including the potential creation of new pathways during construction                    | <b>Moderate</b> | <b>Major – Moderate Adverse to Minor Adverse</b> |
| <b>Surface water receptors: Rochdale Canal</b><br>(Moderate)                    | Surface water run-off / overland flow including the potential creation of new pathways during construction                                                 | <b>Moderate</b> | <b>Moderate – Minor Adverse</b>                  |
| <b>Existing adjacent and new (Phase 1) buildings / infrastructure</b><br>(High) | Direct contact with contaminated waters; migration, ingress and accumulation of ground gases; infiltration of contaminants into pipes; and unstable ground | <b>Moderate</b> | <b>Major – Moderate Adverse</b>                  |
| <b>All, including workers and the wider environment</b><br>(Moderate)           | Spillage of fuels or chemicals during construction.                                                                                                        | <b>Moderate</b> | <b>Moderate – Minor Adverse</b>                  |

10.72. From the above table, it is considered that prior to mitigation, the potential impacts are mostly Major – Moderate Adverse and are considered to represent a likely significant effect for the purposes of the EIA regulations.

### Potential Impacts for the Operation of Phase 1 and Phase 2

10.73. The potential impacts that may occur during the operation of Phase 1 and Phase 2 (post remediation) include the following:

- The risk of significant widespread contamination being present at Phase 1 and Phase 2 is much reduced as post remediation and construction it is expected that most contaminants would be reduced somewhat, and the presence of hardstanding will reduce pathways. Regardless, without other forms of mitigation there is still the potential for the impact to the health of future Site users / occupiers through direct contact, ingestion (via the growing and consumption of vegetation in gardens, or infiltration and consumption through water supply pipes), or the inhalation of contaminants / dust. While the potential impact magnitude to future residents / users could potentially be permanent and over a long period, overall, the level of impact magnitude has been considered as moderate.
- There is a risk that new foundations and services may have created pathways to deeper groundwaters, off-site receptors or for ground gas to migrate to off-site receptors. However, due to an increase in hardstanding the risk from windblown or soil-derived dust to off-site receptors or the infiltration of water into the ground is also

largely reduced so the potential impact magnitude is reduced to minor - moderate, but still present without some form of mitigation.

- As noted in the ES Chapter for the remediation application (ref: 129197/FO/2021), the risk of elevated ground gases and vapours being present is moderate and this could impact new structures and existing adjacent structures. Consequently, a moderate impact magnitude has been considered for the potential impact from ground gases / vapours, particularly as an impact could be over a long period.
- There is a risk that the built environment could be impacted by unstable ground (e.g. ground aggressive to services / concrete, total and differential settlements, collapse compression, heave, shrink / swell, groundwater etc.) and this could result in damage to structures, external areas and services. A moderate impact magnitude has been considered as an impact could be over a long period.

10.74. The following table provides a summary of the potential impacts during operation as outlined above and outlines the receptor sensitivities along with the overall significance (by using the matrix as previously described in Table 10.3).

Table 10.6 Impact Significance – Operation

| Receptor<br>(Sensitivity)                                                       | Nature of Impact/ Comments                                                                                                                                 | Magnitude               | Significance                                     |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------------------------------|
| <b>Future Residents / Site Users<br/>(High)</b>                                 | Direct contact, ingestion (including consumption of vegetables and ingress via water supply pipes) or inhalation of contaminants/dust/groundwaters/gases   | <b>Moderate</b>         | <b>Major – Moderate Adverse</b>                  |
| <b>Adjacent Site Users / General Public<br/>(High)</b>                          | Direct contact, ingestion (including consumption of vegetables and ingress via water supply pipes) or inhalation of contaminants/dust/groundwaters/gases   | <b>Minor - Moderate</b> | <b>Moderate Adverse</b>                          |
| <b>Groundwaters within superficial and bedrock Aquifers<br/>(Low to High)</b>   | Migration of groundwater through the ground (vertical and lateral)                                                                                         | <b>Moderate</b>         | <b>Major – Moderate Adverse to Minor Adverse</b> |
| <b>Surface water receptors: Rochdale Canal<br/>(Moderate)</b>                   | Surface water run-off / overland flow                                                                                                                      | <b>Moderate</b>         | <b>Moderate – Minor Beneficial</b>               |
| <b>New and existing adjacent buildings / infrastructure and land<br/>(High)</b> | Direct contact with contaminated waters; migration, ingress and accumulation of ground gases; infiltration of contaminants into pipes; and unstable ground | <b>Moderate</b>         | <b>Major-Moderate Adverse</b>                    |

10.75. From the above table, it is considered that prior to mitigation, the potential impacts for operation range from Major-Moderate adverse to Major-Moderate to Minor Adverse. However, some benefit is anticipated but in most

instances is outweighed by adverse impacts (before mitigation). Consequently, this has been reflected by reducing magnitude of the impact slightly.

## Mitigation Measures

- 10.76. Following remediation and construction of the site, the risk of contamination being present is much reduced, but could still cause an impact. An extensive intrusive investigation was undertaken by WA between September and November 2020. The intrusive investigation included the chemical analysis of soils, groundwater sampling and testing and ground gas monitoring. However, some additional works have been conditioned by the regulators and are ongoing and there is a possibility that further assessments may be required (e.g. DQRA, Options Appraisal and Detailed Remediation Strategy).
- 10.77. The exact requirements of the mitigation that will be required is dependent on the completion of those assessments that are currently outstanding. WA completed an outline / preliminary remediation strategy in December 2020 that outlines construction and post construction mitigation measures. A Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation Report dated May 2021, contained within **Appendix 10.7**, and an Outline CEMP dated June 2021, contained within **Appendix 10.8**, were also produced. It is recommended that reference is made to these reports and any subsequent updates for any outline mitigation measures that may be required to reduce potentially adverse effects and enhance beneficial effects caused by the construction and operational phases.
- 10.78. At this stage and in the absence of assessments that are yet to be completed, and subject to agreement with the regulators, the likely construction related mitigation measures for both Phase 1 and Phase 2 are outlined below. The list is not exhaustive / detailed, and reference should be made to the WA reports outlined above:
- Installation of a clean cover pathway break across most of the Site (e.g. gardens and soft landscaping areas). The extent and composition, the inclusion of any hardstanding areas as pathway breaks and any other requirements will be determined by those outstanding assessments that are being undertaken and will be subject to agreement with the regulators. Subsequent chemical and physical validation of clean cover systems;
  - Ground gas / vapour mitigation for new buildings. Protection measures are likely to comprise a gas resistant membrane, passive subfloor dispersal layer and / or passive vapour protection measures. Validation of protection in accordance with current guidance. Those outstanding assessments for vapours would need to be undertaken to determine the specific requirements;
  - The risks to off-site receptors (including those future users at Phase 1) during the construction works (Phase 1 and Phase 2) and the risks to construction workers can be mitigated by undertaken the works in accordance with the WA Outline CEMP;
  - Undertaking any construction / development works in accordance with an Asbestos Management Plan as asbestos fibres have been detected within Made Ground and may still be present at the Site;
  - Dewatering and groundwater treatment will be required for those shallow perched groundwaters within Made Ground that are likely to be encountered during earthworks and require discharge from the Site;
  - Following development of the Site there will likely be a requirement for the ongoing management / mitigation of the shallow perched groundwaters as further groundwater seepages could occur;
  - Decommissioning of all monitoring wells as they may pose an ongoing risk to the Principal Aquifer and act as pathways for ground gas.
  - A legislatively compliant Invasive Non-Native Species Management Plan together with suitable monitoring, validation and management during the construction works to deal with the Japanese Knotweed and associated infested soils that may still be present at the Site.
  - Appropriate assessment of subsurface ground services and water supply pipes should be undertaken and installed utilising the associated regulator documentation.
- 10.79. Further details and mitigation are contained with the WA Outline / Preliminary Remediation Strategy dated December 2020, the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation Report

dated May 2021 contained within **Appendix 10.7** and the WA Outline CEMP dated June 2021 contained within **Appendix 10.8**.

10.80. The following mitigating measures are envisaged to reduce the impact on the development from unstable ground. Further details are contained with the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation Report dated May 2021 contained within **Appendix 10.7**:

- The Made Ground that is present on-site is unlikely to be suitable as a founding stratum as it is indicated to be highly variable. Ground improvement and / or excavation and recompaction as engineered fill may be suitable for some types of Made Ground to enable for the use of traditional shallow foundations.
- For those areas where deep and / or highly variable Made Ground is present or where higher loadings are required a piled foundation solution into the underlying Glacial Till could be required;
- For those areas where shallow natural strata are indicated at depths less than 2.5m bgl shallow foundations may be suitable bearing into the underlying Glacial Till (subject to laboratory testing and engineering assessment that considers the influence of trees for example);
- It is likely that suspended floor slabs will need to be adopted across most of the Site. For those areas where ground improvement is undertaken or Made Ground has been fully excavated and reengineered, then ground bearing floor slabs may be able to be adopted if the Made Ground can provide the necessary uniformity and strength;
- Structures that straddle over areas of improved and unimproved Made Ground and any former buried highwalls to the former clay pit excavations should be avoided or suitable foundations adopted as differential settlement could occur in these areas;
- Total settlements will need to be considered, as the Site is underlain by significant thicknesses of Made Ground that includes organic materials and high proportions of deleterious / degradable / problematic waste materials in places. Suitable foundation solutions will need to be adopted and mitigation may also be required for external areas and services (e.g. geotextiles);
- Materials to be used for earthworks should comply with the acceptability criteria for earthworks as defined by the Highways Agency Manual of Contract Documents for Highways Work, Volume 1: Specification for Highway Works, Series 600, Earthworks (SHW) and that the excavated materials are considered suitable for use.
- Shallow groundwaters are indicated that could impact on any shallow excavations and result in instability. Where groundwater inflows could affect foundation or other types of excavations during construction then some form of groundwater control will be required.
- Excavations are unlikely to remain stable in the long or short term. Some form of temporary support may be required for all excavations where collapse is to be avoided.
- Obstructions have been encountered at the locations of the former brickwork's buildings located within the easternmost and north westernmost sections of the Site. Further oversized obstructions are also indicated to be present within the Made Ground. Larger capacity excavators or plant may be required.
- A worst-case Design Sulphate Class (DS) of "DS-2" and an Aggressive Chemical Environment for Concrete (ACEC) of "AC-3Z" has been determined for the Made Ground at the Site. Concrete classes should take these findings into account.
- An extensive area of colliery spoil has been identified within the north eastern section that has the potential for sulphides to be present. "DS-3" and "AC-5" is indicated. The heave potential of these materials may also need to be considered as pyrite is indicated to be present.
- An extensive area of colliery spoil has been identified within the north eastern section of the Site and high proportions of degradable / waste constituents are present in places across the Site. Consideration should be given to the potential for collapse compression at the Site.

- Those colliery spoil materials identified at the Site are indicated to be susceptible to combustion and should be kept a minimum of 1m away from any potential sources of ignition. When used in areas of private gardens or soft landscaping a 1m thick layer of inert material should be present to prevent accidental ignition. Stockpiles should be covered with suitable cohesive material to prevent any oxygen getting to the coal and minimise the combustion risk.
- Any ground improvement or foundation works undertaken at Phase 2 will need to consider the current built environment at Phase 1. For example dynamic compaction could damage existing buildings and services within Phase 1.

10.81. Further details are contained within the WA Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation Report dated May 2021.

### Cumulative Effects

- 10.82. The Site is located within an area of significant historical industrial land use that includes those off-site sources noted in 10.55. However, contamination from off-site sources generally has to migrate, generally in windblown or soil-derived dust, entrained in surface water runoff, in migrating groundwater or as migrating ground / landfill gas and vapours. Any contamination would have to be significant in order to potentially cause impacts to the wider environment.
- 10.83. The committed and likely developments coming forward within the vicinity of the Site are contained within Appendix 2.2.
- 10.84. Cumulative effects during construction include a greater number of groundworkers exposed to contamination and an increased potential for windblown contaminants to be generated and affect nearby users. Intrusive investigations were undertaken at the site's noted and while elevated concentrations of contaminants and ground gas were noted, these were not significant and an overall low to moderate risk was indicated. Furthermore, when the source-pathway-receptor methodology is implemented, they are unlikely to impact upon the Site or in turn be impacted by developments at the Site due to the significant thicknesses and extent of low permeability Glacial Till have also been proven from these investigations. Therefore, the risk of the above cumulative effects occurring are minor.
- 10.85. There is a possibility of a greater number of incidents / accidents which could cause contamination to the ground and the wider environment during construction of the offsite developments, however, the probability of this occurring at every development in order to cause a cumulative effect is considered to be relatively low based on the source-pathway-receptor methodology for the reasons outlined above. It should also be noted that these schemes are likely to adhere to best practice in order to minimise potential environmental impacts (it is likely that strict CEMP's would be required), which would also reduce the probability of incidents / accidents occurring to the storage of any fuels or chemicals.
- 10.86. Similar to the potential cumulative impacts during construction, during operation there could be more future users, water supply pipes, vegetation and buildings being affected by contamination. However, it should be noted that through the planning regime, similar mitigation measures are likely to be incorporated into any developments in the wider area and the impact is considered to be minor.

### Residual Effects

- 10.87. The table below identifies for each potential significant effect, the receptor, possible mitigation measures and residual impact. Please note that the mitigation measures are currently of an outline nature and exact requirements are dependent on the completion of those assessments that are currently outstanding:

Table 10.7 – Summary of Likely Significant Effects, Receptors, Mitigation Measures and Residual Effects

| Likely Significant Effect                                                                                                                                 | Receptor<br>(Sensitivity)                                                         | Impact Significance<br>Pre-Mitigation            | Possible Mitigation Measures                                                                                                                                                                                                                                                                               | Residual<br>Impact<br>Significance |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| <b>Potential Impacts for the Construction of Phase 1 and Phase 2</b>                                                                                      |                                                                                   |                                                  |                                                                                                                                                                                                                                                                                                            |                                    |
| Direct contact, ingestion or inhalation of contaminants/dust/groundwater s/gases                                                                          | Construction workers<br>(High)                                                    | <b>Major – Moderate Adverse</b>                  | Implementation of those items outlined for the Outline CEMP and those construction and post construction mitigation measures in the Outline Remedial Strategy (including use of PPE and adhering to relevant health and safety measures)                                                                   | <b>Negligible</b>                  |
| Direct contact, ingestion (including consumption of vegetables and ingress via water supply pipes) or inhalation of contaminants/dust/groundwater s/gases | Adjacent Site Users / General Public / Future Site Users within Phase 1<br>(High) | <b>Major – Moderate Adverse</b>                  | While the construction works could temporarily increase the risk of migration to off-site receptors, if those items outlined for the Outline CEMP and the construction and post construction mitigation measures in the Outline Remedial Strategy are implemented this should be negligible.               | <b>Negligible</b>                  |
| Migration of groundwater through the ground (vertical and lateral)                                                                                        | Groundwaters within superficial and bedrock<br>Aquifers<br>(Low to High)          | <b>Major – Moderate Adverse to Minor Adverse</b> | While the construction works could temporarily produce pathways to shallow groundwaters in the short term, if those items outlined for the Outline CEMP and the construction and post construction mitigation measures in the Outline Remedial Strategy are implemented this should be negligible.         | <b>Negligible</b>                  |
| Surface water run-off / overland flow                                                                                                                     | Surface water receptors: Rochdale Canal<br>(Moderate)                             | <b>Moderate – Minor Adverse</b>                  | While construction works would increase the potential for surface water run-off / overland flow in the short term, if those items outlined for the Outline CEMP and the construction and post construction mitigation measures in the Outline Remedial Strategy are implemented this should be negligible. | <b>Negligible</b>                  |

| Likely Significant Effect                                                                                                                                  | Receptor (Sensitivity)                                                | Impact Significance Pre-Mitigation | Possible Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Residual Impact Significance                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| Direct contact with contaminated waters; migration, ingress and accumulation of ground gases; infiltration of contaminants into pipes; and unstable ground | Existing adjacent and new (Phase 1) buildings / infrastructure (High) | <b>Major – Moderate Adverse</b>    | While construction works could increase the potential for off-site migration of contamination to third party properties, if those items outlined for the Outline CEMP and the construction and post construction mitigation measures in the Outline Remedial Strategy are implemented this should be negligible. There is a risk that Phase 1 could be impacted by the construction works undertaken at Phase 2 and this could result in damage to structures, external areas and services if mitigation is not implemented. | <b>Moderate – Minor Adverse (* please refer to table footnote)</b> |
| Spillage of fuels or chemicals during construction                                                                                                         | All, including workers and the wider environment (Moderate)           | <b>Moderate – Minor Adverse</b>    | Implementation of those items outlined for the Outline CEMP and those construction and post construction mitigation measures in the Outline Remedial Strategy.                                                                                                                                                                                                                                                                                                                                                               | <b>Negligible</b>                                                  |
| <b>Operation of Phase 1 and Phase 2</b>                                                                                                                    |                                                                       |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                    |
| Direct contact, ingestion (including consumption of vegetables and ingress via water supply pipes) or inhalation of contaminants/dust/groundwater s/gases  | Future Residents / Site Users (High)                                  | <b>Major – Moderate Adverse</b>    | Implementation of those construction and post construction mitigation measures in the Outline Remedial Strategy and post construction related mitigation measures.                                                                                                                                                                                                                                                                                                                                                           | <b>Negligible</b>                                                  |
| Direct contact, ingestion (including consumption of vegetables and ingress via water supply pipes) or inhalation of contaminants/dust/groundwater s/gases  | Adjacent Site Users / General Public (High)                           | <b>Major – Moderate Adverse</b>    | Implementation of those construction and post construction mitigation measures in the Outline Remedial Strategy and post construction related mitigation measures that will result in a betterment of the Site and reduce the potential pathways for off-site migration. However, some pathways may still remain, and mitigation may not be present for off-site receptors.                                                                                                                                                  | <b>Moderate – Minor Adverse (* please refer to table footnote)</b> |

| Likely Significant Effect                                                                                                                                  | Receptor<br>(Sensitivity)                                                | Impact Significance<br>Pre-Mitigation            | Possible Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                  | Residual<br>Impact<br>Significance                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Migration of groundwater through the ground (vertical and lateral) including the potential creation of new pathways                                        | Groundwaters within superficial and bedrock<br>Aquifers<br>(Low to High) | <b>Major – Moderate Adverse to Minor Adverse</b> | Implementation of those construction and post construction mitigation measures in the Outline Remedial Strategy and post construction related mitigation measures that will result in a betterment to the Site. However, pathways could exist via new foundations, but foundation risk assessments and mitigation is envisaged, and foundations are unlikely to penetrate thick Glacial Till.                                                 | <b>Minor Adverse to Negligible (* please refer to table footnote)</b> |
| Surface water run-off / overland flow including the potential creation of new pathways                                                                     | Surface water receptors:<br>Rochdale Canal<br>(Moderate)                 | <b>Moderate – Minor Beneficial</b>               | Implementation of those construction and post construction mitigation measures in the Outline Remedial Strategy and post construction related mitigation measures. Surface waters should only come into contact with hardstanding or clean cover systems, and most will be captured by drainage resulting in a betterment. However, minor residual risks with leaks from vehicles etc. but again these are likely to be captured by drainage. | <b>Minor Adverse to negligible (* please refer to table footnote)</b> |
| Direct contact with contaminated waters; migration, ingress and accumulation of ground gases; infiltration of contaminants into pipes; and unstable ground | New buildings and infrastructure<br>(High)                               | <b>Major-Moderate Adverse</b>                    | Implementation of those construction and post construction mitigation measures in the Outline Remedial Strategy, post construction related mitigation measures and those geotechnical mitigation measures. Risk of ongoing settlements associated with deeper landfill materials and ground gas / vapour generation.                                                                                                                          | <b>Moderate – Minor Adverse (* please refer to table footnote)</b>    |

| Likely Significant Effect                                                                                                                                  | Receptor<br>(Sensitivity)                                       | Impact Significance<br>Pre-Mitigation | Possible Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                           | Residual<br>Impact<br>Significance                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| Direct contact with contaminated waters; migration, ingress and accumulation of ground gases; infiltration of contaminants into pipes; and unstable ground | Existing adjacent buildings / infrastructure and land<br>(High) | <b>Major-Moderate Adverse</b>         | Implementation of those construction and post construction mitigation measures in the Outline Remedial Strategy and post construction related mitigation measures that will result in a betterment of the Site and reduce the potential pathways for off-site migration. Ground gas / vapours and groundwaters may still be an issue for off-site properties and mitigation may not be present for off-site receptors. | <b>Moderate – Minor Adverse (* please refer to table footnote)</b> |

\* This is considered to be the worst-case scenario, and it is likely that control measures during construction will avoid any accidents and incidents occurring and that following development of the Site there will be a betterment to the current baseline conditions.

## Summary

10.88. Following the implementation of the outline mitigation measures, the majority of potential impacts have been identified as moderate – minor or negligible significance. However, this is considered to be the worst-case scenario, and it is likely that control measures during construction will avoid any accidents and incidents occurring and that following development of the Site there will be a betterment to the current baseline conditions. Please refer to the limitations as outlined in paragraph 10.23 and those other limitations noted throughout the report.

## Reference List

10.89. This ES Chapter has been prepared by reference to the following:

- Celtic Technologies Ltd (July 2006), Desk Study - Ten Acres Lane, Newton Heath, Greater Manchester (report ref. R1077/06/2958);
- Celtic Technologies Ltd (February 2008), Interpretative Report (Geoenvironmental Assessment) - Former Jacksons Brick Works, Ten Acres Lane, Newton Heath, Greater Manchester (report ref. R1077/08/3328);
- WA (July 2019), Factual Site Investigation Report – Land Between Ten Acres Lane and Mitchel Street, Newton Heath, Manchester (report ref. SH12254 RPT-001);
- Deloitte Real Estate (January 2021), Jacksons Brickworks Remediation Environmental Statement: Volume 1 & 2;
- WA (June 2020), Land at Ten Acres Lane, Newton Heath, Gap Analysis and Indicative Scope of Further Works;
- WA (December 2020), Land at Ten Acres Lane, Newton Heath, Outline / Preliminary Remediation Strategy;
- WA (May 2021) Combined Phase I Preliminary Risk Assessment and Phase II Ground Investigation Report;
- WA (June 2021) Outline Construction and Environmental Management Plan.



# 11. Water Resources, Flood Risk and Drainage

## Introduction

- 11.1. This Chapter of the ES assesses the likely significant effects of the Proposed Development with respect to Hydrology. This Chapter also describes the methods used to assess the effects; the baseline conditions currently existing at the Site and surrounding area; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.
- 11.2. John Speers is a Chartered Civil Engineer with the ICE and is head of flood risk and drainage at Alan Johnston Partnership. John has over 15 years' experience in the water industry specialising in Hydrology Environmental Statements for Environmental Impact Assessments (EIA) and associated Flood Risk Assessments ranging from large road and rail schemes down to smaller infrastructure and development schemes.
- 11.3. The Scoping Report (Hydrology/ Water Resources, Flood Risk and Drainage section – contained at **Appendix 2.1**) contained a baseline assessment of the hydrology and the potential impact the Proposed Development has on hydrology during construction (Temporary) and operational (Permanent) stages and to identify any requirement for mitigation. The key issues relating to hydrology and flood risk as a result of the Proposed Development comprise the following (during the construction and operational phases):
  - Possible surface water pollution during the construction and operational phases;
  - Effect on surface water attributes, including water quality;
  - Increased on and off-site surface flood risk;
  - Impact on the public drainage network (foul and surface water), both in terms of water quality and capacity; and
  - Assessment of cumulative impacts where relevant.
- 11.4. The receptors identified at risk during the Scoping stage include (i) the Rochdale Canal immediately North of the Site which is shown on the EA Flood Maps to receive two surface water flowpaths and (ii) the potential for surface water runoff to infiltrate into the ground due to the underlying geology. Please see Chapter 10 for the likely significant effects of the Proposed Development with respect to ground conditions, which includes potential land contamination impacts to groundwater. There are no residential or non-residential properties, environmental designations or other watercourse receptors identified at risk and therefore not considered further.
- 11.5. **Appendix 11.1** contains the Flood Risk Assessment and Drainage Strategy which is associated with this ES Chapter. **Appendices 10.1 and 10.2** contains the Celtic Ground Investigation Report, the previous Site specific Site investigation report for the Site.

## Legislative and Policy Context

### UK and European Legislation

- 11.6. Legislation and policy specifically relevant to this Chapter is outlined in **Table 11.1** below.

Table 11.1 Relevant Legislation (Hydrology)

| Legislation                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>European Legislation</b> | <p>The Water Framework Directive 2000/60/EC establishes a framework for community action in the field of water policy. The Water Framework Directive (WFD) seeks to enhance the status of aquatic ecosystems, promotes sustainable water use and contributes to mitigating the effects of flood and drought. It is a requirement of the Directive that member states classify major rivers and their tributaries in terms of their ecological status with reference to biological, chemical and hydromorphological quality indicators. In January 2014 the Freshwater Fish Directive (2006/44/EC) was revoked and was subsumed under the WFD. The WFD is implemented through a series of River Basin Management Plans.</p> <p>The Groundwater Directive (80/68/EEC as amended by 91/692/EEC) the protection of groundwater against pollution caused by certain dangerous substances (as amended - the Ground Water Directive dangerous substances (consolidated) places an obligation on member states to prevent pollution of groundwater by substances including hydrocarbons and control the introduction of named metals, including copper.</p> <p>The Groundwater Daughter Directive (2006/118/EC) the "Daughter Directive" to the Water Framework Directive establishes specific measures as provided for in the Water Framework Directive to prevent and control groundwater pollution. It defines criteria for the assessment of good groundwater chemical status.</p> <p>The EU Directive on the assessment and management of flood risks [2007/60/EC] (the 'Floods' Directive), came into force late in 2008. The Directive requires member states to develop and update a series of tools for managing all sources of flood risk, in particular:</p> <ul style="list-style-type: none"> <li>• preliminary flood risk assessments (PFRAs);</li> <li>• flood risk and flood hazard maps;</li> <li>• flood risk management plans;</li> <li>• co-ordination of flood risk management at a strategic level;</li> <li>• improved public participation in flood risk management; and</li> <li>• co-ordination of flood risk management with the Water Framework Directive</li> </ul> <p>The Nitrates Directive (91/676/EEC) aims to reduce nitrate concentrations from agriculture entering water systems.</p> |
| <b>UK Legislation</b>       | <p>The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 implements the Water Framework Directive.</p> <p>The Groundwater (Water Framework Directive) (England and Wales) Regulations 2009 and Groundwater (Water Framework Directive) (England) Direction 2014 transpose the Groundwater Daughter Directive. The Groundwater Directive 2006/118/EC requirements have now been transposed into UK law by the Environmental Permitting (England and Wales) Regulations 2016.</p> <p>The requirements of the Flood Directive were initially met by the Flood Risk Regulations 2009, which was consolidated into the Flood and Water Management Act 2010. The Flood and Water Management Act (2010) clarifies responsibilities for land drainage and flood risk management and transfers some key responsibilities to local authorities.</p> <p>The Water Resources Act 1991 (and Land Drainage bylaws). The prior written consent of the Environment Agency is required for any works or</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Legislation

structures, in, over under or within 8 metres of any watercourse designated as a 'main river'.

The Land Drainage Act 1991 consolidates various enactments relating to Internal Drainage Boards and the functions of these Boards and local authorities, including Lead Local Flood Authorities, in relation to land drainage. Amongst other matters, the Act sets out provisions and powers in respect of the control of flow of watercourses and watercourse restoration/improvement works.

The Nitrates Directive is implemented by the Nitrate Pollution Prevention Regulations 2015, which include:

- a requirement to designate Nitrate Vulnerable Zones (NVZs);
- a requirement to plan nitrogen applications on agricultural land;
- the setting of limits on nitrogen fertiliser applications;
- the establishment of closed periods for spreading; and
- controls on the application and storage of organic manure.

The Environment Agency is responsible for assessing farmers' compliance with measures in NVZs.

The guidance document H3 'Drainage and waste disposal' (2015 edition) issued by the Government in respect of the requirements of the Building Regulations 2010 stipulates that rainwater from roofs and paved areas is required to be carried away from the surface to discharge to one of the following, listed in order of priority:

- an adequate soakaway or some other adequate infiltration system, or where that is not reasonably practicable;
- a watercourse; or where that is not practicable;
- a sewer.

## National Planning Policy

- 11.7. The National Planning Policy Framework (NPPF) sets out national policy in relation to geological conservation and protection of surface water and groundwater resources. Local planning authorities are required to implement planning policies that 'aim to prevent harm to geological conservation interests. The NPPF incorporates a requirement to protect water resources and prevent unacceptable impact on soils or land stability as follows (Chapter 15, Paragraph 170):

"The planning system should contribute to and enhance the natural and local environment by (inter alia): 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."

- 11.8. National Planning Practice Guidance (PPG) provides detail in relation to water resources protection and the planning system. PPG ID34 advises on how the planning system seeks to protect water quality and support the delivery of adequate water and wastewater infrastructure, as follows:

"Water quality is only likely to be a significant planning concern when a proposal would:

involve physical modifications to a water body such as flood storage areas, channel diversions and dredging, removing natural barriers, construction of new locks, new culverts, major bridges, new barrages/dams, new weirs (including for hydropower) and removal of existing weirs; and/or

indirectly affect water bodies, for example, as a result of new development such as the redevelopment of land that may be affected by contamination, mineral workings, water or wastewater treatment, waste management facilities and transport schemes including culverts and bridges;"

- 11.9. The NPPF also sets out the framework for management of development in relation to flood risk with the aim of directing new development to areas at lowest flood risk. A sequential approach to assessment of development suitability is based on consideration of development vulnerability to flood hazards.

## Local Planning Policy

- 11.10. Local policy regarding development and flood risk is set out in the Manchester City Council Development Plan (Manchester Core Strategy 2012 - 2027). Policy related to Water Resources and Flood Risk is set out in Policy EN14:

### Policy EN 14 Flood Risk:

In line with the risk-based sequential approach contained within PPS25, development should be directed away from sites at the greatest risk of flooding, and towards sites with little or no risk of flooding; this should take account of all sources of flooding identified in the Manchester-Salford-Trafford Strategic Flood Risk Assessment (SFRA).

In addition to the requirements for site-specific Flood Risk Assessments (FRAs) set out in PPS25, an appropriate FRA will also be required for all development proposals, including changes of use, on sites greater than 0.5ha within Critical Drainage Areas (CDAs) and Canal Hazard Zones identified in the SFRA.

All new development should minimise surface water run-off, including through

Sustainable Drainage Systems (SUDS) and the appropriate use of Green Infrastructure.

Developers should have regard to the surface water run-off rates in the SFRA User Guide. In CDAs, evidence to justify the surface water run-off approach / rates will be required.

The City of Manchester contains many sections of rivers which are culverted or 'hidden'; where these are indicated in the SFRA beneath the Proposed Development site, further investigation will be required and the development proposal should take this into account; where feasible and appropriate development should seek to open up culverted/hidden rivers to reduce the associated flood risk and danger of collapse, taking advantage of opportunities to enhance biodiversity and Green Infrastructure

## Assessment Methodology and Significance Criteria

### Approach and Method

- 11.11. Assessment of potential development impacts on local hydrology and hydrogeology has been undertaken through a combination of desk-based analysis, Site survey work, qualitative and quantitative impact assessment and consideration of potential impact mitigation requirements.
- 11.12. Potential development effects have been defined by reference to baseline geological, hydrological and hydrogeological assessment and detailed development design proposals. Where necessary, mitigation measures have been defined for any effects considered to be significant with the aim of reducing any residual risk to an acceptable level. The criteria for determining the significance of effects is based upon the following method, using the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 10 (HD 45/09) as a guide:
- Assessment of potential receptor sensitivity.
  - Assessment of potential magnitude of impact.
  - Determination of potential effect significance.
- 11.13. As summarised in **Tables 11.2, 11.3 and 11.4**, magnitude is considered in relation to the potential impact on the receptor with magnitude defined in a range from negligible to major. The receptor sensitivity is

defined as low, medium or high depending on the specific receptor character and its ability to tolerate change. The significance of the effect is defined in relation to both the magnitude of the impact and receptor significance. If the significance of the potential effect is moderate adverse or higher, then mitigation measures may need to be considered.

Table 11.2 – Methodology for determining sensitivity

| Sensitivity     | Examples of Receptor                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>High</b>     | <p>WFD Classification – Good or High</p> <p>Site protected under EU or UK wildlife legislation (SAC, SPA, ASSI, Ramsar site); and European Designated salmonid fishery (or salmonid &amp; cyprinid fishery);</p> <p>Important social or economic uses such as water supply, navigation or mineral extraction.</p> <p>Floodplain or defence protecting more than 1 or more residential properties or industrial premises from flooding</p> |
| <b>Moderate</b> | <p>WFD Classification: Moderate</p> <p>May be designated as a local wildlife site.</p> <p>May support a small / limited population of protected species. Limited social or economic uses.</p> <p>Floodplain or defence protecting 10 or fewer industrial properties from flooding</p>                                                                                                                                                     |
| <b>Low</b>      | <p>WFD classification - Poor</p> <p>No nature conservation designations.</p> <p>Low aquatic fauna and flora biodiversity and no protected species. Minimal economic or social uses.</p> <p>Floodplain with limited constraints and a low probability of flooding of residential and industrial properties</p>                                                                                                                             |

Table 11.3 – Methodology for determining impact magnitude

| Magnitude of Impact | Criteria for assessing impact magnitude                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Major</b>        | <p>Loss of Protected Area.</p> <p>Pollution of potable sources of water abstraction.</p> <p>Deterioration of a water body leading to a failure to meet Good Ecological Status (GES) under the WFD and reduction in Class (or prevents the successful implementation of mitigation measures for heavily modified or artificial water bodies).</p> <p>Increase in peak flood level (1% annual probability) &gt;100 mm.</p>                                       |
| <b>Moderate</b>     | <p>Loss in production of fishery.</p> <p>Discharge of a polluting substance to a watercourse but insufficient to change its water quality status (WFD class) in the long term.</p> <p>No reduction in WFD class, but effect may prevent improvement (if not already at GES) or the successful implementation of mitigation measures for heavily modified or artificial water bodies.</p> <p>Increase in peak flood level (1% annual probability) &gt;50 mm</p> |
| <b>Minor</b>        | <p>Noticeable effect on features, or key attributes of features, on the Protected Areas Register.</p>                                                                                                                                                                                                                                                                                                                                                          |

| Magnitude of Impact | Criteria for assessing impact magnitude                                                                                                                                                                                                                                                                                            |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | Measurable changes in attribute but of limited size and / or proportion, which does not lead to a reduction in WFD status or failure to improve.<br>Increase in peak flood level (1% annual probability) >10mm                                                                                                                     |
| <b>Negligible</b>   | No effect on features, or key attributes of features, on the Protected Areas Register.<br>Discharges to watercourse but no significant loss in quality, fishery productivity or biodiversity.<br>No effect on WFD classification or water body target.<br>Negligible change in peak flood level (1% annual probability) <+/- 10 mm |
| <b>Beneficial</b>   | Improvement on features, or key attributes of features, on the Protected Areas Register.<br>Improvement in fishery production or biodiversity. Improvement in WFD classification or water body target.<br>Reduction in peak flood level (1% annual probability) >+/- 10 mm                                                         |

Table 11.4 – Effect of significance matrix

| Magnitude         | Sensitivity                          |                                      |                                      |
|-------------------|--------------------------------------|--------------------------------------|--------------------------------------|
|                   | High                                 | Moderate                             | Low                                  |
| <b>Major</b>      | Major<br>Adverse/Beneficial          | Major-Moderate<br>Adverse/Beneficial | Moderate-Minor<br>Adverse/Beneficial |
| <b>Moderate</b>   | Major-Moderate<br>Adverse/Beneficial | Moderate-Minor<br>Adverse/Beneficial | Minor<br>Adverse/Beneficial          |
| <b>Minor</b>      | Moderate-Minor<br>Adverse/Beneficial | Minor<br>Adverse/Beneficial          | Minor-Negligible                     |
| <b>Negligible</b> | Negligible                           | Negligible                           | Negligible                           |

- 11.14. In considering the significance of the effect account is taken of an effect's duration; reversibility and compatibility with relevant environmental policies and standards. Effects can be temporary or permanent. Temporary effects are largely associated with the construction phase and permanent effects are largely associated with the operational phase.

### Limitations and Assumptions

- 11.15. The methodology for assessment of potential water resource and flood risk effects has incorporated the following assumptions:
- That Site access roads would be surfaced with compacted hardcore or similar and therefore assumed to be effectively impermeable.
  - Any runoff from waste materials would be collected, contained and prevented from direct entry to local watercourses.

- That all clean roof drainage would be discharged directly to the nearest surface water drainage channel.
- Analysis of flood extents is reliant on the accuracy of the published EA Flood Map for Planning and EA flood data. No new hydraulic modelling has been undertaken as part of this study.
- There has been no independent testing or analysis of Site-specific waste products.
- Assumed finished floor levels of the Proposed Development will be set at 150 mm above existing ground levels in line with Building Regulations for England and Wales (Part C) as recommended in the Flood Risk Assessment.
- A successful development strategy for the Site will require engagement with appropriate stakeholders and will rely on an interdisciplinary approach to the design process.

## Baseline Conditions

- 11.16. The existing Site is situated to the North of Ten Acres Lane, Newton Heath, Manchester and is located at National Grid reference SD 87580 00295. The location of the existing Site is illustrated in Appendix A of the FRA (contained at **Appendix 11.1**) and the extent of the area to which the application relates is shown on the enclosed aerial photo, attached in Appendix B of the FRA.
- 11.17. The existing Site covers a total area of approximately 19.1ha and is the Site of a former brickworks which has been vacant for a number of years and has since been self-seeded with trees and shrubs. The Site is bounded to the east, south and west by existing residential developments, with Mitchell Street to the east and Ten Acres Lane to the west. The Site is also bounded to the north by the Rochdale Canal. It should be noted that Full Planning Permission was granted in October 2021 for remediation works to the Site (application reference: 129197/FO/2021).
- 11.18. The Site slopes from east to west with levels falling from approximately 86.00mAOD in the north-east corner to approximately 76.00m AOD in the north-west corner. Generally, the northern half of the Site falls in a north westerly direction and the southern portion of the Site falls in a south westerly direction. A topographical survey of the existing Site is attached in Appendix C of the FRA and an aerial photo is included in Appendix B of the FRA to illustrate the Site at the present day.
- 11.19. Further detail on the baseline flood risk and topographic information is provided in **Appendix 11.1** (Flood Risk Assessment (FRA)). A summary is provided below on each source of flooding (rivers or sea, surface water, groundwater and artificial sources).

## Flood Risk

### Flood Risk from Rivers or Sea

- 11.20. The Flood Risk map is included at Appendix E of the FRA (provided in **Appendix 11.1**).
- 11.21. As can be seen from the Flood Risk map, the entire Site is located within Flood Zone 1 with a chance of flooding of less than 0.1% (or 1 in 1000).
- 11.22. The nearest river is the River Medlock, which is located approximately 600m south of the Site and therefore the risk of flooding to the Proposed Development from rivers is considered to be low.
- 11.23. The Site is not at risk of flooding from the sea. The lowest level of the Site is approximately 76.00m AOD, i.e. well above tidal flood levels.
- 11.24. It is therefore concluded that the Site is at low risk of flooding from fluvial sources.

## Surface Water Resources and Flood Risk

- 11.25. The Groundwater Flooding Map contained within the Manchester City, Salford City and Trafford Councils Level 2 Hybrid Strategic Flood Risk Assessment (SFRA) Report indicates that the Site is in an area which is not at risk of groundwater flooding.
- 11.26. The Celtic Ground Investigation Report (see **Appendices 10.1 and 10.2**) indicated that groundwater strikes were recorded across the Site but these seem to be indicative of perched groundwater above the impermeable clay strata. This would therefore indicate that the actual groundwater level is located within the bedrock strata at depths below 16.6mbgl. As such, due to the likely depths of the groundwater table it is envisaged that the Site has a negligible risk of groundwater flooding.
- 11.27. Therefore, the Site is considered to be at low risk of flooding from groundwater.

## Flooding from Reservoirs, canals & other artificial sources

- 11.28. The Reservoir Flood Risk map is included in Appendix E of the FRA and the nearest reservoir is Audenshaw Reservoir which is located approximately 4.5km south-east of the Site. As such, it can be seen from the map that the Site is not at risk of flooding from reservoirs.
- 11.29. However, the nearest canal is the Rochdale Canal which is located adjacent to the northern boundary of the Site. The Canal Hazard Zones Map contained within the Manchester City, Salford City and Trafford Councils Level 2 Hybrid Strategic Flood Risk Assessment (SFRA) Report indicates that a small area to the north-west corner of the Site is located within a Canal Breach Zone B, which is defined as a less likely breach location.
- 11.30. Assessing the topography of the Site with respect to the canal and towpath it can be seen that the towpath level is typically around 1.5m – 3.0m below the adjacent Site levels. This is further demonstrated by the photograph in Section 5.6 of the Flood Risk Assessment (see **Appendix 11.1**), which indicates the level of the towpath and canal relative to the adjacent Site level (left), at Ten Acres Lane bridge.

## Surface Water Drainage

- 11.31. Intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems can run quickly off land and result in local flooding.
- 11.32. The Surface Water Flooding map is included in Appendix E of the FRA. It can be seen from the map that the majority of the Site is classified as having a very low risk of surface water flooding with only very small areas classified as having a medium to high risk of surface water flooding.
- 11.33. Assessing the existing topography of the Site, it can be seen that the areas at medium to high risk are small depressions in the existing levels. As these will be removed and the Site positively drained as part of the Proposed Development, the risk of flooding from overland flows due to surface water flooding is considered to be low.
- 11.34. Surface water runoff from the Site will need to be managed to ensure that it will not increase the risk of flooding, notably during the operational phase either on or off the Site. To meet this objective, the following measures were undertaken and assessed below:
- a review was undertaken in accordance with the SuDS Hierarchy;
  - a Drainage Strategy was developed using the relevant CIRIA C753 Guidance; and
  - mitigation proposals were developed which can be incorporated into the developing development layout and design.
- 11.35. The Drainage Strategy is contained within **Appendix 11.1**.

## Groundwater Resources and Flood Risk

- 11.36. A summary of the groundwater risks extracted from the Flood Risk Assessment are provided below.
- 11.37. Information taken from the British Geological Survey (BGS) 1:50,000 Bedrock geology maps. These show that the Site has superficial deposits comprising of both Glaciofluvial Sheet Deposits and Till, Devensian deposits, with the bedrock reported to be of both the Collyhurst Sandstone Formation, comprising of sandstone and the Manchester Marls Formation comprising of mudstone.
- 11.38. The Site is shown to sit on a Principal Aquifer, geology that exhibit high permeability and/or provide a high level of water storage and may support water supply and/or base flow on a strategic scale.
- 11.39. 5 No. BRE365 soakaway tests were undertaken by Wardle Armstrong between 19/10/2020 and 20/10/2020 to establish initial infiltration characteristics and inform the Drainage Strategy. Trial pits were excavated to a maximum depth of 1.7m – 2.0m bgl and suggest a shallow geology of 1.1m of made ground overlying a natural firm clay with interbedded sand lenses. No groundwater strikes were encountered at this depth.
- 11.40. Due to the cohesive nature of the underlying natural strata infiltration was not possible and therefore will need to be discounted as a viable means of surface water disposal.

## Identification and Evaluation of Significant Effects

- 11.41. Baseline hydrological and hydrogeological assessment provides the basis for assessment of the potential effect of the Proposed Development on surface water resources, groundwater resources and local flood risk. The assessment has been undertaken in relation to the construction and operational phases.
- 11.42. As the Site is located in Flood Zone 1, Climate Change is not required to be assessed from a fluvial perspective. Furthermore, existing residential and commercial developments are not considered to be at risk during the baseline or future scenario. As there is considered to be no impact on existing or future residents, it is not considered a sensitive receptor and are therefore not assessed further as part of this assessment.
- 11.43. From a drainage perspective, the surface water drainage is to be designed to the 1 in 100 year storm with an allowance of 40% for climate change. Further detail is provided in the Drainage Strategy in **Appendix 11.1**.

## Construction Phase

- 11.44. Construction phase activities with the potential to affect water resources or flood risk include the following:
- Establishment of new areas of hardstanding for waste management;
  - Excavations for installation of associated drainage systems;
  - Installation of surface water drainage systems; and
  - Excavation and construction of new internal access roads.

## Silt-laden Runoff

- 11.45. During the construction phases of the Proposed Development, there are a number of activities which have the potential to negatively affect the local water environment. Activities such as potential dewatering of excavations, concreting, earthworks, and use of heavy plant can lead to significant quantities of silty runoff that may also be contaminated with oil, fuel and/or other construction materials, all of which have

potential to cause pollution of the water environment and negatively affect the ecology it supports. Pollutants could be mobilised to watercourses or indirectly (e.g. via uncontrolled surface water runoff).

- 11.46. The Proposed Development would involve construction of new internal access roads to the Proposed Development. Access roads are expected to be constructed with compacted self-binding aggregate fill materials. Shallow excavation of vegetation and soils would be necessary for placement of road surfaces. Access roads would form long linear features that, in the event of rainfall, could provide temporary drainage routes for surface water during the construction phase of the development. With the potential for soil erosion and consequent liberation of sediment from shallow road excavations it would be necessary to ensure that on-site pollution prevention measures are adequate to prevent migration of silt to surface watercourses.
- 11.47. The sensitivity of surface water to silt contamination is considered to be **Moderate**. Without mitigation, potential effects are considered **Moderate** magnitude. The significance of effect is **Moderate Adverse** on a temporary short-term basis.

#### Spillages, Leakages and Pollutants

- 11.48. During construction, fuel, hydraulic fluids, solvents, grouts, paints and detergents and other potentially polluting substances will be stored and / or used on Site. Leaks and spillages of these substances could pollute the nearby surface watercourses if their use is not carefully controlled and spillages enter existing flow pathways. To allow such substances to enter a watercourse could be in breach of the Water Resources Act 1991, therefore, measures to control the storage, handling and disposal of such substances will need to be in place prior to and during construction.
- 11.49. The construction compound locations have not been determined, nor has it been confirmed at this stage whether concrete will be batched off-site. Therefore, it has been assumed that these could be sited next to existing flow pathways. The sensitivity of surface water to spillages, leakages and pollutants is considered to be **Moderate**. Without mitigation measures Site spillages of chemicals/fuel stored and or used on Site could cause short term, temporary effects of a **Moderate** magnitude on the Rochdale Canal (medium importance). The significance of effect is **Moderate Adverse** on a temporary short-term basis.

#### Inappropriate Wastewater Disposal from Welfare Facilities

- 11.50. Foul water from welfare facilities will be routed to a nearby sewer where possible. If unable to connect to mains network, a suitably sized self-contained unit will be installed on Site that will be maintained by a specialist Contractor. The sensitivity of surface water to inappropriate wastewater disposal from welfare facilities is considered to be **Low**. Construction Site foul water will not be discharged into a watercourse under any circumstances and therefore the magnitude of impact and significance of this effect is considered to be **Negligible**.

#### Operational Phase

- 11.51. There are a number of potential activities that have been identified which have the potential to affect water resources during the operational phase of the Proposed Development.
- 11.52. The Proposed Development is likely to have significantly different foul drainage discharge characteristics when compared with the existing site. From previous correspondence with United Utilities, attached in Appendix F of the Flood Risk Assessment, it is assumed that they are happy to allow foul water to discharge into the public sewers at unrestricted rates. Therefore, it can safely be assumed that the anticipated volumes of foul water generated on Site do not pose a water resource risk.
- 11.53. The sensitivity of surface water to inappropriate wastewater disposal is considered to be **Low**. Site foul water will not be discharged into a watercourse under any circumstances and therefore the magnitude of impact and significance of this effect is considered to be **Negligible**.

- 11.54. There is a risk of reduced drainage infrastructure performance due to silt build up and general deterioration of the system. The sensitivity of surface water to silt contamination is considered to be **Moderate**. Without mitigation, potential effects are considered **Moderate** magnitude. The significance of effect is **Moderate Adverse**.
- 11.55. Appropriate mitigation measures will be employed to reduce the risk these activities pose to the Site during the Operational phase of the Proposed Development.

### Summary

- 11.56. In summary, the main receptor at risk is the canal immediately North of the Site which is currently impacted from surface water runoff. During the construction and operational phases there are a number of potential effects on water resources which require mitigation to reduce the residual effect to **Negligible** which is summarised below.

Table 11.5 – Water Resources summary of likely significant effects and receptors at risk

| Likely Significant Effect                                   | Receptor(s)                                               | Impact Prior to Mitigation |
|-------------------------------------------------------------|-----------------------------------------------------------|----------------------------|
| <b>Construction Phase</b>                                   |                                                           |                            |
| <b>Silt-laden Runoff</b>                                    | Surface Water (leaching into ground) / Canal to the North | Moderate Adverse           |
| <b>Spillages, Leakages and Pollutants</b>                   | Surface Water (leaching into ground) / Canal to the North | Moderate Adverse           |
| <b>Inappropriate Wastewater Disposal Welfare Facilities</b> | Surface Water (leaching into ground) / Canal to the North | Negligible                 |
| <b>Operational</b>                                          |                                                           |                            |
| <b>Diffuse Pollution Contained in Urban Runoff</b>          | Surface Water (leaching into ground)                      | Moderate Adverse           |
| <b>Increase in Highway Routine Runoff</b>                   | Surface Water (leaching into ground)                      | Moderate Adverse           |
| <b>Increase in Highway Spillage Risk</b>                    | Surface Water (leaching into ground)                      | Moderate Adverse           |
| <b>Increased demand on Water Supply</b>                     | Surface Water (leaching into ground)                      | Moderate Adverse           |
| <b>Increased Foul Water Across Site</b>                     | Foul Water (leaching into ground)                         | Negligible                 |

## Effects on Water Resources

### Assessment of Effects on Flood Risk

#### Construction Phase

##### Mud and Debris Blockages

- 11.57. There is the potential for mud and debris arising from the construction works to enter the existing surface water drainage system, causing blockages and restricting flow. This could result in localised flooding on Site, especially after heavy or prolonged rainfall. As the Site is at present greenfield, as classified by the LLFA, the initial effect is considered to be limited.

- 11.58. However, as the phased development of the Site progresses and surface water drainage networks are installed this potential construction effect will become an increasing consideration. The sensitivity of surface water to mud and debris blockages is considered to be **Moderate**. The potential for mud and debris to block drainage networks is considered to have an effect of **Minor Adverse** magnitude on flooding to the Site itself and surrounding area which would result in flood risk to future people or property at the Site (considered to be up to very high importance). The significance of effect is **Moderate Adverse**.

#### Temporary Increase in Impermeable Area

- 11.59. Temporary increase in impermeable area during construction has the potential to increase flooding both on and off site. Temporary hard standing or compacted areas could result in rapid surface water runoff to local watercourses or cause an increase in overland flow. As the Site has no current positive drainage it will be classified as Greenfield by the LLFA, and therefore, at present there is potential for overland flows to be created and for localised flooding to occur. Increased, un-regulated discharges into local watercourses could also increase the risk of flooding downstream.
- 11.60. The effects would be temporary and short term. The sensitivity of surface water is considered to be **Moderate** with the temporary effects considered to have an effect of **Moderate Adverse** magnitude to future people and property at the Site (considered to be up to very high importance and including construction workers and construction equipment) as it could occur at a time of high flood risk (e.g. during a large storm event). The significance of effect is **Moderate Adverse**.

#### Operational Phase

- 11.61. There are a number of potential activities that have been identified which could pose a flood risk to the Site during the operational phase of the Proposed Development.
- 11.62. There is a risk of reduced drainage infrastructure performance due to silt build up and general deterioration of the system. The sensitivity of surface water to silt contamination is considered to be **Moderate**. Without mitigation, potential effects are considered **Moderate** magnitude. The significance of effect is **Moderate Adverse**.
- 11.63. Permanent increase in impermeable area has the potential to increase flooding both on and off site. Hard standing areas could result in rapid surface water runoff to local watercourses or cause an increase in overland flow. Increased, un-regulated discharges into local watercourses could also increase the risk of flooding downstream.
- 11.64. The sensitivity of surface water is considered to be **Moderate** with the effects considered to have an effect of **Moderate Adverse** magnitude to future people and property at the Site (considered to be up to very high importance) as it could occur at a time of high flood risk (e.g. during a large storm event). The significance of effect is **Moderate Adverse**.
- 11.65. There is a risk that future surface water discharge rates will increase due to climate change.
- 11.66. Appropriate mitigation measures, outlined within later sections of this report, will be employed to reduce the risk these activities pose to the Site during the Operational phase of the Proposed Development.

#### Summary

- 11.67. In summary, the main receptor at risk is the Canal immediately North of the Site which is currently impacted from surface water runoff. During construction there are a number of potential effects on surface water which require mitigation to reduce the residual effect to **Negligible** which is summarised below. During operation the risk to the canal will be mitigated through implementation of suitable SuDS systems outlined in the CEMP which is to be developed.

Table 11.6 – Flood Risk summary of likely significant effects and receptors at risk

| Likely Significant Effect                                   | Receptor(s)                                               | Impact Prior to Mitigation |
|-------------------------------------------------------------|-----------------------------------------------------------|----------------------------|
| <b>Construction Phase</b>                                   |                                                           |                            |
| <b>Mud and debris blockages</b>                             | Surface Water (leaching into ground) / Canal to the North | Moderate Adverse           |
| <b>Temporary Increase in Impermeable Area</b>               | Surface Water (leaching into ground) / Canal to the North | Moderate Adverse           |
| <b>Operational</b>                                          |                                                           |                            |
| <b>Silt and Debris Blockages in drainage infrastructure</b> | Surface Water (leaching into ground) / Canal to the North | Moderate Adverse           |
| <b>Permanent Increase in Impermeable Area</b>               | Surface Water (leaching into ground) / Canal to the North | Moderate Adverse           |

## Cumulative Effects

- 11.68. The Proposed Development is surrounded by existing developments in the Ten Acres Lane area. It is therefore important to consider the anticipated effects of the Proposed Development cumulatively with other existing developments in the surrounding area.
- 11.69. All other developments in the surrounding area will have to provide sufficient drainage to ensure:
- Surface water discharge rates are reduced compared to existing brownfield rates
  - Flooding (if any) will be carefully controlled and kept within individual plot boundaries
- 11.70. The Site and surrounding areas slope gently from north-east to south-west, and so any excess floodwater from surrounding developments will have a tendency to flow away from the Site to the south-west.
- 11.71. Any floodwater approaching the Site from the north-east in this way will have to overtop the kerb on Mitchell Street before reaching the Site, or else be directed around the Site boundary.
- 11.72. The Site is therefore sufficiently protected in the event that the drainage infrastructure of any of the surrounding developments were to fail.
- 11.73. Therefore, no significant cumulative effects have been identified.

## Mitigation Measures

### Mitigation associated with Water Resources

- 11.74. A number of key mitigation measures has been suggested in the sections below. It is likely that these will be formalised through the preparation of a Construction Environmental Management Plan (CEMP) and Drainage Strategy which will be required to be secured by planning condition.
- 11.75. In summary, the mitigation below reduces the residual risk to **Negligible** for the canal and surface water receptors, largely through appropriate infiltration drainage measures, reducing surface water runoff into the canal, thereby reducing risk to flows into the receiving watercourse and downstream.

### Construction Phase

#### Silt-laden Runoff - Silt Management and Control

- Works that are likely to generate silt-laden runoff (e.g. earthworks and excavations) will be done preferentially during the drier months of the year;
- A buffer of 10m should be adjacent to all surface water receptors;
- Site compounds and stockpiles will be located at least 30m away from surface water receptors;
- A drainage system will be developed to prevent silt-laden runoff from entering surface water drains without treatment (e.g. earth bunds, silt fences, straw bales, or proprietary treatment) and ponds under any circumstances;
- Earth stockpiles will be seeded as soon as possible, covered with geotextile mats or surrounding by a bund;
- Mud will be controlled at entry and exits to the Site using wheel washes and / or road sweepers;
- Tools and plant to be washed out and cleaned in designated areas within Site compound where runoff can be isolated for treatment before discharge to watercourse/ground or sewer under appropriate consent;
- Debris and other material will be prevented from entering surface water receptors;
- Construction SuDS (such as temporary attenuation) to be used during construction if necessary.

11.76. Following the implementation of the mitigation measures the residual effect is considered to be **Negligible**.

#### Spillages and Leaks of Pollutants

- 11.77. To allow chemicals, fuels/oils and other such substances to enter a water body could be in breach of the Water Resources Act 1991. As such measures to control the storage, handling and disposal of these substances will need to be put in place prior to and during construction. The following key mitigation measures relating to the control of spillages and leaks should be included in the CEMP:
- Fuel will be stored and used in accordance with the Control of Substances Hazardous to Health Regulations 2002, and the Control of Pollution (Oil Storage) (England) Regulations 2001;
  - Fuel and other potentially polluting chemicals are to be stored in a secure impermeable and bunded area;
  - Refuelling of plant to take place off Site if possible, or only in a designated area at the Site compound at least 20m from surface water receptors;
  - Any plant / machinery / vehicles will be regularly inspected and maintained to ensure they are in good working order and clean for use in a sensitive environment. This maintenance is to take place off Site if possible or only at designated areas in the Site compound;
  - All fixed plant used on Site to be self-bunded;
  - Mobile plant to be in good working order, kept clean and fitted with drip trays where appropriate
  - An Emergency Response Plan will be prepared and included in the CEMP. Spill kits and oil absorbent material to be carried by mobile plant and located at vulnerable locations on the Site. Construction workers will receive spill response training;
  - The Site is to be secure to prevent vandalism that could lead to a pollution incident;

- Construction waste / debris are to be prevented from entering any water body;
- Surface water drains on roads, other watercourse crossings or the core scheme compound area will be identified and where there is a risk that silt laden runoff could enter them they will be protected (e.g. covers or sand bags); and
- Concrete wash water will be adequately contained and removed from site.

11.78. Following the implementation of the mitigation measures the residual effect is considered to be **Negligible**.

#### Inappropriate Wastewater Disposal from Welfare Facilities

11.79. No mitigation required. The residual effect is considered to be **Negligible**.

#### **Operational Phase**

11.80. In order to mitigate the risk posed to the Proposed Development during the operational phase, the following measures should be taken:

- Regular inspection and maintenance of all drainage infrastructure both on and near to the Proposed Development. A suitable maintenance strategy should be adopted to ensure the drainage network is cleaned regularly and the routine maintenance and cleansing regime should be documented.
- Operation and maintenance guidance for the proposed drainage systems is outlined within the attached AJP Flood Risk Assessment and Drainage Strategy Report and this should be incorporated within the Operation and Maintenance Manual for the Proposed Development.
- The use of source control SuDS should be incorporated where possible, prior to discharge to minimise siltation of the surface water system.

11.81. Following the implementation of the mitigation measures the residual effect is considered to be **Negligible**.

### **Mitigation associated with Flood Risk**

#### **Construction Phase**

##### Mud and Debris Blockages

11.82. A temporary drainage network will be installed prior to the commencement of construction and a robust maintenance plan, confirmed through a Construction Management Plan, should be maintained throughout the duration of construction works on site. Following the implementation of mitigation measures the residual effect of mud and debris entering the surface water drainage system is considered Negligible.

##### Temporary Increase in Impermeable Area

11.83. Construction mitigation guidance should be adhered to, for example ensuring that Site impermeability is increased as little as possible during construction. This effect should lessen as the Proposed Development progresses and the overall impermeable area increases with surface water drainage networks installed to deal with this effect. The residual effect, following the implementation of a temporary construction drainage network, is considered to be Negligible.

#### **Operational Phase**

11.84. In order to mitigate the risk posed to the Proposed Development during the operational phase, the following measures should be taken:

- Regular inspection and maintenance of all drainage infrastructure both on and near to the Proposed Development. A suitable maintenance strategy should be adopted to ensure the drainage network is cleaned regularly and the routine maintenance and cleansing regime should be documented.
- Operation and maintenance guidance for the proposed drainage systems is outlined within the attached AJP Flood Risk Assessment and Drainage Strategy Report and this should be incorporated within the Operation and Maintenance Manual for the Proposed Development.
- The use of source control SuDS should be incorporated where possible, prior to discharge to minimise siltation of the surface water system.
- Design all drainage systems with exceedance in mind, including adequate storage capacity for extreme rainfall events and additional capacity for climate change over the life of the Proposed Development.
- As previously described, surface water flow rates leaving the Site will be reduced to the existing greenfield runoff rates.

11.85. Following the implementation of the mitigation measures the residual effect is considered to be **Negligible**.

### Residual Effects

- 11.86. Whilst the risk of flooding to the Proposed Development is low it should be acknowledged that there is potential for residual risks. At this Site the residual risk comes from the failure or blockage of drains and sewers or from burst water mains. These cannot be predicted. Prudent design will mitigate the potential impact these could have on the development.
- 11.87. Enacting regular inspection and maintenance regimes and careful working practices should reduce the potential of failures of infrastructure.
- 11.88. Designing in allowances for climate change provides extra capacity and so provides a level of future proofing in the drainage system for the potential changes to the climate over the design life of the development.

Table 11.7 – Summary of likely residual effects, post mitigation

| Likely Significant Effect                                   | Receptor(s)                                               | Residual Effect |
|-------------------------------------------------------------|-----------------------------------------------------------|-----------------|
| <b>Construction Phase</b>                                   |                                                           |                 |
| <b>Mud and debris blockages</b>                             | Surface Water (leaching into ground) / Canal to the North | Negligible      |
| <b>Temporary Increase in Impermeable Area</b>               | Surface Water (leaching into ground) / Canal to the North | Negligible      |
| <b>Silt-laden Runoff</b>                                    | Surface Water (leaching into ground) / Canal to the North | Negligible      |
| <b>Spillages, Leakages and Pollutants</b>                   | Surface Water (leaching into ground) / Canal to the North | Negligible      |
| <b>Inappropriate Wastewater Disposal Welfare Facilities</b> | Surface Water (leaching into ground) / Canal to the North | Negligible      |
| <b>Operational</b>                                          |                                                           |                 |

| Likely Significant Effect                                   | Receptor(s)                                               | Residual Effect |
|-------------------------------------------------------------|-----------------------------------------------------------|-----------------|
| <b>Silt and Debris Blockages in drainage infrastructure</b> | Surface Water (leaching into ground) / Canal to the North | Negligible      |
| <b>Permanent Increase in Impermeable Area</b>               | Surface Water (leaching into ground) / Canal to the North | Negligible      |
| <b>Diffuse Pollution Contained in Urban Runoff</b>          | Surface Water (leaching into ground)                      | Negligible      |
| <b>Increase in Highway Routine Runoff</b>                   | Surface Water (leaching into ground)                      | Negligible      |
| <b>Increase in Highway Spillage Risk</b>                    | Surface Water (leaching into ground)                      | Negligible      |
| <b>Increased demand on Water Supply</b>                     | Surface Water (leaching into ground)                      | Negligible      |
| <b>Increased Foul Water Across Site</b>                     | Foul Water (leaching into ground)                         | Negligible      |

## Reference List

11.89. This ES Chapter has been prepared by reference to the following:

- The Flood Risk Regulations 2009 transpose the European Commission (EC) Floods Directive (Directive 2007/60/EC)
- Flood and Water Management Act 2010 & Sustainable Drainage Systems: Written Statement – HCWS161
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017
- The Environmental Permitting Regulations 2016
- The Water Resources Act 1991
- The Land Drainage Act 1991
- The Building Regulations 2015 – Guidance Document H3 'Drainage and waste disposal' (2015 edition)
- Department for Communities and Local Government, 2012: National Planning Policy Framework
- Department for Communities and Local Government, 2014: Technical Guidance to the National Planning Policy Framework
- Manchester City Council's Unitary Development Plan, 1995
- Guide to Development in Manchester Supplementary Planning Document and Planning Guidance, April 2007
- Manchester City Council's Local Development Framework, Core Strategy Development Plan 2012
- Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA, March 2011
- Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA: User Guide, May 2010

- Celtic Site Investigation Report, R1077/08/3328, February 2008.
- British Geological Survey (BGS) 1:50,000 Bedrock geology maps
- [Flood-map-for-planning.service.gov.uk](http://Flood-map-for-planning.service.gov.uk)
- United Utilities sewer plans
- CIRIA: The SUDS Manual C753

# 12. Ecology

## Introduction

- 12.1. This Chapter of the ES has been prepared by an ecologist from Wardell Armstrong LLP (WA) with Qualifying membership of the Chartered Institute of Ecology and Environmental Management (CIEEM) and a Technical Director at WA (MCIEEM) and assesses the likely impacts of the proposals upon ecology receptors within the Site (Site) and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.
- 12.2. This chapter follows a previous ecology ES chapter (Wardell Armstrong, 2021; **Appendix 12.1**). This assessed the likely impacts of the remediation works associated with the preceding Remediation Application, including vegetation clearance and ground works, on ecology receptors onsite and within the area.
- 12.3. This chapter assesses the subsequent impacts of the proposed residential development scheme on ecology receptors. It will consider the impacts of the Proposed Development in two scenarios:

Table 12.1: Scenarios

|                   |                                          |
|-------------------|------------------------------------------|
| <b>Scenario 1</b> | Baseline + Phase 1 + Phase 2             |
| <b>Scenario 2</b> | Alternative Baseline + Phase 1 + Phase 2 |

- 12.4. The “baseline” in Scenario 1 refers to the same baseline as was used in the previous ecology ES chapter i.e. before any remediation works occur on Site. The “alternative baseline” in Scenario 2 refers to the Site as it would be following habitat clearance and remediation. Both baselines along with the phased development of the Site are described in more detail in this chapter.
- 12.5. This Chapter is accompanied by six technical appendices, as listed below:
- Appendix 12.1: Environmental Statement (Wardell Armstrong, 2021; Ecology Chapter for Remediation);
  - Appendix 12.2: Biodiversity Offsetting Assessment (Wardell Armstrong, 2022);
  - Appendix 12.3: Illustrative Masterplan (Planit.I.E.Ltd 2022);
  - Appendix 12.4: Habitats Regulation Assessment (Wardell Armstrong, 2021);
  - Appendix 12.5: Ecological Assessment (TEP, 2020); and
  - Appendix 12.6: Construction Environmental Management Plan (Wardell Armstrong 2021).
- 12.6. This chapter has been prepared in accordance with Regulation 18(5) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended, and with reference to The Chartered Institute of Ecology and Environmental Management’s (CIEEM) Ecological Impact Assessment (EclA)

Guidelines (2018)<sup>1</sup>. It has been prepared and reviewed by an experienced WA Ecologist who is a qualifying member of CIEEM.

## Limitations and Assumptions

- 12.7. This ES chapter has been prepared in support of the redevelopment of the Jackson's Brickworks Site (the Proposed Development). This hybrid planning application seeks Full Planning Permission for Phase 1 and Outline Permission, with all matters reserved except main access for Phase 2. The Proposed Development seeks to bring forward a high-quality residential led scheme comprising up to 716 homes, a community hub with ground floor commercial floorspace, and a new secondary school. It should be noted that Full Planning Permission was granted in October 2020 for remediation works on-site (application reference: 129197/FO/2021).
- 12.8. At the request of Manchester City Council<sup>9</sup>, the Biodiversity Net Gain (BNG) assessment (**Appendix 12.2**) produced by Wardell Armstrong for the Site was calculated using the baseline conditions as they were before remediation works began in Scenario 1. In Scenario 1, there was a loss of 34.49 habitat units and a gain of 9.77 hedgerow units for Phase 1 of the development. This equates to a 64.02% net loss in biodiversity units and a 100.00% net gain in hedgerow units. In Phase 2, there was a loss of 15.34 habitat units which equates to a 51.42% net loss of biodiversity. This is in contrast to the BNG assessment that was carried out for Scenario 2, where a 100.00% net gain in was calculated for habitat units and hedgerow units in both Phase 1 and Phase 2.
- 12.9. Phase 2 of the Proposed Development includes an area of the Site comprising 3.78 ha which will be used for a secondary school and associated greenspace post-development. However, as the plans for the school are yet to be finalised and have been omitted from the Illustrative Masterplan (**Appendix 12.3**), the area in which the school and associated greenspace will be developed has been excluded from assessment in this ES chapter, and likewise from the accompanying BNG assessment. Therefore, all assessments made regarding Phase 2 of the Proposed Development consider the residential development only. Additionally, the BNG assessment will require an update when the plans for the area have been finalised.
- 12.10. Finally, the pre-application response from GMEU states that the trees bordering the northern boundary of the Site in the buffer habitat are to be retained or replaced where possible. It is assumed in this chapter that it will not be possible to retain all trees during works, and therefore the alternative baseline in Scenario 2 does not include them.

## Legislative and Policy Context

### Legislation

- 12.11. The Conservation of Habitats and Species Regulations 2019 transpose the EU Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) and Directive 2009/147/EC on the Conservation of Wild Birds into UK law. These Regulations provide for the notification and protection of statutory designations of European value ('European sites'), and the protection of a number of rare and vulnerable species in a European context ('European Protected Species' – EPS).
- 12.12. Wildlife and Countryside Act (WCA) 1981 (as amended), which protects Sites of Special Scientific Interest, National Nature Reserves, and a range of species including bats, great crested newt, otter, water vole and all wild birds. This includes partial protection for adder, slow worm, common lizard and grass snake. Additional protection is provided to birds listed on Schedule 1 of WCA against disturbance of any Schedule listed bird or young while nesting. Finally, Section 14 of the WCA prohibits the release of any Schedule 9 (part 2) species.

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<sup>9</sup> Via Greater Manchester Ecology Unit.

- 12.13. The Natural Environment and Rural Communities (NERC) Act 2006, which requires the Secretary of State to publish a list of habitats and species of principal importance for the conservation of biodiversity in England.
- 12.14. Hedgerow Regulations 1997, which allows identification of hedgerows classified as 'important' against the Wildlife and Landscape Criteria (the 'criteria')
- 12.15. The Protection of Badgers Act 1992, which protects active badger setts and the animals themselves from disturbance.

## National Planning Policy

- 12.16. Section 40 of the Natural Environment and Rural Communities (NERC) Act imposes a legal duty on Planning Authorities to 'have regard' to the conservation of biodiversity when considering planning applications.
- 12.17. Section 41 of the NERC Act requires the Secretary of State to publish a list of species and habitats of principal importance for conserving biodiversity in the UK. Such Biodiversity Action Plan (BAP) Habitats and Species (2007) do not receive specific protection but their inclusion highlights their importance at a national level. This list is used by Local Planning Authorities to identify the species and habitats that should be afforded priority when applying the requirements of the National Planning Policy Framework (NPPF).
- 12.18. The UK Biodiversity Action Plan was superseded by The Biodiversity Framework (JNCC, 2012) and Biodiversity 2020 (Defra, 2011) with regards to biodiversity policies for the UK. These policies aim to deliver a more strategic, landscape-scale approach to nature conservation, wildlife, people, places, and climate change resilience. The UK Government's 25 Year Environment Plan for England (Defra, 2018) is the policy framework that will replace Biodiversity 2020.
- 12.19. The NPPF underpins the Government's planning policies for England and how these are to be applied. The central theme of the NPPF is a presumption in favour of sustainable development.
- 12.20. The NPPF states (Paragraph 174), *Planning policies and decisions should contribute to and enhance the natural and local environment by:*
  - protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
  - Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
  - Maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
  - minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; 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; and
  - remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.
- 12.21. The NPPF goes on to state that (Paragraph 180) '*When determining planning applications, local planning authorities should apply the following principles*':

- if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative Site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the Site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

## Local Planning Policy

- 12.22. The current Local Plan in Manchester (previously known as the Local Development Framework) consists of the Core Strategy and extant Unitary Development Plan (UDP) policies, of which the Core Strategy is of relevance to this assessment. The Core Strategy and remaining extant UDP policies are currently under review.
- 12.23. Manchester's Core Strategy Development Plan was adopted on 11 July 2012 by Manchester City Council and is the key Development Plan document in the Local Development Framework. This document replaces significant elements of the existing UDP since the document sets out long term strategic policies for Manchester's future development and forms the framework that planning applications are assessed against.
- 12.24. There are several Core Strategy policies relevant to ecology and biodiversity:
- Policy EN 9 - Green Infrastructure: New development will be expected to maintain existing green infrastructure (GI) in terms of its quantity, quality, and multiple function. The council will encourage developers to enhance the quality and quantity of GI, improve the performance of its functions and create and improve linkages to and between areas of GI. Key features of Manchester's GI include the continued development of a network of green spaces, water bodies, canals, paths, and cycleways, with priority given to those parts of the City where there is an identified existing lack of open space. Manchester's GI will also include the provision of new, and improvements to the quality and accessibility of existing GI assets, to mitigate any loss of GI.
  - Policy EN 15 - Biodiversity and Geological Conservation: The council will seek to maintain or enhance sites of biodiversity and geological value throughout the City. Particular consideration will be given to sites with international or national designations for their biodiversity value (SSSI and SAC), as well as other sites of biodiversity value (such as SBIs and LNRs) and priority habitats included in the Greater Manchester Biodiversity Action Plan (see below). The nearest SSSI is the Rochdale Canal, which is approximately 1.2km away from the north east boundary of the site.
  - The Greater Manchester Biodiversity Action Plan<sup>10</sup> identifies species and habitats of local conservation importance (Priority habitats and species) and the required action to conserve and protect them. Manchester is urban in character with many brownfield sites. One such habitat of relevance to the Proposed Development is Grasslands of High Ecological Value on Areas of Previously Developed Land defined as being '*open grasslands with many varied flowering plants and herbs, areas of bare ground*

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<sup>10</sup> [https://www.gmwildlife.org.uk/resources/downloads/gm\\_bap/grasslands\\_2009.pdf](https://www.gmwildlife.org.uk/resources/downloads/gm_bap/grasslands_2009.pdf)

*and often a little scrub, which can persist for decades with limited management on substrates whose edaphic conditions severely limit plant growth and lead to arrested successions'.*

12.25. The emerging Local Plan and associated policies will be guided by will be set in the context of the emerging Places for Everyone (PfE). The PfE is being prepared jointly by nine of the Greater Manchester authorities and the Greater Manchester Combined Authority (GMCA) and is due to be adopted in 2023. The PfE will provide a vision and strategic policies for development across the nine authorities involved in PfE. It sets out several policies which relate to ecology and biodiversity:

- Policy JP-G 1: Valuing Important Landscapes. Development should reflect and respond to the species qualities and sensitivities of the key landscape characteristics of its location.
- Policy JP-G 2: Green Infrastructure networks. A strategic approach will be taken to the protection, management and enhancement of our Green Infrastructure in order to protect and enhance ecosystem services.
- Policy JP-G 3: River Valleys and Waterways. River valleys and waterways will be protected and improved as central components of our Green Infrastructure Network and a vital part of Nature Recovery Network, making a major contribution to local identity, quality of life and the natural environment.
- Policy JP-G 4: Lowland Wetland and Mosslands. The distinctive flat, open landscape and network of habitats of ecologically valuable lowland wetlands and mosslands will be protected, enhanced and restored, with a strong emphasis on reconnecting local communities to the natural and historic environments.
- Policy JP-G 5: Uplands. Upland areas contain important parts of the green infrastructure network, including significant areas of blanket bog priority habitat, Sites of Biological Importance (SBIs), Sites of Species Scientific Interest (SSSIs), Special Areas of Conservations (SAC), Special Protection Areas (SPAs), woodlands and habitats vulnerable to climate change. Planning decisions and other associated activities will seek to integrate into the landscape and extent, protect and regenerate habitats.
- Policy JP-G 6: Urban Green space. To ensure there is an appropriate scale, type, quality and distribution of accessible urban green space that can support a high quality of life and other important green infrastructure functions.
- Policy JP-G 7: Trees and Woodland. In making planning decisions and carrying out other associated activities, we will work to deliver the aims and objectives of Greater Manchester Tree and Woodland Strategy, aiming to significantly increase tree cover, protect and enhance woodland, and connect people to the trees and woodland around them.
- Policy JP-G 8: Standards for Greener Places. To develop standards relating to access to natural green space and a "Green Factor".
- Policy JP-G 9: A net enhancement of biodiversity and geodiversity.
- Policy JP-G 10: The Green Belt. The Green Belt as defined on the Policies Map will be afforded strong protection in accordance with the National Planning Policy Framework.
- Policy JP-G11: Safeguard Land. Land adjacent to the proposed HS2 Manchester Airport Station has been protected from development, and will only be released from safeguarding under few exceptions.

## Assessment Methodology and Significance Criteria

- 12.26. The methodology complies with the principles set out within Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) guidance, especially regarding the evaluation of receptors, which is detailed below.
- 12.27. The assessment of significance of impacts is determined by identifying the presence of ecological features; evaluating their importance or value and defining the magnitude of the effects. In order to objectively assess effects arising from a particular development/activity it is essential to establish the sensitivity of each ecological receptor. The sensitivity is evaluated within a geographical context, with each receptor falling into one (or more) of the following categories:
- International and European;
  - National (within England);
  - Regional (North West);
  - County/ Metropolitan (Greater Manchester);
  - Local (Newton Heath);
  - Site (i.e. within the defined survey area); and
  - Of negligible importance.
- 12.28. When a receptor falls into more than one category, it is considered to be within the higher level. Some receptors can be readily assigned to one of the above categories, particularly sites that support designations. For example, a Site with a designation assigned through European legislation, such as a Special Area of Conservation (SAC) would normally be considered of International Value; a Site of Special Scientific Interest (SSSI) designated by UK statute would be of National Importance; and a Site designated by a Local Authority would be of County Importance.
- 12.29. Individual species may be protected under European or National legislation; such protection is relevant to the assignment of value to such species, but additional factors, such as Site supported population size and the nature of the distribution of the species are also considered. It is possible therefore for an evaluation of a small Site supported population of great crested newt (recognised in international policy/protection) to be of less than international value, given the contribution of the Site supported population to the overall meta-population.
- 12.30. Receptors which are considered to be of value at local level or higher for which significant impacts can be reasonably anticipated are identified as valued ecological receptors and are discussed throughout the report. Receptors which are not exposed to negative (or positive) effects are excluded from the assessment.
- 12.31. Likely impacts on the receptors occurring within the Site have been identified through consideration of the proposals. The impacts were characterised with reference to the following:
- whether an impact is considered to be positive or negative;
  - the extent/magnitude of the impact;
  - duration of the impact, its timing and frequency; and
  - whether any of the impacts are cumulative in effect.
- 12.32. Both positive and negative impacts/effects will be determined according to whether the change is in accordance with nature conservation initiatives and policy. The definitions provided within CIEEM guidance (2018) are detailed within Table 12.2, below. Confidence in the assessment, based on the availability of supporting evidence is expressed as being either High, Moderate or Low.

Table 12.2. Definition of positive and negative effects

|                 |                                                                                                                                                                                                                                                      |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Positive</b> | A change that improves the quality of the environment e.g. by increasing species diversity extending habitat or improving water quality. Positive impacts may also include halting or slowing an existing decline in the quality of the environment. |
| <b>Negative</b> | A change which reduces the quality of the environment e.g. destruction of habitat, removal of species foraging habitat, habitat fragmentation, pollution                                                                                             |

- 12.33. Following impact characterisation, assessments are made based on professional judgement, as to whether there would be any corresponding loss of integrity (of a Site or ecosystem) or whether the conservation status (of a habitat or species) is likely to be affected, i.e. whether the magnitude of impact(s) would be 'significant' in ecological terms.
- 12.34. As indicated in the CIEEM guidance, the impact may influence the conservation status and integrity of receptors, and effects may be judged to be significant in ecological terms even at the Site level.
- 12.35. Regarding cumulative assessment, two types of cumulative effects will be assessed:
- Type 1 Effects: The combination of individual effects (for example noise, dust and visual effects) from a development on a particular receptor; and
  - Type 2 Effects: Effects from several committed developments, which individually might be insignificant, but when considered together could create a significant cumulative effect.

## Baseline Conditions

### Scenario 1

- 12.36. The Site, as defined by the planning application boundary is c. 20 hectares (ha) in extent. The Site is located to the south of the A62, with the Rochdale Canal running along the northern boundary, Ten Acres Lane lying beyond the western boundary, a residential estate including Briscoe Lane Academy and Day Nursery to the south and residential and retail development to the east.
- 12.37. The baseline conditions for Scenario 1 and the sensitivity of each ecological receptor are detailed in the previous ecology ES chapter (**Appendix 12.1**). In summary, the Site comprises semi-natural broadleaved woodland, dense scrub and grassland. The ecological receptors and their sensitivity are as follows:
- Rochdale Canal SAC/SSSI and Hollinwood Branch Canal SSSI are of **International** and **National** Value (respectively).
  - Non-designated sections of the Rochdale Canal adjacent and downstream from the Site are of **County** value.
  - Woodland and grassland habitats, including LBAP Priority Grasslands of High Ecological Value on Areas of Previously Developed Land are of **County** value.
  - Foraging and Commuting Bats. A limited assemblage and absence of roosts. Foraging and commuting assemblage are of **Local** value.
  - Slow worm *Anguis fragilis*. A small population on Site is of **Local** value.
  - Breeding birds. A range of widespread species were recorded during the surveys, of **Local** value.
- 12.38. In addition to the above receptors, Invasive non-native species, namely Japanese knotweed *Reynoutria japonica* and pontic rhododendron *Rhododendron ponticum* are present within the woodland onsite, with Nuttall's waterweed *Elodea nuttallii* and New Zealand pygmyweed *Crassula helmsii* recorded from the

survey of the adjacent Rochdale Canal. These species are relevant to the assessment and are therefore considered throughout.

- 12.39. The Site is relatively isolated from other semi-natural habitats other than a potential link along the Rochdale Canal westwards and the well vegetated railway embankments to Clayton Vale and the River Medlock to the south.
- 12.40. The Rochdale Canal Special Area for Conservation (SAC) and Site of Special Scientific Interest (SSSI) is located some 1.2km to the north-east of the site. The non-designated section of the Rochdale Canal abuts the northern Site boundary.

## Scenario 2

- 12.41. The Site and its surroundings are as described above in Scenario 1.
- 12.42. The alternative baseline conditions within the Site for Scenario 2 relate to the Site's condition post-remediation works, which include complete vegetation clearance. As detailed within the Habitats Regulation Assessment (HRA, **Appendix 12.4**), works also include the treatment of contaminants present across the Site. Consequently, the area within the application boundary comprises entirely bare, remediated ground.
- 12.43. As the woodland and grassland habitats will have been cleared and the slow worm population translocated in this scenario, these two ecological receptors will no longer be present and are therefore excluded from consideration. The impacts on all other remaining receptors (Rochdale Canal SSSI/SAC, undesignated sections of Rochdale Canal, foraging/commuting bats and nesting birds) are considered in Scenario 2.

## Future Baseline

### Scenario 1

- 12.44. The future baseline conditions of the Site under Scenario 1 are described in the previous ES Chapter (**Appendix 12.1**). In summary, it is predicted that the continued absence of management would result in the development of closed-canopy broadleaved woodland and the expansion of Japanese knotweed stands. Neither the grassland habitats or the populations of protected species supported the Site are predicted to change significantly.

### Scenario 2

- 12.45. The alternative baseline conditions of the Site are bare, remediated ground with some peripheral vegetation. The future baseline of the Site in the continued absence of management would be for the habitats to develop through ruderal/pioneer grassland and scrub, eventually resulting in a climax community of broad-leaved woodland. The extent to which non-native species such as Japanese knotweed would influence the 'natural' development of habitats is unknown, however it is anticipated that significant areas of the Site would become dominated by this species, to the exclusion of native flora.
- 12.46. In addition to the above, it is notable that the Site is allocated in the Local Plan for housing and as such the future baseline is reasonably likely to change in character subject to the construction of a residential development. In this regard there are two likely scenarios, the first being that a residential development will be taken forwards. In this scenario, the future baseline would be dominated by the residential development and associated amenity grassland, native shrub and ornamental shrub. Street trees and areas of species-rich grassland will also be included. The second scenario is that if for unknown reason(s) the residential development is delayed the developer has committed to wildflower meadow seed planting, across the Site if construction works for the redevelopment of the Site have not commenced within 1 year of the completion of the remediation works. This will ensure that should planning for the remediation of

the Site be granted, a beneficial habitat will be created either as a result of compensation included in the residential scheme or via wildflower meadow plantings<sup>11</sup>.

## Identification and Evaluation of Significant Effects

### Scenario 1

- 12.47. An assessment of likely significant effects of the Proposed Development on the ecological features identified above has been undertaken based on the proposal to build a total of 716 residential homes on Site in two phases. The Masterplan is given as **Appendix 12.3**. In summary, 378 homes and a central community hub will be developed on the western half of the Site during Phase 1, followed by 338 homes during Phase 2. It is understood that amenity grassland habitat will be created in the residential gardens along with areas of woodland, neutral grassland and street trees being created around the community areas.
- 12.48. This Application includes seeking outline planning permission for Phase 2 of the Proposed Development, which will deliver a new secondary school. The detailed design of the school will be developed and submitted as part a future Reserved Matters Application. On this basis, the area of the Site proposed for the school has been excluded from consideration within this chapter and in the Biodiversity Offsetting Assessment. It is anticipated that this will be addressed as part of the future Reserved Matters application.
- 12.49. The likely significant effects of Scenario 1 on the Proposed Development are discussed in more detail in the previous ES chapter (**Appendix 12.1**), and are summarised in Table 12.3 below.

### Scenario 2

- 12.50. An assessment of the impacts of the Proposed Development (detailed above) on the ecological receptors identified for this scenario has been undertaken. As with Scenario 1, the area of land reserved for the development of the school has been excluded from the assessment.

### Rochdale Canal SAC/SSSI and Hollinwood Branch Canal SSSI

- 12.51. There will be no direct effect on SAC habitat as a result of the Proposed Development which lies entirely outside the SAC. Given that the Canal is clay lined, there will be no lateral incursion of potentially contaminated groundwater from the Proposed Development. Impacts considered from the development proposal are therefore restricted to incidental run-off of contaminated surface water.
- 12.52. Given that the Rochdale Canal is located adjacent to the northern boundary of the Site (within 10m) and this is linked to the Rochdale Canal SAC some 1.2Km to the east, any mobilisation of surface water run-off from the Site during development has the potential to indirectly impact the SAC.
- 12.53. Although results from Site investigations contaminants in surface waters including lead and chromium, remediation works associated with the Remediation Planning Permission, detailed in the Outline Remediation Strategy and HRA (Wardell Armstrong, 2021), are to be carried out across the Site. Therefore, contaminants present in surface waters will already be remediated in the baseline conditions for the Proposed Development that this chapter deals with.
- 12.54. During the construction and operational phases of the Proposed Development, contaminants in surface waters on Site may be mobilised to the Canal during periods of heavy rainfall, in the absence of mitigation. It should be noted that the current botanical composition of the SAC has developed under the influence of such conditions and hence either there is no significant contamination of the SAC or the plant communities are tolerant to any (presumably minor) background contamination levels. It should also be

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<sup>11</sup> At the request of GMEU a 'do nothing scenario' was requested whereby the residential development did not come forward following remediation of the site.

noted that the Aquatic Macrophyte Survey (Goldsmith Ecology 2020) did not record any of the qualifying species of the SAC in the stretch of the Canal which lies adjacent to the Site.

- 12.55. The qualifying feature of the SAC is the presence of colonies of the Nationally scarce pondweed Floating water-plantain *Luronium natans*, which is a European protected species. The sensitivity of the species to water borne pollutants/contamination is unknown although this impact is not listed as conservation objective for the SAC nor is it listed in the Site Improvement Plan<sup>12</sup> (Natural England 2014). It is also notable that the flow of the Canal is to the west i.e. away from the SAC although flows may be negligible in the canal's downstream reach. Given the Canal flows away from the SAC, no or very limited contamination pathways exists for any released contaminants to impact the SAC or its qualifying species assemblages and hence the magnitude of effect would be **negligible** on the Rochdale Canal SAC/SSSI and not significant. A number of standard mitigation measures included within a Construct Environmental Management Plan (CEMP) will ensure that there is no incidental contamination of the canal.
- 12.56. Similarly, impacts to the Hollinwood Branch Canal SSSI are of **negligible magnitude** and not significant, given the lack of ecological connectivity with the Proposed Development Site and the separation distance of >3km.

#### Non designated sections of the Rochdale Canal

- 12.57. The Proposed Development, in the absence of mitigation, could lead to the mobilisation of contaminants such as dust into surface water, and run-off of such into the adjacent Canal. Surface run-off into the Canal is exacerbated by the Site being elevated relative to the Canal in places. During the construction phase, run-off will also be influenced by the lack of vegetation across the Site.
- 12.58. During the operational phase, surface run-off into the canal will be influenced by the areas of hard standing that will be created across the Site. Furthermore, the run-off may be contaminated with pesticides (slug pellets), lawn fertilisers and excess nutrients from the residential gardens. However, the area of buffer habitat being created adjacent to the canal (**Appendix 12.3**) will provide protection against surface run-off entering the canal during the operational phase of the development. Although, surface run-off may still be likely during periods of heavy rainfall despite the buffer vegetation.
- 12.59. In addition to mortality from contamination, sediment run-off from both the construction and operational phases is likely to result in adverse impacts to spawning fish and invertebrates downstream.
- 12.60. The magnitude of the potential impact of contaminants on the faunal assemblage supported by the Canal adjacent and downstream of the Site cannot be quantified, although effects could be severe and permanent especially to fish and invertebrate receptors, depending on the type and concentration of pollutants. In the absence of mitigation this impact is likely to be **Significant** and adverse at up to **County** level.

#### Foraging and commuting bats

- 12.61. Bats using Rochdale Canal and other habitats surrounding the Site for foraging and commuting purposes may be negatively impacted by lighting used during the construction phase of the Proposed Development. Furthermore, as can be seen in the Masterplan, a cycle path is to be created along the canal and there are several access points to the Proposed Development from the canal area. Lighting will therefore need to be provided along this route for safety reasons. Additionally, during the operational phase, lighting from street lights and housing around the Proposed Development may affect bats using the tree corridors around the periphery of the Site. Considering lighting is already in place along the canal, the impacts of light spill from both the construction and operational phases of the Proposed Development are predicted to have a **negligible adverse** impact on bats at a **Site** level. Confidence in this assessment is **High**.

<sup>12</sup> <http://publications.naturalengland.org.uk/publication/6227629417955328>

- 12.62. However, around the peripheries of the Site, trees are being replaced in order to provide a buffer for the development. Such habitat is of use to local populations of bats that may use it for foraging and commuting, particularly the buffer zone adjacent to Rochdale Canal on the northern boundary of the Site. Consequently, there will be an increase in available habitat to bats in the operational phase of the Proposed Development when compared to the baseline conditions. The increase of foraging and commuting habitats for bats would be **positive** at a Site level. Confidence in this assessment is **High**.

#### Breeding birds

- 12.63. There will be no retained nesting habitat during the construction phase and hence no adverse impact to nesting birds.
- 12.64. During the operational phase of the Proposed Development, no adverse impacts to nesting birds are predicted. The retention/replacement of habitat adjacent to the canal and around the remaining periphery of the Site combined with the creation of street trees and boundary planting across the development means that there will be an increase in suitable breeding and foraging habitat for local bird species when compared to the baseline levels. However, it should be noted that the availability of suitable bird nesting habitat on Site during the operational phase may change depending on how residents choose to maintain their personal gardens. The increase in potential nesting habitat is thought to have a **positive impact** on birds at a Site level. Confidence in this assessment is **High**.

### Mitigation Measures

#### Scenario 1

- 12.65. The mitigation measures for Scenario 1 are largely the same as those described in the previous ES Chapter (**Appendix 12.1**). The mitigation measures have been adapted to include Phase 1 and Phase 2 of the Proposed Development, and are summarised in Table 12.3 below.

#### Scenario 2

- 12.66. This section identifies mitigation measures required to avoid, reduce or offset the potential for adverse impacts, where mitigation is available. Table 12.4 provides a summary of mitigation measures to be delivered by the Proposed Development, each of which is discussed below.
- 12.67. No mitigation other than a number of standard protective measures to be provided in the Construction Environmental Management Plan CEMP (**Appendix 12.6**) and further considered in the separate HRA report (**Appendix 12.4**) are required for the Rochdale Canal SAC/SSSI site.
- 12.68. The non-designated section of Rochdale Canal may be impacted by contaminated and/or silt laden run-off during construction and run-off contaminated by anthropogenic means during operation, although the application of a number of standard mitigation measures will ensure that the risk of this is minimised. Such measures are included within the CEMP and HRA. Measures include bunding of the Site perimeter and collection and treatment of surface water followed by discharge into an approved foul water drain.
- 12.69. Impacts to bats foraging along the Rochdale Canal will be mitigated by ensuring that temporary lighting required during the construction phase of the development, if this is timed to occur during the period April – October (inclusive), is directed away from the foraging corridor along the adjacent Rochdale Canal. Similarly, a sensitive lighting scheme should be designed for the operational phase of the development that focuses on minimising spill from permanent lighting on foraging and commuting corridors.
- 12.70. If works during the construction phase of the development are to take place during the bird breeding season (March – August inclusive), mitigation will comprise a detailed survey by a suitably experienced Ecologist to confirm that no nests are present in the retained vegetation around the periphery of the Site before works commence. In the event that active birds' nests are identified, it will be necessary to establish a protective buffer of undisturbed vegetation around the nest. The extent of the buffer will depend upon the species concerned and would be advised by a suitably experienced ecologist.

## Cumulative Effects

### Scenario 1 and 2

- 12.71. **Appendix 2.2** lists the committed and likely developments coming forward in the locality. There are thirteen developments within a 2km radius of the Site which have planning approval but are not yet built.
- 12.72. The closest application to the Proposed Development lies adjacent to the Site on its western boundary and is for the Erection of 12 industrial units with Use Class E(g), B2 and B8 uses with ancillary offices together with service areas, car parking, landscaping and boundary treatment following demolition of existing building (Planning Reference 129444/FO/2021). No Environmental Statement is available for this development, however the Ecological Assessment identified foraging/commuting bats, hedgehogs, reptiles and breeding birds as being at risk of impacts from vegetation clearance. Given the small area of vegetated habitats on site combined with the Reasonable Avoidance Measures (RAMs) and compensatory measures that will be implemented, no residual adverse cumulative effects are expected.
- 12.73. Another development, roughly 260m from the Site, also lies adjacent to the Rochdale Canal. This is a City Council Development for the erection of 21, 2 storey dwellinghouses (Use Class C3a) and erection of 3, 4 storey buildings to form apartments (Use Class C3a) with associated car parking, landscaping and boundary treatment (planning reference 130586/VO/2021). Although neither CEMP or Environmental Statement are available for this development, it is already under construction and hence in order to discharge planning conditions, appropriate measures will be in place to mitigate against adverse impacts on the canal and other receptors. Furthermore, as clearance operations have already begun no cumulative effects are therefore anticipated.
- 12.74. Most other Developments appear to be located within urbanised environments with limited habitat availability for ecological receptors and hence limited or absent adverse impacts. One site which is located within an area of semi-natural grassland habitat reports (presumably residual) impacts to invertebrates, amphibians, reptiles, nesting and foraging birds and hedgehogs this being for the erection of a battery energy storage facility (planning reference 127629/FO/2020) on Land To The South West Of Moston Vale, Manchester. The only potential receptor exposed to cumulative effects would be breeding birds although given the relatively small area of habitat loss from the battery energy storage facility no significant cumulative impacts will be apparent. Another area of modified neutral grassland, scrub and woodland is located on land bound by Rochdale Road, Shellard Road and Harrowby Drive (planning reference 129393/VO/2021). Birds, bats and hedgehogs have been identified as receptors at risk of adverse impact, however as vegetation clearance and groundworks have already begun on site it is presumed that acceptable mitigation measures have been implemented.
- 12.75. In conclusion, there are no proposed cumulative impacts on any of the ecological receptors considered in this chapter.

## Residual Effects

### Scenario 1

- 12.76. The residual effects for Scenario 1 align with those discussed in the previous ES Chapter (**Appendix 12.1**), and are summarised in Table 12.3 below.
- 12.77. Impacts, mitigation measures and residual effects are summarised in Table 12.4 below:

Table 12.3: Impacts of the Proposed Development on Ecological Receptors, Mitigation Measures and Residual Effects (Scenario 1)

| Receptor(s)             | Likely Significant Effects                     | Mitigation / Compensation Measures           | Residual Effects |
|-------------------------|------------------------------------------------|----------------------------------------------|------------------|
| Rochdale Canal SAC/SSSI | Surface water run-off and accidental pollution | No mitigation required (no adverse effects). | Neutral          |

| Receptor(s)                                                          | Likely Significant Effects                     | Mitigation / Compensation Measures                                                                                                                                                                                                                                                                                                                                | Residual Effects                 |
|----------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Undesignated sections of Rochdale Canal                              | Surface water run-off and accidental pollution | CEMP protocols including bunding of the site, collection and treatment of surface water and discharge to foul sewer.                                                                                                                                                                                                                                              | Neutral (potentially beneficial) |
| Woodland and grassland habitats, including LBAP Priority Grasslands* | Habitat loss/clearance                         | Compensatory species-rich grassland and tree planting. (* please see table footnote)                                                                                                                                                                                                                                                                              | Significant Adverse (County)     |
| Foraging and Commuting bats*                                         | Loss of foraging and commuting habitat         | Lighting of site during remediation works to avoid Rochdale Canal corridor.<br><br>(* please see table footnote)                                                                                                                                                                                                                                                  | Significant Adverse (Local)      |
| Slow worm*                                                           | Population loss                                | Capture and Translocation of individuals to off Site receptor location with ongoing management/monitoring.<br><br>(* please see table footnote)                                                                                                                                                                                                                   | Neutral                          |
| Breeding Birds*                                                      | Habitat loss and displacement                  | Timing of vegetation removal to avoid bird breeding season (namely March to August) unless a detailed survey by a suitably experienced Ecologist has confirmed that no nests are present in the affected area immediately prior to works commencing*. Compensatory tree and shrub planting will replace some of the habitat.<br><br>(* please see table footnote) | Significant Adverse (Local)      |

\* Remediation works and associated mitigation measures were approved and captured under planning permission ref. 129197/FO/2021. These items have therefore been considered and approved in conjunction with that application. In addition, site clearance works have now commenced including tree removal, and these works are expected to complete by the end of May 2022.

## Scenario 2

- 12.78. Subject to the mitigation measures outlined above being implemented, no significant residual adverse effects are anticipated to Rochdale Canal SAC/SSSI and the non-designated section of the Canal which abuts the site.
- 12.79. Additionally, subject to the mitigation measures detailed for bats, no significant residual adverse effects are anticipated during the construction phase. The increase of vegetated habitats on site, particularly adjacent to the Rochdale Canal, and consequently increase of foraging and commuting habitats for bats is expected to result in a residual **positive** impact at a **Site** level.
- 12.80. Similarly, no significant residual adverse effects are anticipated for breeding birds. The increase in vegetated habitats on site will also result in a residual **positive** impact for breeding birds at a **Site** level.

Table 12.4: Impacts of the Proposed Development on Ecological Receptors, Mitigation Measures and Residual Effects (Scenario 2)

| Receptor(s)                          | Likely Significant Effects               | Mitigation Measures                                                                                                 | Residual Effects |
|--------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Construction</b>                  |                                          |                                                                                                                     |                  |
| Rochdale Canal SAC/SSSI              | Surface run-off and accidental pollution | No mitigation required (no adverse effects).                                                                        | Neutral          |
| Undesignated areas of Rochdale Canal | Surface run-off and accidental pollution | HRA protocols including bunding of the site, collection and treatment of surface water and discharge to foul sewer. | Neutral          |
| Foraging and Commuting Bats          | Disturbance from construction lighting   | Sensitive lighting scheme to minimise light spill on commuting/foraging corridors                                   | Neutral          |
| <b>Operational</b>                   |                                          |                                                                                                                     |                  |
| Rochdale Canal SAC/SSSI              | Surface run-off and accidental pollution | No mitigation required (no adverse effects).                                                                        | Neutral          |
| Undesignated areas of Rochdale Canal | Surface run-off and accidental pollution | HRA protocols include collection and treatment of surface water and discharge to foul sewer.                        | Neutral          |
| Foraging and Commuting Bats          | Disturbance from residential lighting    | Sensitive lighting scheme to minimise light spill on commuting/foraging corridors                                   | Minor positive   |
| Breeding Birds                       | None                                     | N/A                                                                                                                 | Minor positive   |

## Biodiversity Offsetting Assessment

### Scenario 1

- 12.81. The biodiversity offsetting assessment considered the impacts of Phase 1 and Phase 2 of Proposed Development on Scenario 1 baseline conditions.
- 12.82. The assessment results indicate that, in Scenario 1, Phase 1 developments would result in a 64.02% net loss in habitat biodiversity (or 33.48 habitat area units). The baseline for Scenario 1 does not feature any hedgerows, therefore a gain of 9.77 hedgerow units in Phase 1 equates to a 100.00% net gain for hedgerows.
- 12.83. Similarly, Phase 2 developments would result in a 51.42% loss of biodiversity (habitat areas) in Scenario 1. Therefore, in Scenario 1, there will be a considerable loss of woodland and grassland habitats onsite resulting from the Proposed Development. The impact of such scale of loss on ecological receptors is considered in detail in the previous ecology ES chapter (**Appendix 12.1**) for the vegetation clearance

associated with remediation works. As previously mentioned, the impacts of the Proposed Development in Scenario 1 is therefore predicted to align with the impacts of the Proposed Remediation works.

## Scenario 2

- 12.84. The biodiversity offsetting assessment considered the impacts of Phase 1 and Phase 2 of Proposed Development on Scenario 2 baseline conditions.
- 12.85. The assessment results indicate that, in Scenario 2, Phase 1 of the development would result in an increase in of 17.11 in habitat area units and 9.77 in hedgerow units. Considering the baseline habitat is completely void of vegetation in Scenario 2, this equates to an increase in biodiversity of 100.00% for both habitats and hedgerows.
- 12.86. Similarly, Phase 2 of the development (excluding the area reserved for the school) will result in an increase in habitat units of 13.17 or 100.00% in Scenario 2.

## Reference List

- This ES Chapter has been prepared by reference to the following:
- CIEEM (2018), *Guidelines for Ecological Impact Assessment in the UK and Ireland*.
- TEP (2020), *Ecological Assessment (including Extended Phase I Habitat Survey and Desk Study)*
- Wardell Armstrong (2021), *Environmental Statement (Ecology chapter)*
- Wardell Armstrong (2021), *Provisional Biodiversity Offsetting Assessment*
- Wardell Armstrong (2021), *Information to Inform Habitats Regulation Assessment*.

# 13. Socio-Economics

## Introduction

- 13.1. This Chapter of the ES has been prepared by ekosgen and assesses the likely socio-economic impacts of the proposals upon the Site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.
- 13.2. This Chapter is accompanied by one technical appendix (**Appendix 13.1**) containing socio-economic baseline data.
- 13.3. This chapter has been prepared by ekosgen, economic, social and regeneration specialists, with significant experience conducting socio-economic impact assessments, profiling local economies and sectors and assessing the impacts to be secured as a result of a variety of investment proposals, including schemes designed to unlock both residential and employment sites. All ekosgen employees are qualified to degree standard or higher and abide by a range of company policies that ensure professional conduct and that work meets expected standards and legal requirements. Employees all take part in a range of development opportunities, including formal training sessions, coaching and mentoring, on-the-job training, job shadowing and participation in external events, to help build and maintain their knowledge at all stages of their careers.

## Limitations and Assumptions

- 13.4. There is not a recognised criteria for the assessment of socio-economic impacts, and therefore ekosgen, drawing on their expertise, knowledge of overarching guidance and experience of working in the subject area, have taken a structured approach to quantifying and assessing the scale and nature of potential impacts relative to baseline conditions. In cases where impacts could not be quantified, a qualitative judgement has been made, drawing on professional experience.
- 13.5. The most up to date data from official published sources has been used, however there are some limitations in the baseline data. Where this is the case, ekosgen have gathered data most closely aligning to the chosen Assessment Area and clearly stated what geography the data collected refers to.

## Legislative and Policy Context

- 13.6. This section considers the national, sub-regional and local planning documents and policies of relevance to this socio-economic impact assessment.

### National Planning Policy

#### The National Planning Policy Framework (NPPF)

- 13.7. In July 2021, Government published a revised National Planning Policy Framework (NPPF). The NPPF sets out the Government's planning policies for England and how these should be applied and "provides a framework within which locally-prepared plans for housing and other development can be produced".
- 13.8. In order to achieve sustainable development, the NPPF sets out three interdependent overarching objectives which are:
  - a. "an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support

growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

- b. a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
- c. an environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

13.9. The NPPF also states "Planning policies and decisions should play an active role in guiding development towards sustainable solutions, but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area" and that planning policies should "seek to address potential barriers to investment, such as inadequate infrastructure, services or housing, or a poor environment".

13.10. The updated NPPF recognises the importance of delivering a sufficient supply of homes, as well as highlighting the need to *"ensure an integrated approach to considering the location of housing, economic uses and community facilities and service"*.

## Sub-Regional Planning Policy

### Places for Everyone Plan

- 13.11. Places for Everyone is the new long-term joint development plan for nine Greater Manchester districts<sup>13</sup>. On 14 February 2022, the Plan and supporting documents were submitted to the Secretary of State for examination.
- 13.12. The Places for Everyone plan will serve as a Development Plan Document, setting out the need to maximise the potential of Greater Manchester's key growth locations whilst also securing investment that raises the competitiveness of northern boroughs to deliver inclusive growth across the sub-region by ensuring that employment growth opportunities are well connected and accessible to all residents.
- 13.13. The Plan highlights the importance of Manchester in regards to housing - "Manchester and Salford will continue to be an appropriate location for the highest levels of new housing due to their central location, good public transport connections, proximity to the main concentrations of employment and leisure opportunities, and ability to deliver very high density developments".
- 13.14. Housing requirements for 56,528 new homes between 2021 and 2037 are identified to be delivered in Manchester (3,533 per annum), equating to 34% of the nine local authorities' target of c.164,880 set to address the housing crisis and achieve its ambitions.
- 13.15. The development is a brownfield Site in line with the Places for Everyone Plan "'brownfield preference' policy" which is adopted in the Plan, which has sought to "enable most efficient use of our brownfield land supply" and *"maximise the supply of the brownfield land at the core of the conurbation and limit the need extent of Green Belt release"*.

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<sup>13</sup> Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan

- 13.16. In addition, the Places for Everyone Plan strategic objectives state the aim to “Ensure new development is properly served by physical and social infrastructure including schools, health, social care, sports and recreation facilities”.

#### The Greater Manchester Strategy – Our People, Our Place (2018)

- 13.17. The Greater Manchester Strategy – Our People, Our Place (2018) vision is to make Greater Manchester one of the best places in the world to grow up, get on and grow old.
- 13.18. Manchester has a key role to play in both the provision of jobs for a growing population and high-quality housing close to employment locations. In line with the Proposed Development the Strategy sets out aim to “continue emphasis on directing new housing to brownfield land in urban locations, limiting the requirement for Green Belt development and enhancing the quality of life in our existing urban areas”.

### Local Planning Policy

#### Manchester Core Strategy (2012)

- 13.19. The Proposed Development is in East Manchester, recognised in the Core Strategy as an area of primary focus requiring further development. The Core Strategy suggests there is a shortage of attractive family homes in East Manchester and references the aims to “provide residents with a range of attractive housing” and “increase the population of East Manchester through the attraction and retention of working households and in particular those working households with children”. In addition, Newton Heath, where the Site is located, provides “significant opportunities for new housing and smaller scale employment sites”.
- 13.20. Brownfield Land is referenced as the “the priority for development over greenfield sites” in the Core Strategy, with the requirement “to build at least 90% of new homes on brownfield sites”, aligned to the Proposed Development.

#### Residential Growth Strategy (2016)

- 13.21. Manchester City Council approved a Residential Growth Strategy in 2016, which seeks to deliver a minimum of 25,000 new homes in a ten-year period between 2016 and 2025. This policy framework aims to ensure that there is the right quality, mix and type of housing in the right locations to meet demand and changing demographics, develop neighbourhoods of choice and improve equality amongst the City's residents in terms of housing choice, quality and affordability in order to develop strong communities.
- The Residential Growth Strategy is based around the following four key aims to:
  - Increase housing supply across all tenures.
  - Ensure housing is affordable & accessible to those who need it most.
  - Working in mixed tenure neighbourhoods and improving quality & management in the private rented sector.
  - Increase the sustainability, safety & efficiency of new and existing stock.
- 13.22. In addition, the Strategy sets out the aim to “increase supply and density and the conurbation core on brownfield sites within the Northern and Eastern Gateways”.

#### East Manchester Strategic Regeneration Framework (SRF) 2008 - 2018

- 13.23. The East Manchester SRF, which includes Newton Heath where the Site is located, sets out the aims to maximise the contribution of East Manchester to national, regional and local competitiveness as well as making East Manchester an attractive, safe, accessible and friendly area in which to live and work. The framework sets out target to deliver 15,000 new homes.

- 13.24. The SRF highlights that a major constraint in retaining working households and attracting new residents is the poor range, quality and value of housing.
- 13.25. One of the three core objectives of the SRF seeks to encourage “neighbourhood-focused growth through the provision of high-quality housing and services”.

Assessment Methodology and Significance Criteria

Overarching Approach

- 13.26. The socio-economic assessment has determined the baseline position for intervention, including consideration of the key demographic, economic and social characteristics of a defined Assessment Area. The assessment then evaluates the potential impacts on identified socio-economic indicators for the Proposed Development, as well as the cumulative impact of the delivery of the Proposed Development along with other committed developments in close proximity to the Site.
- 13.27. The Proposed Development is set out within Section 4 of this Statement. The two scenarios to be tested in the assessment are noted below. Please refer to Appendix 1.1 which sets the scenarios out in detail.:
- Scenario 1: Phase 1
  - Scenario 2: Phase 1 and Outline Phases (Phase 2) (including the secondary school)

Significance Criteria

- 13.28. A staged assessment against set criteria has been completed to allow the significance of effects to be accurately and consistently tested. The process gave consideration to:
- The value of the resource (international, national, regional and local level importance);
  - The magnitude of the impact;
  - The duration involved;
  - The reversibility of the effect; and
  - The number and sensitivity of receptors.
- 13.29. The criteria applied in each case are outlined below. The magnitude of the impact was assessed to fall under one of four categories, as outlined in the table overleaf:

Table 13.1: Methodology for Determining Impact Magnitude

| Magnitude of Impact | Criteria for Assessing Effect                                                                                                                                                                                                                                                    |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Major               | Total loss or major/substantial alteration to key element/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.                                                                   |
| Moderate            | Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.                                                                                       |
| Minor               | A minor 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. |

|            |                                                                                                                       |
|------------|-----------------------------------------------------------------------------------------------------------------------|
| Negligible | Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation. |
|------------|-----------------------------------------------------------------------------------------------------------------------|

- 13.30. The sensitivity of a receptor is based on the relative importance of the receptor using the scale in the table overleaf.

Table 13.2: Methodology for Determining Sensitivity

| Sensitivity | Example of Receptor                                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High        | The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance. |
| Moderate    | The receptor/resource has moderate capacity to absorb change without significantly altering its present character, or is of high importance.                   |
| Low         | The receptor/resource is tolerant of change without detriment to its character, is of low or no local importance.                                              |

- 13.31. The significance of the impact is determined by the interaction of magnitude and sensitivity, whereby the impacts can be positive or negative. The Impact Significance Matrix is set out in the table below.

Table 13.3: Impact Significance Matrix

| Magnitude          | Sensitivity                          |                                      |                                        |
|--------------------|--------------------------------------|--------------------------------------|----------------------------------------|
|                    | High                                 | Moderate                             | Low                                    |
| <b>Substantial</b> | Major Adverse/Beneficial             | Major to Moderate Adverse/Beneficial | Moderate to Minor Adverse/Beneficial   |
| <b>Moderate</b>    | Major to Moderate Adverse/Beneficial | Moderate to Minor Adverse/Beneficial | Minor Adverse/Beneficial               |
| <b>Minor</b>       | Moderate to Minor Adverse/Beneficial | Minor Adverse/Beneficial             | Minor Adverse/Beneficial to Negligible |
| <b>Negligible</b>  | Negligible                           | Negligible                           | Negligible                             |

## Baseline Conditions

- 13.32. The purpose of this section is to establish an understanding of the baseline conditions to inform the context for intervention and therefore the potential impact of the Proposed Development on local characteristics. A range of published data sources have been considered to understand both the social and economic characteristics of the area as a starting point for the assessment.
- 13.33. For the purpose of establishing the baseline, the Local Assessment Area has been defined to reflect the anticipated catchment of the Proposed Development Site and is defined using Lower Super Output Area (LSOA) level data, covering roughly a 1.2 mile radius from the Site, as shown in Figure 13.1.
- 13.34. In some instances, alternative assessment areas have been considered, for example when considering capacity of local public services. These are typically based on a distance or journey time from the Site and the rationale for the distance chosen is set out in the relevant sections of this report. Where LSOA level

data is unavailable, ward level data has been presented for the Newton Heath & Miles Platting ward where the Site sits, or in the absence of ward level, local authority data is considered.

13.35. Comparator geographies presented are:

- Manchester Local Authority;
- Greater Manchester Combined Authority; and
- England.

Population

13.36. Data for 2020 suggests the Assessment Area had a resident population of 47,274, accounting for 8.5% of Manchester’s total population. The population of the Assessment Area has grown by 8.6% between 2011 and 2020, an uplift of 3,741 people, which is below the rate of growth across Manchester (10.5%) but above the sub-regional (6.0%) and national (6.5%) growth rate.<sup>14</sup>

Table 13.4: Local Population

|                    | 2011       | 2020       | Change (%) |
|--------------------|------------|------------|------------|
| Assessment Area    | 43,533     | 47,274     | 8.6%       |
| Manchester         | 502,902    | 555,741    | 10.5%      |
| Greater Manchester | 2,685,386  | 2,848,286  | 6.0%       |
| England            | 53,107,169 | 56,550,138 | 6.5%       |

13.37. The Assessment Area has a relatively high proportion of the population aged under 16, which accounts for 26.1% of the total population. This is above the proportion across Manchester (20.2%), Greater Manchester (20.5%) and nationally (19.2%) and this suggests a large number of families with children in the assessment area. While the population under 16 is overrepresented in the Assessment Area, young people (aged 16 to 24) are underrepresented, accounting for 9.5% of the population which is particularly low compared to Manchester (17.5%) and also below the averages for Greater Manchester (11.4%) and nationally (10.5%). Around 61.4% of the population of the Assessment Area are working age (aged 16-64 years), below the Manchester (70.5%), Greater Manchester (63.6%) and national (70.5%) proportion.<sup>15</sup>

Table 13.5: Population Age Profile 2020

| Assessment Area |   | Manchester |   | GM | England |
|-----------------|---|------------|---|----|---------|
| No.             | % | No.        | % | %  | %       |

14 2020 ONS Population Estimates

15 2020 ONS Population Estimates

| Assessment Area |        |       | Manchester |        | GM     | England |
|-----------------|--------|-------|------------|--------|--------|---------|
| 0-15            | 12,353 | 26.1% | 112,531    | 20.2%  | 20.5%  | 19.2%   |
| 16-24           | 4,487  | 9.5%  | 97,057     | 17.5%  | 11.4%  | 10.5%   |
| 25-49           | 16,537 | 35.0% | 220,664    | 39.7%  | 34.2%  | 32.6%   |
| 50-64           | 8,012  | 16.9% | 73,932     | 13.3%  | 18.0%  | 19.2%   |
| 16-64           | 29,036 | 61.4% | 391,653    | 70.5%  | 63.6%  | 62.3%   |
| 65+             | 5,885  | 12.4% | 51,557     | 9.3%   | 15.9%  | 18.5%   |
| Total           | 42,274 | 100%  | 555,741    | 100.0% | 100.0% | 100.0%  |

### Households

- 13.38. As of September 2021, there were 8,347 households in the Miles Platting & Newton Heath Ward<sup>16</sup>, equal to 2.9% of households in Manchester.

### Skills/Education Levels

- 13.39. As of 2020 a significant proportion of Manchester's working age population held a degree or higher degree qualification, with 48.4% qualified at Level 4 and above compared to 39.2% across Greater Manchester and 42.8% nationally.
- 13.40. Manchester had a relatively small population with no qualifications at 7.4%, marginally below the equivalent Greater Manchester proportion (7.7%) but above the national figure (6.2%).

Table 13.6: Skills and Qualifications of the Working Age Population (2020)<sup>17</sup>

|                   | Manchester |       | Greater Manchester |       | England    |       |
|-------------------|------------|-------|--------------------|-------|------------|-------|
| Level 4 and above | 187,800    | 48.4% | 698,400            | 39.2% | 14,886,100 | 42.8% |
| Level 3 only      | 58,400     | 15.0% | 301,400            | 16.9% | 5,945,300  | 17.1% |
| Level 2 only      | 38,600     | 9.9%  | 284,100            | 15.9% | 5,396,400  | 15.5% |
| Level 1 only      | 37,100     | 9.6%  | 199,100            | 11.2% | 3,435,600  | 9.9%  |

<sup>16</sup> In the absence of recent LSOA level data, ward level data has been chosen for the ward which the Site is in.

<sup>17</sup> ONS 2020 Annual Population Survey

|                       |        |      |         |      |           |      |
|-----------------------|--------|------|---------|------|-----------|------|
| Trade apprenticeships | 7,600  | 2.0% | 57,000  | 3.2% | 931,100   | 2.7% |
| Other qualifications  | 29,800 | 7.7% | 105,600 | 5.9% | 2,048,700 | 5.9% |
| No qualifications     | 28,900 | 7.4% | 138,100 | 7.7% | 2,153,900 | 6.2% |

## Unemployment

- 13.41. The unemployment rate for the year ending in June 2021 stood at 9.1% for Manchester, above the five-year average for the local authority, reflecting the impact the Covid-19 Pandemic and lockdown restrictions have had on the economy. However, this remains below the post financial crisis high of 13.3% in 2009/10.<sup>18</sup>
- 13.42. The Claimant Count measures the number of people who are receiving benefits principally because they are unemployed. From April 2015, the Claimant Count includes all Universal Credit claimants who are required to seek work and be available for work, as well as the remaining Jobseeker's Allowance claimants. As of September 2021, there were 3,235 claimants of unemployment related benefits in the Assessment Area, equivalent to 11.1% of the working age population, notably above the Manchester (7.2%), Greater Manchester (6.4%) and England wide (5.1%) proportion.

Table 13.7: Claimant Count (September 2021)<sup>19</sup>

|                                     | Assessment Area | Manchester | GM      | England   |
|-------------------------------------|-----------------|------------|---------|-----------|
| Claimant Count (no.)                | 3,235           | 28,500     | 116,260 | 1,785,985 |
| Claimant Count (% 16-64 population) | 11.1%           | 7.2%       | 6.4%    | 5.1%      |

## Employment – Workplace Analysis

- 13.43. There are 18,000 jobs in the Assessment Area, accounting for 4.4% of the total employment in Manchester.<sup>20</sup> Since 2015 there has been a 9.1% increase in employment in the Assessment Area, a lower rate of growth than Manchester which experienced significant growth over the period (15.6%), but above the Greater Manchester (7.6%) and England (2.9%) average growth rate.

Table 13.8: Employment – Workplace Analysis (2015 - 2020)<sup>21</sup>

| 2015 | 2020 | Change 2015-20 (%) |
|------|------|--------------------|
|------|------|--------------------|

18 ONS 2020 Annual Population Survey

19 ONS 2021 Claimant Count

20 ONS 2019 Business Register and Employment Survey (BRES)

21 ONS 2019 BRES

|                    |            |            |       |
|--------------------|------------|------------|-------|
| Assessment Area    | 17,000     | 18,000     | 9.1%  |
| Manchester         | 357,000    | 413,000    | 15.6% |
| Greater Manchester | 1,254,000  | 1,350,000  | 7.6%  |
| England            | 25,934,000 | 26,672,000 | 2.9%  |

## Employment by sector

13.44. In the Assessment Area, wholesale and retail trade is the most prominent sector by employment, followed by public administration and defence, which accounts for 16.7% and 15.3% of total jobs, respectively. Manufacturing is overrepresented in the Assessment Area, accounting for 13.9% of employment compared to just 3.6% in Manchester and 7.6% nationally. At local authority level, Manchester's sectoral mix differs from the assessment area and is more concentrated in the service sector, including more highly skilled jobs, with significant numbers in professional, scientific and technical activities and administrative and support service activities.

Table 13.9: Employment by Industry – Workplace Analysis (2020)<sup>22</sup>

|                                                 | Assessment Area |       | Manchester | GM    | England |
|-------------------------------------------------|-----------------|-------|------------|-------|---------|
|                                                 | Number          | %     | %          | %     | %       |
| Wholesale & retail trade                        | 3,000           | 16.7% | 12.2%      | 16.7% | 14.9%   |
| Public administration & defence                 | 2,750           | 15.3% | 4.7%       | 4.1%  | 4.1%    |
| Manufacturing                                   | 2,500           | 13.9% | 3.6%       | 7.9%  | 7.6%    |
| Human health & social work activities           | 1,625           | 9.0%  | 12%        | 12.7% | 12.9%   |
| Education                                       | 1,500           | 8.3%  | 9.9%       | 8.7%  | 8.7%    |
| Construction                                    | 1,375           | 7.6%  | 1.9%       | 4.0%  | 4.9%    |
| Information & communication                     | 1,125           | 6.2%  | 4.8%       | 4.0%  | 4.5%    |
| Professional, scientific & technical activities | 950             | 5.3%  | 13.6%      | 10.0% | 9.1%    |
| Administrative & support service activities     | 850             | 4.7%  | 12.1%      | 9.9%  | 8.8%    |
| Accommodation & food service activities         | 550             | 3.1%  | 7.3%       | 5.9%  | 7.1%    |
| Arts, entertainment & recreation                | 550             | 3.1%  | 1.7%       | 2.0%  | 2.3%    |
| Transportation & storage                        | 450             | 2.5%  | 6.8%       | 5.6%  | 5.2%    |
| Other service activities                        | 220             | 1.2%  | 1.7%       | 1.9%  | 2.0%    |

<sup>22</sup> ONS 2019 BRES

|                                                        | Assessment Area |      | Manchester | GM   | England |
|--------------------------------------------------------|-----------------|------|------------|------|---------|
|                                                        | Number          | %    | %          | %    | %       |
| Real estate activities                                 | 200             | 1.1% | 2.4%       | 2.1% | 2.0%    |
| Water supply; sewerage, waste management & remediation | 80              | 0.4% | 0.2%       | 0.5% | 0.7%    |
| Financial & insurance activities                       | 40              | 0.2% | 4.4%       | 2.9% | 3.5%    |
| Agriculture, forestry & fishing                        | 0               | 0%   | 0%         | 0.2% | 1.4%    |
| Total                                                  | 18,000          | 100% | 100%       | 100% | 100%    |

## GVA

- 13.45. As of 2019, Gross Value Added (GVA – a key measure of economic output) totalled £24.5bn in Manchester. Over the decade since 2009, GVA grew by 56%, a faster rate of growth than across Greater Manchester (41.6%) and nationally (42.1%).

Table 13.10: GVA in millions (2009 and 2019)<sup>23</sup>

|                    | 2009       | 2019       | Change 2009-19 (%) |
|--------------------|------------|------------|--------------------|
| Manchester         | £15.7bn    | £24.5bn    | 56.0%              |
| Greater Manchester | £52.9bn    | £75.0bn    | 41.6%              |
| England            | £1,198.0bn | £1,702.1bn | 42.1%              |

## Resident and Workforce Income

- 13.46. The median gross annual pay for residents in Manchester, as of 2020, is £23,017, notably below the national average of £26,055. In comparison the median gross annual pay for those working in Manchester is £27,789, higher than the national average.

Table 13.11: Median Annual Gross Salary – Population Analysis (2020)<sup>24</sup>

|                         | Manchester | Greater Manchester | England |
|-------------------------|------------|--------------------|---------|
| Resident Annual Salary  | £23,017    | £24,029            | £26,055 |
| Workforce Annual Salary | £27,789    | £24,262            | £26,062 |

<sup>23</sup> ONS Regional Accounts

<sup>24</sup> ONS 2020 Annual Survey of Hours and Earnings

|          |         |       |     |
|----------|---------|-------|-----|
| Variance | -£4,772 | -£233 | -£7 |
|----------|---------|-------|-----|

### Local Expenditure

- 13.47. Local expenditure includes spend relating to food and drink, recreation and leisure and other expenditure likely to be spent locally, excluding income expenditure incurred on mortgage and rents. Using the 2019 ONS Family Spending Survey suggests annual local expenditure per households is around £11,700 per household. Applying the average household spend to the number of households in the Assessment Area suggests annual local expenditure by households totals £97.7m.

### Healthcare Facilities

- 13.48. Data on local healthcare provision is based on the distance from the Site selecting an appropriate radius for travelling from the Site, rather than on other statistical boundaries. A one-mile radius was considered appropriate for GP's while a two-mile radius was considered appropriate for dental practices (reflecting the preposition that visits to a dental practice are less medically urgent than a GP and therefore a wider radius was selected).
- 13.49. Within 1 mile from the Site there are eight GPs, five of which are accepting new NHS patients according to each GP profile on the NHS website. There are 16 dental practices within 2 miles of the Site, of the 12 where data is available, six are accepting new NHS adult and child patients if they have a referral from a dentist, while the remaining six are not accepting new NHS adult and children patients.
- 13.50. See Tables 1 and 2 in the Appendix 13.1 for further details on the local healthcare facilities.

### Educational Facilities

- 13.51. National Travel Survey data for 2018/19 has informed the baseline assessment of educational facilities, which suggests that in areas classified as urban city and town the average length of a journey to primary school is 1.5 miles and 2.9 miles to secondary school. Reflecting the Site location these distances have been deemed appropriate for assessment of local educational facilities.
- 13.52. Within 1.5 miles from the Site there are 16 day nurseries, although information on the number of vacancies was not readily available.
- 13.53. There are 33 primary schools within a 1.5-mile radius of the Proposed Development. Of the 31 where data on school places and capacity is available, 25 have additional capacity using the latest data from the Department for Education (DfE) on school capacity for the academic year 2018/2019, totalling 700 places.
- 13.54. Within a 2.9-mile radius of the Site there are 41 secondary schools including recently opened academies and independent schools, of the 16 schools where data is available on school places and capacity, 12 have additional capacity as of 2018/19, with 3,372 available places in total.
- 13.55. See Tables 3, 4 and 5 in the Appendix 13.1 for further details on local educational facilities and capacity.

### Crime

- 13.56. UK Crime Statistics for the Newton Heath neighbourhood, which covers the Site and surrounding area, suggest between July 2018 and June 2019 there were 2,805 crimes recorded. Violent, anti-social behaviour and public order accounted for 58% of total crimes.

Table 13.12: Crime recorded by type within the Newton Heath neighbourhood, July 2018 – June 2019

| Crime type                                      | No.   | %     |
|-------------------------------------------------|-------|-------|
| Violent                                         | 768   | 27.4% |
| Anti-social Behaviour                           | 469   | 16.7% |
| Public Order                                    | 386   | 13.8% |
| Criminal Damage & Arson                         | 355   | 12.7% |
| Other theft                                     | 193   | 6.9%  |
| Burglary                                        | 160   | 5.7%  |
| Vehicle                                         | 129   | 4.6%  |
| Shoplifting                                     | 81    | 2.9%  |
| Robbery                                         | 79    | 2.8%  |
| Other                                           | 65    | 2.3%  |
| Drugs                                           | 47    | 1.7%  |
| Weapons                                         | 40    | 1.4%  |
| Theft from the person                           | 20    | 0.7%  |
| Bike theft                                      | 13    | 0.5%  |
| Total                                           | 2,805 |       |
| Source: The Economic Policy Centre UKCrimeStats |       |       |

## Open Space and Recreational Facilities

13.57. The following public green spaces within 1 mile radius of the Site<sup>25</sup> have been identified:

Table 13.13: Open Green Space within 1 mile of the Site

|                            | Distance  | Size      |
|----------------------------|-----------|-----------|
| Orford Road Community Park | 0.3 miles | -         |
| Clayton Vale               | 0.4 miles | 140 acres |
| Philips Park               | 0.6 miles | 31 acres  |

<sup>25</sup> Considered an accessible walking distance

|                     |           |          |
|---------------------|-----------|----------|
| Moston Vale         | 0.7 miles | 45 acres |
| Brookdale Park      | 0.8 miles | 33 acres |
| Lower Memorial Park | 0.9 miles | 11 acres |

13.58. The following gyms and leisure/sports centres are within 1 mile of the Site:

- Ten Acres Lane Sports Complex, <0.1 miles
- Failsworth Fitness 24-7 Gym, 0.9 miles
- Newton Heath Boxing Club, 1 mile
- Newton Heath Cricket Club, 1 mile

## Identification and Evaluation of Significant Effects

### Construction Phase

#### Employment and GVA

- 13.59. Estimated construction spend of £65.5m for Phase 1 and £58.5m for Phase 2 will support temporary economic uplift during the construction period.
- 13.60. Scenario 1 (Phase 1) has the potential to support an estimated 554 construction job years, equivalent to 92 full time equivalent (FTE) jobs per year for six years, based on the average turnover per FTE in Manchester for the construction sector<sup>26</sup>. The 554 job years will generate GVA of £42.9m over the six year construction period, estimated by applying the average GVA per FTE for the Manchester Construction sector<sup>27</sup>.
- 13.61. Using the same approach, the completion of Scenario 2 (Phase 1 and 2) would support a total of 1,049 construction job years, 105 FTEs over ten years, generating a total GVA of £81.3m.
- 13.62. The number of construction workers is likely to fluctuate over the duration of the construction programme to reflect the stage of development reached and associated workforce requirements. Although regional and national construction firms will often use their own workers on development schemes, it is common for at least some contractors to be drawn from the immediate local area. A Local Labour Agreement would support the capture of local benefits.
- 13.63. Multiplier effects as a result of spill-over spending through the supply chain (indirect impacts) and through knock-on consumer spending as a result of wages being derived or spent locally (the induced impacts) will generate further employment and GVA during the construction phase.
- 13.64. Applying the HCA Additionality Guidance sub-regional multiplier for regeneration and physical infrastructure projects suggests a further 30 FTEs and GVA of £11.5m will be supported for Scenario 1 over six years, and 35 FTEs and £21.8m of GVA for Scenario 2 over ten years.

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<sup>26</sup> Using ONS BRES, Annual Business Survey and Annual Population Survey data for 2019

<sup>27</sup> Using ONS BRES and Regional Accounts for 2019

Table 13.14: Construction Phase Employment and GVA Impacts

|                             | Scenario 1 | Scenario 2 |
|-----------------------------|------------|------------|
| <i>Direct</i>               |            |            |
| Construction job years      | 554        | 1,049      |
| GVA                         | £42.9m     | £81.3m     |
| <i>Indirect and induced</i> |            |            |
| FTEs                        | 30         | 35         |
| GVA                         | £11.5m     | £21.8m     |

- 13.65. Based on the assessment above, for both scenarios considered, the construction employment and GVA is considered to have a temporary minor beneficial effect at the local authority level.

#### Local Expenditure

- 13.66. Construction workers will support a temporary uplift in local expenditure on lunchtime food and drink, during the construction phase. Assuming average expenditure of £3.69 per day per worker, based on Visa research on commuters spend across the UK on lunch, suggests Scenario 1 will support £470,000 of additional local expenditure over the six year construction period, while Scenario 2 will support £890,000 of additional local expenditure over the ten year period.
- 13.67. The uplift in local expenditure for both scenarios is considered to have a temporary negligible effect at the Assessment Area and local authority level.

### Operational Phase

#### Housing

- 13.68. The Proposed Development will help to increase Manchester's Housing Stock and make an important contribution to Manchester's housing targets of 3,533 per annum in the recent spatial framework.
- 13.69. Scenario 1 of the Proposed Development will deliver 378 new homes, just over 10% of Manchester's annual housing target, while in total 716 new homes will be delivered by Scenario 2, accounting for just over one fifth of the annual housing target in Manchester. In addition, provided further funding is secured, there is an aim to deliver affordable housing as part of the development, contributing to Manchester's policy targets and ambitions.
- 13.70. The number of new homes delivered under Scenario 1 is anticipated to have a minor beneficial impact, while Scenario 2 will be of minor-moderate beneficial impact significance, at the Manchester level.

#### Population

- 13.71. Scenario 1 is estimated to support a population uplift of around 850 additional residents, based on the number of units and the average household size in the assessment area<sup>28</sup> and assuming all units are occupied. Given there is no provision of housing currently on the Site suggests these residents will be

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28 Using ONS Census data for 2011

largely additional supporting a net uplift in the Assessment Areas population of 850, representing an uplift in the usual resident population of 1.8%.

- 13.72. Applying the same approach, delivery of Scenario 2 of the Proposed Development will result in an additional 1,620 residents, an uplift of 3.3% in the Assessment Area.
- 13.73. The current age profile of the Assessment Area suggests that around 61.4% of the Proposed Development residents will be of working age, equating to 530 working age residents from Scenario 1 and 1,000 from Scenario 2. This will support the local economy's workforce and growth forecasts for the city, while tax income from those working in the local authority will contribute to the public purse.
- 13.74. Other potential impacts of an uplift in population related to spend in the local economy, crime rates, pressure on existing services, environmental amenity are considered in later sections.
- 13.75. Based on the above the impacts on population at the Site are considered to be of negligible significance at the Assessment Area level.

#### Employment and GVA

- 13.76. The community hub delivered as part of Scenario 1 is likely to accommodate some employment uses providing potential opportunities for new and local residents in the area. While exact details of the hub are not known at this stage, the employment accommodated is expected to be minimal. Therefore Scenario 1 would have a negligible impact on employment and GVA at Assessment Area and local authority level.
- 13.77. Scenario 2 of the Proposed Development will also deliver a new Secondary School alongside the community hub, creating employment opportunities for local residents, across a range of skill levels. The secondary school will deliver up to 1,050 new school places which, based on the Department for Education average pupil to adult ratio average for local authority maintained secondary schools and the average full time part time split for the education sector in Manchester, suggests 90 FTEs would be created, generating GVA of £4.8m per annum based on the average GVA per FTE in Manchester for the education sector.<sup>29</sup> This represents a 0.5% uplift in employment in the Assessment Area. Based on this assessment the delivery of Scenario 2 would have a negligible impact on employment and GVA at the Assessment Area level.

#### Local Expenditure

- 13.78. The addition of new homes as part of the Proposed Development will lead to a net uplift in the number of households in the Assessment Area, supporting greater local expenditure by households including on retail, household goods, food and drink, local transport, recreation and leisure and other expenditure likely to be spent locally.
- 13.79. For Scenario 1, delivery of 378 new homes will support additional household spend each year of £4.4m, using the 2019 ONS Family Spending Survey, a negligible uplift of 0.8% on total estimated household expenditure in the Assessment Area. This is sufficient to support 31 FTEs including within retail, other services and in the supply chain locally, based on the economy wide average cost per FTE in the North West, and GVA of £2.0m each year, based on the economy wide GVA per FTE for Manchester.
- 13.80. Scenario 2 will deliver 716 new homes, supporting additional household expenditure of £8.4m per annum, representing a marginal uplift of 1.5% on the local households' expenditure in the Assessment Area. The additional £8.4m, will support 59 FTEs and GVA of £3.7m each year.

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<sup>29</sup> Using ONS BRES and Regional Accounts for 2019

13.81. Based on the assessment presented, the impact of both scenarios on additional local expenditure by residents who are new to the area is considered to be of negligible – minor beneficial significance to the local economy.

Local Authority Income

- 13.82. Additional Council Tax income for the City Council will be generated by the delivery of new homes in the Assessment Area, supporting the delivery of services across the Local Authority and local economic regeneration ambitions. While exact Council Tax bandings will not be determined until detailed Site plans are known, a conservative assumption has been made, recognising the potential for discounts for example for people living alone, that properties will fall into Council Tax band B.
- 13.83. Delivery of Scenario 1 of the Proposed Development would generate an estimated £531,000 of annual Council Tax income, while Scenario 2 would support an additional £1.0m of Council Tax income each year.
- 13.84. Based on this assessment, the local authority income effect is considered to be a permanent, minor beneficial impact for the local authority.

Healthcare

- 13.85. The anticipated uplift in population is likely to create additional demand for existing local services including healthcare facilities such as GP’s and dentists, although a proportion of residents in the Assessment Area may already be registered at local facilities.
- 13.86. Within a mile radius from the Site, there are eight GPs, five of which are accepting new NHS patients, although information on capacity was not available.
- 13.87. There are 16 dental practices within 2 miles of the Site, seven of which are accepting new NHS adult and child patients if they have a referral from a dentist and/or new private patients. A 2021 report by Greater Manchester Healthwatch has highlighted that current capacity in NHS dentists is insufficient to meet demand, and reported that there’s been a ‘huge increase’ in the number of patients struggling to find NHS dentists in the city.
- 13.88. For Scenario 1, assuming the worst case scenario where all 850 residents estimated to be accommodated in the development require a GP and Dentist (within 1 and 2 miles respectively), using available data for those which are accepting new patients suggests on average each GP surgery would need to take on c.170 new patients and each dental practice would take c.121 patients. For Scenario 2 this increases to c.324 new patients per GP and c.232 for each dentist.
- 13.89. It is worth noting that both GP and Dental Practices may take patients that are located outside of this search radius.
- 13.90. Given the lack of information on capacity within existing healthcare facilities and the known shortages in NHS dentists in Manchester, taking into account a worst case scenario, the assessment impacts are considered to be negligible to minor adverse at the local scale for both scenarios.

Educational Provision

- 13.91. The assessment of school places is based on the anticipated number of residents in the Proposed Development and the proportion of nursery, primary and secondary age members of the population in the Assessment Area using ONS population estimates. The table overleaf sets out the additional demand for places under both scenarios.

Table 13.15: Anticipated Demand for Nursery, primary and Secondary School Places

| Scenario 1 | Scenario 2 |
|------------|------------|
|------------|------------|

|                                |    |     |
|--------------------------------|----|-----|
| Nursery <sup>30</sup>          | 34 | 65  |
| Primary School <sup>31</sup>   | 89 | 169 |
| Secondary School <sup>32</sup> | 65 | 124 |

- 13.92. Within 1.5 miles from the Site there are 16 day nurseries, although information on the number of vacancies was not readily available.
- 13.93. Department for Education published data on school capacity, shows there were 700 available places in primary schools within 1.5 miles of the Site and 3,372 in secondary schools within 2.9 miles of the Site in the academic year 2018/19.
- 13.94. In addition, under Scenario 2 the Proposed Development will deliver a new secondary school creating an additional 1,050 secondary school places, helping to attract families to the area, more than satisfying any additional demand as a result of the uplift in population from Scenario 2 of the Proposed Development, and providing local education provision for other residents within the local area.
- 13.95. The surplus of Primary and Secondary school places, as well as the addition of up to 1,050 new secondary school places as part of Scenario 2, means if all primary and secondary school age residents as part of both Scenario 2 were new to the area and required places at local state schools there would still be additional capacity available, which suggests that both schools and students would not be negatively impacted by an influx of new students. In addition, while information on vacancies is unavailable, given the number of day nurseries in the local area, it is anticipated that any additional demand would be accommodated within the existing provision.
- 13.96. Based on the assessment above Scenario 1 is considered to have negligible impact upon local educational provision, while Scenario 2 is considered to have a moderate beneficial impact upon the local education institutions, as a result of new secondary school provision.

### Crime

- 13.97. The increased number of residents in the neighbourhood as part of both Scenario 1 and Scenario 2 may lead to a negligible increase in some types of crime. However, the Proposed Development will help to regenerate and animate the Site which has remained vacant for a number of years and, alongside housing and a new school, will deliver community facilities to activate ground floor uses, safe overlooked green spaces and public realm with adequate lighting, and new shared sports and other community facilities. This will help to increase footfall and visibility, providing natural surveillance and reducing the sense of isolation and create a better sense of place and community which can help to reduce criminal activity.
- 13.98. Based on this assessment the Proposed Development would have a negligible impact on crime at the local scale.

### Open Space, Recreation and Amenity

- 13.99. An uplift in population as a result of Scenario 1 (+850 residents) and Scenario 2 (+1,620 residents), will increase demand and usage of nearby open space and recreation facilities. A number of open green

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30 Assuming half of all additional residents aged 0-4 will go to nursery

31 Assuming all residents aged 5-10 attend primary school

32 Assuming all residents aged 11-15 attend primary school

spaces and parks have been identified within 1 mile of the Site as part of the baseline assessment, which together provide around 260 acres of public greenspace. In addition, the Proposed Development, will deliver a variety of accessible green spaces including private, semi-private and public green spaces with pocket parks and a central community park, while the Proposed Development will also promote accessibility to the canal towpath and link bridges by providing new connections through the site. Scenario 1 proposes to deliver the following public realm and landscaped areas: Jacksons Community Park including play space; Ten Acres Pocket Park including play space; Hallam Green including play space; Ten Acres Lane arrival space; Canal Linear Park; and Hallam Road Pedestrian / Cycle Connection.

- 13.100. Sports and leisure facilities close the Site were also identified as part of the baseline assessment. In addition, as part of Scenario 1 the Proposed Development will deliver community facilities while under Scenario 2 the Proposed Development will deliver sports and recreation provision as part of the secondary school which can be used by the local community.
- 13.101. While local open space and recreation facilities are expected to see an increase in usage as a result of the Proposed Development, there is adequate provision within close proximity to the Site as well as additional provision as part of the Proposed Development, which is considered to be sufficient to accommodate the forecast uplift in population under both scenarios. The additional public realm, green spaces, improved accessibility to the canal and community and sports facilities will generate benefits for local residents, including improved health and wellbeing. Therefore, the impact of the Proposed Development on open space, recreation and amenity is considered to be of minor beneficial significance and permanent in nature for both scenarios at the Assessment Area level.

## Summary of Impacts

Table 13.16 – Summary of Impacts

| Receptors              | Scenario 1                    | Scenario 2                    |
|------------------------|-------------------------------|-------------------------------|
| <b>Construction</b>    |                               |                               |
| Employment and GVA     | Minor beneficial              | Minor beneficial              |
| Local Expenditure      | Negligible                    | Negligible                    |
| <b>Operational</b>     |                               |                               |
| Housing                | Minor beneficial              | Minor-moderate beneficial     |
| Population             | Negligible                    | Negligible                    |
| Employment and GVA     | Negligible                    | Negligible                    |
| Local Expenditure      | Negligible – minor beneficial | Negligible – minor beneficial |
| Local Authority Income | Minor beneficial              | Minor beneficial              |
| Healthcare             | Negligible – minor adverse    | Negligible – minor adverse    |
| Educational Provision  | Negligible                    | Moderate beneficial           |

| Receptors                              | Scenario 1       | Scenario 2       |
|----------------------------------------|------------------|------------------|
| Crime                                  | Negligible       | Negligible       |
| Open Space and Recreational Facilities | Minor beneficial | Minor beneficial |

## Mitigation Measures

- 13.102. Under both scenarios there are no anticipated adverse effects arising in the Construction Phase in terms of the socio-economic assessment requiring mitigation measures, with impacts identified as negligible to minor – moderate beneficial. Adopting a Local Labour Agreement, or committing to using local suppliers will support a greater share of benefits will be captured in the Manchester economy. While there are likely to be a number of mitigation measures required for the construction phase, they are not covered within this discipline and will be contained within the other chapters of the ES.
- 13.103. During the operational phase, once the Proposed Development is complete and occupied, there are no anticipated moderate or major adverse effects, with impacts considered ranging from negligible - minor adverse to moderate beneficial, and therefore within the socio-economic assessment there are no mitigation measures required.

## Residual Effects

Table 13.17 – Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

| Receptor(s)            | Likely Significant Effects    |                               | Mitigation Measures | Residual Effects              |                               |
|------------------------|-------------------------------|-------------------------------|---------------------|-------------------------------|-------------------------------|
|                        | Scenario 1                    | Scenario 2                    |                     | Scenario 1                    | Scenario 2                    |
| Construction           |                               |                               |                     |                               |                               |
| Employment and GVA     | Minor beneficial              | Minor beneficial              | None                | Minor beneficial              | Minor beneficial              |
| Local Expenditure      | Negligible                    | Negligible                    | None                | Negligible                    | Negligible                    |
| Operational            |                               |                               |                     |                               |                               |
| Housing                | Minor beneficial              | Minor-moderate beneficial     | None                | Minor beneficial              | Minor-moderate beneficial     |
| Population             | Negligible                    | Negligible                    | None                | Negligible                    | Negligible                    |
| Employment and GVA     | Negligible                    | Negligible                    | None                | Negligible                    | Negligible                    |
| Local Expenditure      | Negligible – minor beneficial | Negligible – minor beneficial | None                | Negligible – minor beneficial | Negligible – minor beneficial |
| Local Authority Income | Minor beneficial              | Minor beneficial              | None                | Minor beneficial              | Minor beneficial              |

| Receptor(s)                                   | Likely Significant Effects |                            | Mitigation Measures | Residual Effects           |                            |
|-----------------------------------------------|----------------------------|----------------------------|---------------------|----------------------------|----------------------------|
|                                               | Scenario 1                 | Scenario 2                 |                     | Scenario 1                 | Scenario 2                 |
| <b>Healthcare</b>                             | Negligible – minor adverse | Negligible – minor adverse | None                | Negligible – minor adverse | Negligible – minor adverse |
| <b>Educational Provision</b>                  | Negligible                 | Moderate beneficial        | None                | Negligible                 | Moderate beneficial        |
| <b>Crime</b>                                  | Negligible                 | Negligible                 | None                | Negligible                 | Negligible                 |
| <b>Open Space and Recreational Facilities</b> | Minor beneficial           | Minor beneficial           | None                | Minor beneficial           | Minor beneficial           |

## Cumulative Effects

13.104. The following developments within a 1,500m radius have been considered alongside the Proposed Development as part of the cumulative assessment:

- 125990/FO/2020 Land Off Oldham Road (A62), Dulverton Street, Holyoak Street And Droylsden Road Manchester – Approved
- 123295/FO/2019 Former Workshop, Arkady Industrial Estate, Briscoe Lane Manchester M40 2XG – Approved
- 126281/FO/2020 Dob Brook Close Manchester M40 1DB – Approved
- 121841/FO/2018 Reliance Street Waste Management Site, Reliance Street Manchester M40 3EZ – Approved
- 128133/FO/2020 497 Oldham Road Manchester M40 5AA – Approved
- 127629/FO/2020 Land To The South West Of Moston Vale, Manchester – Approved
- 125596/FO/2019 Land Bounded By Hulme Hall Lane, Varley Street, Iron Street, Coleshill Street And Rochdale Canal Manchester M40 8HH – Approved
- 129444/FO/2021 Former Mather & Platt Foundry Grimshaw Lane Manchester M40 2BA – Approved
- 130586/VO/2021 Land Bounded By The Rochdale Canal, Smallwood Street, Great Newton Street And Droylsden Road Newton Heath Manchester M40 1HE – Approved and under construction
- (Oldham Council) PA/338035/16 Express Dairies Milk Ridgefield Street – Approved and under construction
- 126431/FO/2020 Site South Of Sportcity Way, East Of Joe Mercer Way, West Of Alan Turing Way And North Of The Ashton Canal At The Etihad Campus Manchester – Approved and under construction
- 127669/FO/2020 Deanway DIY Store 112 Kenyon Lane Manchester M40 9DH – Approved
- 129393/VO/2021 Land Bound By Rochdale Road, Shellard Road, Harrowby Drive, Johnny King Close, Thornton Street North, Stretton Close & Marston Street Manchester – Approved

- 13.105. The construction of the cumulative developments along with Scenario 1 or Scenario 2 will provide a boost in employment and GVA, providing a regular local expenditure from the construction workforce.
- 13.106. The cumulative scale development will deliver 1,425 new dwellings including Scenario 1 of the Proposed Development, and 1,763 new homes including Scenario 2, making a contribution to Manchester's housing targets (3,555 per annum between 2021 and 2037). Based on the assessment, the cumulative development is considered to have a moderate beneficial impact on housing.
- 13.107. A population uplift of 3,200 residents is estimated as a results of the cumulative scale of development including Scenario 1, a 6.4% uplift in the population of the Assessment Area, and 4,000 including Scenario 2 representing a 7.8% uplift in the Assessment Area population. Around 61.4% are expected to be of working age, making a positive contribution to the local workforce, supporting economic growth objectives.
- 13.108. The cumulative scale of development will generate new employment opportunities for new and existing residents, supporting 974 new FTEs under Scenario 1 or 1,064 FTEs under Scenario 2, representing a 5.4% or 5.9% uplift in the assessment area employment level, respectively. Based on the assessment, the cumulative effects is considered to have a minor beneficial impact on employment and GVA under both Scenarios.
- 13.109. An uplift in local expenditure in the Assessment Area will also be generated as a result of the additional 1,425 (cumulative plus Scenario 1) or 1,763 (cumulative plus Scenario 2) new homes, in addition to Local Authority Income generated through Council Tax, which can be reinvested in the local economy generating further benefits.
- 13.110. In regard to provision of healthcare facilities, due to the lack of data available on capacity and known shortages in NHS dental care, a cautious assessment has been made of the impact of the cumulative development on healthcare facilities. For both scenarios the cumulative scale development and anticipated uplift in population is projected to have a minor adverse impact.
- 13.111. As a result of the uplift in population from the cumulative developments, demand for educational facilities is expected to increase. The number of additional places required is set out in the table below, assuming the worst-case scenario where all school aged children are new to the area and require a place at a local school.

Table 13.18: Cumulative Development Anticipated Demand for Nursery, primary and Secondary School Places

|                                | Cumulative (inc. Scenario 1) | Cumulative (inc. Scenario 2) |
|--------------------------------|------------------------------|------------------------------|
| Nursery <sup>33</sup>          | 130                          | 160                          |
| Primary School <sup>34</sup>   | 337                          | 417                          |
| Secondary School <sup>35</sup> | 246                          | 305                          |

<sup>33</sup> Assuming half of all additional residents aged 0-4 will go to nursery

<sup>34</sup> Assuming all residents aged 5-10 attend primary school

<sup>35</sup> Assuming all residents aged 11-15 attend primary school

- 13.112. Within 1.5 miles from the Site there are 16-day nurseries, although information on the number of vacancies was not readily available. The cumulative scale of development suggests each nursery would need to take approximately eight children for Scenario 1 and seven under Scenario 2.
- 13.113. Department for Education published data on school capacity, shows there were 700 available places in primary schools within 1.5 miles of the Site and 3,372 in secondary schools within 2.9 miles of the Site in the academic year 2018/19, plus under Scenario 2 a new 1,050 place secondary school will be provided. This suggests that additional demand can be more met by the existing and new educational facilities.
- 13.114. Increased pressure of open space and recreational facilities is also expected from the cumulative scale of development, although as part of the Proposed Development a variety of green spaces, community facilities, sports and recreation provision as part of the secondary school which can be used by the local community will be delivered.
- 13.115. The Table below summarises the cumulative effects of the Proposed Development considering Scenario 1 and 2 in turn.

Table 13.19: Cumulative Impacts

| Receptors                              | Cumulative<br>(inc. Scenario 1) | Cumulative (inc. Scenario<br>2) |
|----------------------------------------|---------------------------------|---------------------------------|
| <b>Construction</b>                    |                                 |                                 |
| Employment and GVA                     | Minor – moderate beneficial     | Minor – moderate beneficial     |
| Local Expenditure                      | Negligible                      | Negligible                      |
| <b>Operational</b>                     |                                 |                                 |
| Housing                                | Moderate beneficial             | Moderate beneficial             |
| Population                             | Negligible                      | Negligible                      |
| Employment and GVA                     | Minor beneficial                | Minor beneficial                |
| Local Expenditure                      | Minor beneficial                | Minor beneficial                |
| Local Authority Income                 | Minor beneficial                | Minor beneficial                |
| Healthcare                             | Minor adverse                   | Minor adverse                   |
| Educational Provision                  | Negligible                      | Moderate beneficial             |
| Crime                                  | Negligible                      | Negligible                      |
| Open Space and Recreational Facilities | Minor beneficial                | Minor beneficial                |

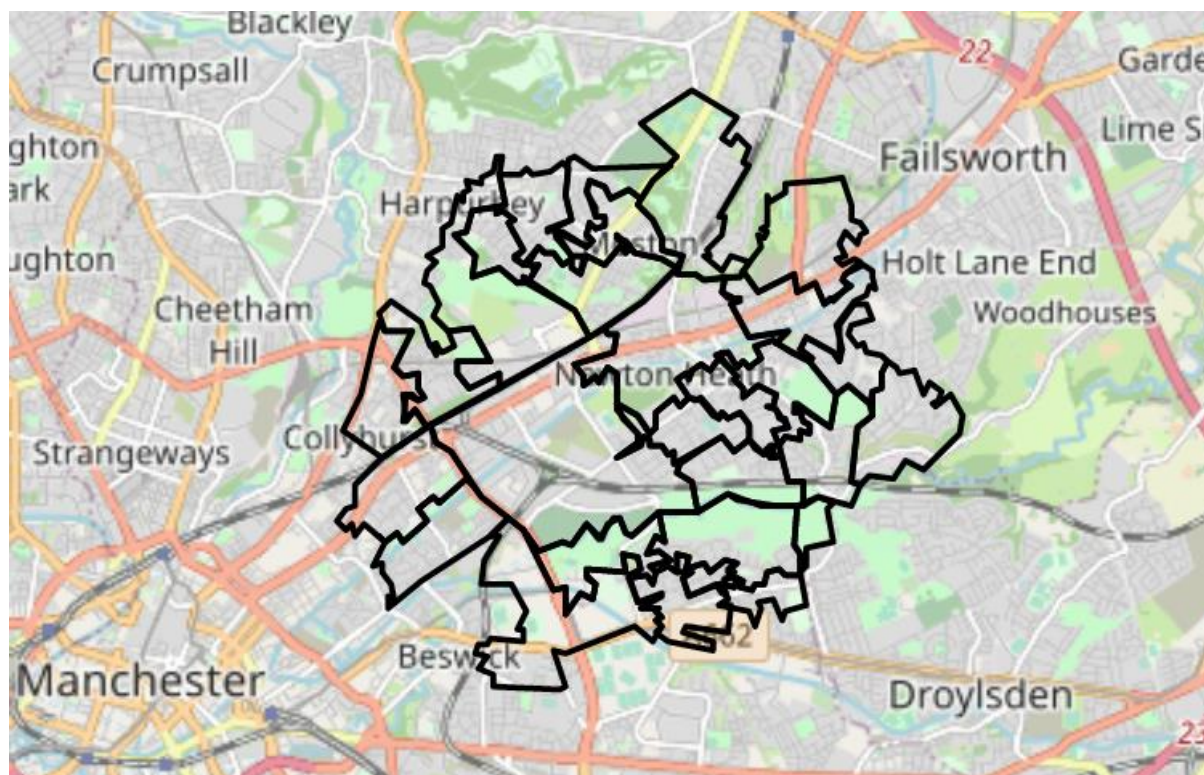
## Reference List

13.116. This ES Chapter has been prepared by reference to the following:

- National Planning Policy Framework (NPPF)
- Places for Everyone Plan
- The Greater Manchester Strategy – Our People, Our Place
- Manchester Core Strategy
- Residential Growth Strategy

- Our Manchester Strategy
- ONS Census
- ONS Business Register and Employment Survey (BRES)
- ONS UK Business Counts
- ONS Claimant Count
- ONS Annual Population Survey
- ONS Annual Survey of Hours and Earnings (ASHE)
- DfE Schools Capacity Data
- National Travel Survey

## Figure 13.1: Map of the Assessment Area



# 14. Summary of Residual Effects

14.1. This section contains a summary of the residual effects of the Proposed Development.

## Townscape and Visual Impact

Table 14.1 – TVIA Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

| Receptor(s)                                      | Likely Significant Effects | Mitigation Measures | Residual Effects                        |
|--------------------------------------------------|----------------------------|---------------------|-----------------------------------------|
| <b>Construction - temporary</b>                  |                            |                     |                                         |
| Townscape Character                              | Small Adverse              | N/A                 | Small Adverse. Minor significance       |
| Urban Grain                                      | Negligible Beneficial      | N/A                 | Negligible Beneficial. Not significant. |
| Land Use                                         | Small Neutral              | N/A                 | Small Neutral. Minor significance       |
| Building Heights                                 | Negligible Beneficial      | N/A                 | Negligible Beneficial. Not significant. |
| Topography and Site Levels                       | Negligible Neutral         |                     | Negligible Neutral. Not significant.    |
| Movement and Linkages                            | Small Adverse              | N/A                 | Small Adverse. Minor significance       |
| Public Open Space and Environmental Designations | Small Adverse              | N/A                 | Negligible Adverse. Not significant.    |
| Site Character                                   | Small Adverse              | N/A                 | Small Adverse. Not significant.         |
| Viewpoint 1                                      | Medium Adverse             | N/A                 | Medium Adverse. Moderately Significant  |
| Viewpoint 2                                      | Large Adverse              | N/A                 | Large Adverse. Moderately Significant   |
| Viewpoint 3                                      | Small Adverse              | N/A                 | Small Adverse. Minor significance.      |
| Viewpoint 4                                      | Negligible Adverse         | N/A                 | Negligible Adverse. Not Significant     |
| Viewpoint 5                                      | Medium Adverse             | N/A                 | Medium Adverse. Moderately Significant  |

| Receptor(s)                                      | Likely Significant Effects | Mitigation Measures | Residual Effects                          |
|--------------------------------------------------|----------------------------|---------------------|-------------------------------------------|
| Viewpoint 6                                      | Negligible Adverse         | N/A                 | Negligible Adverse. Not Significant       |
| Viewpoint 7                                      | Medium Adverse             | N/A                 | Medium Adverse. Minor Significance        |
| Viewpoint 8                                      | Negligible Adverse         | N/A                 | Negligible Adverse. Minor Significance    |
| Viewpoint 9                                      | Small Adverse              | N/A                 | Small Adverse. Minor significance.        |
| Viewpoint 10                                     | Small Adverse              | N/A                 | Small Adverse. Not Significant            |
| Viewpoint 11                                     | Negligible Adverse         | N/A                 | Negligible Adverse. Not Significant       |
| Viewpoint 12                                     | Small Adverse              | N/A                 | Small Adverse. Not Significant            |
| Viewpoint 13                                     | Small Adverse              | N/A                 | Small Adverse. Not Significant            |
| Viewpoint 14                                     | Medium Adverse             | N/A                 | Medium Adverse. Minor Significance        |
| Viewpoint 15                                     | No Change                  | N/A                 | No Change                                 |
| <b>Operational</b>                               |                            |                     |                                           |
| Townscape Character                              | Medium Beneficial          | N/A                 | Medium Beneficial. Moderately significant |
| Urban Grain                                      | Medium Beneficial          | N/A                 | Medium Beneficial. Moderately significant |
| Land Use                                         | Medium Beneficial          | N/A                 | Medium Beneficial. Moderately significant |
| Building Heights                                 | Medium Beneficial          | N/A                 | Medium Beneficial. Moderately significant |
| Topography and Site Levels                       | Small Beneficial           |                     | Small Beneficial. Not significant         |
| Movement and Linkages                            | Medium Beneficial          | N/A                 | Medium Beneficial. Moderately significant |
| Public Open Space and Environmental Designations | Small Beneficial           | N/A                 | Small Beneficial. Minor significance      |
| Site Character                                   | Large Beneficial           | N/A                 | Large Beneficial. Moderately significant. |
| Viewpoint 1                                      | Medium Adverse             | N/A                 | Medium Adverse. Moderately Significance.  |

| Receptor(s)  | Likely Significant Effects | Mitigation Measures | Residual Effects                        |
|--------------|----------------------------|---------------------|-----------------------------------------|
| Viewpoint 2  | Medium Adverse             | N/A                 | Medium Adverse. Moderately Significant. |
| Viewpoint 3  | Small Neutral              | N/A                 | Small Neutral. Minor Significance       |
| Viewpoint 4  | Small Beneficial           | N/A                 | Small Beneficial. Not Significant       |
| Viewpoint 5  | Medium Adverse             | N/A                 | Medium Adverse. Moderately Significant. |
| Viewpoint 6  | Negligible Neutral         | N/A                 | Negligible Neutral. Not Significant     |
| Viewpoint 7  | Medium Beneficial          | N/A                 | Medium Beneficial. Minor Significance   |
| Viewpoint 8  | Small Beneficial           | N/A                 | Small Beneficial. Minor Significance    |
| Viewpoint 9  | Small Beneficial           | N/A                 | Small Beneficial. Minor Significance    |
| Viewpoint 10 | Small Beneficial           | N/A                 | Small Beneficial. Not Significant       |
| Viewpoint 11 | Negligible Beneficial      | N/A                 | Negligible Beneficial. Not Significant  |
| Viewpoint 12 | Small Neutral              | N/A                 | Small Neutral. Not Significant          |
| Viewpoint 13 | Small Beneficial           | N/A                 | Small Beneficial. Not Significant       |
| Viewpoint 14 | Medium Adverse             | N/A                 | Medium Adverse. Minor Significance      |
| Viewpoint 15 | No Change                  | N/A                 | No Change. Not Significant              |

## Traffic and Transport

Table 14.2 – Traffic and Transport Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

| Likely Significant Effects | Receptor(s)                                              | Mitigation Measures                                              | Residual Effects       |
|----------------------------|----------------------------------------------------------|------------------------------------------------------------------|------------------------|
| <b>Construction Phase</b>  |                                                          |                                                                  |                        |
| Severance                  | Existing residential properties<br>Vulnerable road users | CTMP to be developed prior to commencement of construction phase | Negligible – Temporary |

| Likely Significant Effects  | Receptor(s)                                                                                     | Mitigation Measures                                                                                                                                            | Residual Effects       |
|-----------------------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Driver Delay                | Drivers using study network                                                                     | and agreed with relevant consultees                                                                                                                            | Negligible – Temporary |
| Public Transport Users      | Existing residential properties<br><br>Vulnerable road users                                    |                                                                                                                                                                | Negligible – Temporary |
| Pedestrian Delay            | Existing residential properties<br><br>Vulnerable road users                                    |                                                                                                                                                                | Negligible – Temporary |
| Pedestrian/ Cyclist Amenity | Existing residential properties<br><br>Vulnerable road users                                    |                                                                                                                                                                | Negligible – Temporary |
| Fear and Intimidation       | Existing residential properties<br><br>Vulnerable road users                                    |                                                                                                                                                                | Negligible – Temporary |
| Accidents and Safety        | Existing residential properties<br><br>Vulnerable road users<br><br>Drivers using study network |                                                                                                                                                                | Negligible – Temporary |
| Operational Phase           |                                                                                                 |                                                                                                                                                                |                        |
| Severance                   | Existing residential properties<br><br>Vulnerable road users                                    | None                                                                                                                                                           | Negligible – Permanent |
| Driver Delay                | Drivers using study network                                                                     | Enhancements to capacity at the Briscoe Lane/ Ten Acres Lane junction                                                                                          | Negligible – Permanent |
| Public Transport Users      | Existing residential properties<br><br>Vulnerable road users                                    |                                                                                                                                                                | Negligible – Permanent |
| Pedestrian Delay            | Existing residential properties<br><br>Vulnerable road users                                    | Provision of high-quality infrastructure through the Site including connection to the canal towpath, including the primary north-south route along Hallam Road | Negligible – Permanent |
| Pedestrian/ Cyclist Amenity | Existing residential properties<br><br>Vulnerable road users                                    |                                                                                                                                                                | Negligible – Permanent |
| Fear and Intimidation       | Existing residential properties                                                                 | None                                                                                                                                                           | Negligible – Permanent |

| Likely Significant Effects | Receptor(s)                     | Mitigation Measures | Residual Effects       |
|----------------------------|---------------------------------|---------------------|------------------------|
|                            | Vulnerable road users           |                     |                        |
| Accidents and Safety       | Existing residential properties | None                | Negligible – Permanent |

## Noise and Vibration

Table 14.3 – Noise and Vibration Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

| Receptor(s)         | Likely Significant Effects | Mitigation Measures | Residual Effects                              |
|---------------------|----------------------------|---------------------|-----------------------------------------------|
| <b>Construction</b> |                            |                     |                                               |
| ESR1                | Moderate Adverse           | CEMP                | None (with brief periods of Moderate Adverse) |
| ESR2                | Moderate Adverse           | CEMP                | None (with brief periods of Moderate Adverse) |
| ESR3                | Moderate Adverse           | CEMP                | None (with brief periods of Moderate Adverse) |
| ESR4                | Moderate Adverse           | CEMP                | None (with brief periods of Moderate Adverse) |
| <b>Operational</b>  |                            |                     |                                               |
| ESR1                | Negligible Adverse         | None                | Negligible                                    |
| ESR3                | Minor Adverse              | None                | Minor Adverse                                 |
| ESR5                | Negligible Adverse         | None                | Negligible                                    |
| ESR6                | No Change                  | None                | Negligible                                    |
| ESR7                | Negligible Adverse         | None                | Negligible                                    |

## Air Quality

Table 14.4 – Air Quality Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

| Receptor(s)                                                                     | Likely Significant Effects                    | Mitigation Measures                                                                       | Residual Effects                                                                                                            |
|---------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Construction Phase</b>                                                       |                                               |                                                                                           |                                                                                                                             |
| <b>Sensitive human receptors within 350m of the Phase 1 and 2 Site boundary</b> | Risk of dust soiling and human health effects | Site-specific mitigation measures previously outlined, as per Step 3 of the IAQM guidance | After mitigation, residual effects from the construction phase will be direct, temporary, medium-term and 'not significant' |

| Receptor(s)                                                                                        | Likely Significant Effects                    | Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Residual Effects                                                                                                            |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Phase 1 sensitive human receptors within 350m of Phase 2 Site boundary (cumulative effects)</b> | Risk of dust soiling and human health effects | Site-specific mitigation measures previously outlined, as per Step 3 of the IAQM guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | After mitigation, residual effects from the construction phase will be direct, temporary, medium-term and 'not significant' |
| <b>Operational Phase</b>                                                                           |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                             |
| <b>Sensitive human receptors considered in assessment (i.e. ESRs 1-23)</b>                         | No likely significant effects                 | No significant effects are predicted; however, best practice mitigation measures are suggested to futureproof the Proposed Development. Mitigation measures include the planned access and highway improvements (which will reduce congestion generated by the Proposed Development), as well as the provision of electric vehicle charging infrastructure and cycle parking at the proposed dwellings. Further mitigation measures to reduce pollution from the buildings within the Proposed Development may include installing low NOx boilers at the proposed dwellings | Effects from the operational phase assessment will be direct, permanent, long-term and 'not significant'                    |

## Ground Conditions

Table 14.5 – Ground Conditions Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

| Likely Significant Effect                                                        | Receptor (Sensitivity)      | Impact Significance Pre-Mitigation | Possible Mitigation Measures                                                                                                                                                                                                             | Residual Impact Significance |
|----------------------------------------------------------------------------------|-----------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Potential Impacts for the Construction of Phase 1 and Phase 2</b>             |                             |                                    |                                                                                                                                                                                                                                          |                              |
| Direct contact, ingestion or inhalation of contaminants/dust/groundwater s/gases | Construction workers (High) | <b>Major – Moderate Adverse</b>    | Implementation of those items outlined for the Outline CEMP and those construction and post construction mitigation measures in the Outline Remedial Strategy (including use of PPE and adhering to relevant health and safety measures) | <b>Negligible</b>            |

| Likely Significant Effect                                                                                                                                  | Receptor<br>(Sensitivity)                                                         | Impact Significance<br>Pre-Mitigation            | Possible Mitigation<br>Measures                                                                                                                                                                                                                                                                                                                                                                                                                    | Residual<br>Impact<br>Significance                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Direct contact, ingestion (including consumption of vegetables and ingress via water supply pipes) or inhalation of contaminants/dust/groundwater s/gases  | Adjacent Site Users / General Public / Future Site Users within Phase 1<br>(High) | <b>Major – Moderate Adverse</b>                  | While the construction works could temporarily increase the risk of migration to off-site receptors, if those items outlined for the Outline CEMP and the construction and post construction mitigation measures in the Outline Remedial Strategy are implemented this should be negligible.                                                                                                                                                       | <b>Negligible</b>                                                   |
| Migration of groundwater through the ground (vertical and lateral)                                                                                         | Groundwaters within superficial and bedrock<br><br>Aquifers<br>(Low to High)      | <b>Major – Moderate Adverse to Minor Adverse</b> | While the construction works could temporarily produce pathways to shallow groundwaters in the short term, if those items outlined for the Outline CEMP and the construction and post construction mitigation measures in the Outline Remedial Strategy are implemented this should be negligible.                                                                                                                                                 | <b>Negligible</b>                                                   |
| Surface water run-off / overland flow                                                                                                                      | Surface water receptors: Rochdale Canal<br>(Moderate)                             | <b>Moderate – Minor Adverse</b>                  | While construction works would increase the potential for surface water run-off / overland flow in the short term, if those items outlined for the Outline CEMP and the construction and post construction mitigation measures in the Outline Remedial Strategy are implemented this should be negligible.                                                                                                                                         | <b>Negligible</b>                                                   |
| Direct contact with contaminated waters; migration, ingress and accumulation of ground gases; infiltration of contaminants into pipes; and unstable ground | Existing adjacent and new (Phase 1) buildings / infrastructure<br>(High)          | <b>Major – Moderate Adverse</b>                  | While construction works could increase the potential for off-site migration of contamination to third party properties, if those items outlined for the Outline CEMP and the construction and post construction mitigation measures in the Outline Remedial Strategy are implemented this should be negligible. There is a risk that Phase 1 could be impacted by the construction works undertaken at Phase 2 and this could result in damage to | <b>Moderate – Minor Adverse* (* please refer to table footnote)</b> |

| Likely Significant Effect                                                                                                                                 | Receptor<br>(Sensitivity)                                      | Impact Significance<br>Pre-Mitigation | Possible Mitigation<br>Measures                                                                                                                                                                                                                                                                                                                                             | Residual<br>Impact<br>Significance                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
|                                                                                                                                                           |                                                                |                                       | structures, external areas and services if mitigation is not implemented.                                                                                                                                                                                                                                                                                                   |                                                                     |
| Spillage of fuels or chemicals during construction                                                                                                        | All, including workers and the wider environment<br>(Moderate) | <b>Moderate – Minor Adverse</b>       | Implementation of those items outlined for the Outline CEMP and those construction and post construction mitigation measures in the Outline Remedial Strategy.                                                                                                                                                                                                              | <b>Negligible</b>                                                   |
| <b>Operation of Phase 1 and Phase 2</b>                                                                                                                   |                                                                |                                       |                                                                                                                                                                                                                                                                                                                                                                             |                                                                     |
| Direct contact, ingestion (including consumption of vegetables and ingress via water supply pipes) or inhalation of contaminants/dust/groundwater s/gases | Future Residents / Site Users<br>(High)                        | <b>Major – Moderate Adverse</b>       | Implementation of those construction and post construction mitigation measures in the Outline Remedial Strategy and post construction related mitigation measures.                                                                                                                                                                                                          | <b>Negligible</b>                                                   |
| Direct contact, ingestion (including consumption of vegetables and ingress via water supply pipes) or inhalation of contaminants/dust/groundwater s/gases | Adjacent Site Users / General Public<br>(High)                 | <b>Major – Moderate Adverse</b>       | Implementation of those construction and post construction mitigation measures in the Outline Remedial Strategy and post construction related mitigation measures that will result in a betterment of the Site and reduce the potential pathways for off-site migration. However, some pathways may still remain, and mitigation may not be present for off-site receptors. | <b>Moderate – Minor Adverse*</b> (* please refer to table footnote) |

| Likely Significant Effect                                                                                                                                  | Receptor<br>(Sensitivity)                                                | Impact Significance<br>Pre-Mitigation            | Possible Mitigation<br>Measures                                                                                                                                                                                                                                                                                                                                                                                                               | Residual<br>Impact<br>Significance                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Migration of groundwater through the ground (vertical and lateral) including the potential creation of new pathways                                        | Groundwaters within superficial and bedrock<br>Aquifers<br>(Low to High) | <b>Major – Moderate Adverse to Minor Adverse</b> | Implementation of those construction and post construction mitigation measures in the Outline Remedial Strategy and post construction related mitigation measures that will result in a betterment to the Site. However, pathways could exist via new foundations, but foundation risk assessments and mitigation is envisaged, and foundations are unlikely to penetrate thick Glacial Till.                                                 | <b>Minor Adverse* to Negligible (* please refer to table footnote)</b> |
| Surface water run-off / overland flow including the potential creation of new pathways                                                                     | Surface water receptors:<br>Rochdale Canal<br>(Moderate)                 | <b>Moderate – Minor Beneficial</b>               | Implementation of those construction and post construction mitigation measures in the Outline Remedial Strategy and post construction related mitigation measures. Surface waters should only come into contact with hardstanding or clean cover systems, and most will be captured by drainage resulting in a betterment. However, minor residual risks with leaks from vehicles etc. but again these are likely to be captured by drainage. | <b>Minor Adverse* to negligible (* please refer to table footnote)</b> |
| Direct contact with contaminated waters; migration, ingress and accumulation of ground gases; infiltration of contaminants into pipes; and unstable ground | New buildings and infrastructure<br>(High)                               | <b>Major-Moderate Adverse</b>                    | Implementation of those construction and post construction mitigation measures in the Outline Remedial Strategy, post construction related mitigation measures and those geotechnical mitigation measures. Risk of ongoing settlements associated with deeper landfill materials and ground gas / vapour generation.                                                                                                                          | <b>Moderate – Minor Adverse* (* please refer to table footnote)</b>    |

| Likely Significant Effect                                                                                                                                  | Receptor (Sensitivity)                                       | Impact Significance Pre-Mitigation | Possible Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                           | Residual Impact Significance                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Direct contact with contaminated waters; migration, ingress and accumulation of ground gases; infiltration of contaminants into pipes; and unstable ground | Existing adjacent buildings / infrastructure and land (High) | <b>Major-Moderate Adverse</b>      | Implementation of those construction and post construction mitigation measures in the Outline Remedial Strategy and post construction related mitigation measures that will result in a betterment of the Site and reduce the potential pathways for off-site migration. Ground gas / vapours and groundwaters may still be an issue for off-site properties and mitigation may not be present for off-site receptors. | <b>Moderate – Minor Adverse*</b> (* please refer to table footnote) |

\* This is considered to be the worst-case scenario, and it is likely that control measures during construction will avoid any accidents and incidents occurring and that following development of the Site there will be a betterment to the current baseline conditions

## Water Resources, Flood Risk and Drainage

Table 14.6 – Water Resources Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

| Likely Significant Effect                                   | Receptor(s)                                               | Mitigation Measures | Residual Effect |
|-------------------------------------------------------------|-----------------------------------------------------------|---------------------|-----------------|
| <b>Construction Phase</b>                                   |                                                           |                     |                 |
| <b>Mud and debris blockages</b>                             | Surface Water (leaching into ground) / Canal to the North | n/a                 | Negligible      |
| <b>Temporary Increase in Impermeable Area</b>               | Surface Water (leaching into ground) / Canal to the North | n/a                 | Negligible      |
| <b>Silt-laden Runoff</b>                                    | Surface Water (leaching into ground) / Canal to the North | n/a                 | Negligible      |
| <b>Spillages, Leakages and Pollutants</b>                   | Surface Water (leaching into ground) / Canal to the North | n/a                 | Negligible      |
| <b>Inappropriate Wastewater Disposal Welfare Facilities</b> | Surface Water (leaching into ground) / Canal to the North | n/a                 | Negligible      |
| <b>Operational</b>                                          |                                                           |                     |                 |

| Likely Significant Effect                            | Receptor(s)                                               | Mitigation Measures | Residual Effect |
|------------------------------------------------------|-----------------------------------------------------------|---------------------|-----------------|
| Silt and Debris Blockages in drainage infrastructure | Surface Water (leaching into ground) / Canal to the North | n/a                 | Negligible      |
| Permanent Increase in Impermeable Area               | Surface Water (leaching into ground) / Canal to the North | n/a                 | Negligible      |
| Diffuse Pollution Contained in Urban Runoff          | Surface Water (leaching into ground)                      | n/a                 | Negligible      |
| Increase in Highway Routine Runoff                   | Surface Water (leaching into ground)                      | n/a                 | Negligible      |
| Increase in Highway Spillage Risk                    | Surface Water (leaching into ground)                      | n/a                 | Negligible      |
| Increased demand on Water Supply                     | Surface Water (leaching into ground)                      | n/a                 | Negligible      |
| Increased Foul Water Across Site                     | Foul Water (leaching into ground)                         | n/a                 | Negligible      |

## Ecology

Table 14.7 – Ecology Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

| Receptor(s)                                                           | Likely Significant Effects (Considered)        | Mitigation / Compensation Measures                                                                                    | Residual Effects                 |
|-----------------------------------------------------------------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Rochdale Canal SAC/SSSI                                               | Surface water run-off and accidental pollution | No mitigation required (no adverse effects).                                                                          | Neutral                          |
| Undesignated sections of Rochdale Canal                               | Surface water run-off and accidental pollution | CEMP protocols including bunding of the site, collection and treatment of surface water and discharge to foul sewer.  | Neutral (potentially beneficial) |
| Woodland and grassland habitats, including LBAP Priority Grasslands** | Habitat loss/clearance                         | Compensatory species-rich grassland and tree planting. (**please refer to table footnote)                             | Significant Adverse (County)     |
| Foraging and Commuting bats**                                         | Loss of foraging and commuting habitat         | Lighting of Site during remediation works to avoid Rochdale Canal corridor.<br><br>(**please refer to table footnote) | Significant Adverse (Local)      |
| Slow worm**                                                           | Population loss                                | Capture and Translocation of individuals to off Site receptor location with ongoing management/monitoring.            | Neutral                          |

| Receptor(s)      | Likely Significant Effects (Considered) | Mitigation / Compensation Measures                                                                                                                                                                                                                                                                                                                                       | Residual Effects            |
|------------------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
|                  |                                         | (**please refer to table footnote)                                                                                                                                                                                                                                                                                                                                       |                             |
| Breeding Birds** | Habitat loss and displacement           | Timing of vegetation removal to avoid bird breeding season (namely March to August) unless a detailed survey by a suitably experienced Ecologist has confirmed that no nests are present in the affected area immediately prior to works commencing**. Compensatory tree and shrub planting will replace some of the habitat.<br><br>(** please refer to table footnote) | Significant Adverse (Local) |

\*\* Remediation works and associated mitigation measures were approved and captured under planning permission ref. 129197/FO/2021. These items have therefore been considered and approved in conjunction with that application. In addition, site clearance works have now commenced including tree removal, and these works are expected to complete by the end of May 2022.

## Socio-Economics

Table 14.8 – Socio-Economics Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

| Receptor(s)         | Likely Significant Effects |                          | Mitigation Measures | Residual Effects |                  |
|---------------------|----------------------------|--------------------------|---------------------|------------------|------------------|
|                     | Scenario 1 <sup>36</sup>   | Scenario 2 <sup>37</sup> |                     | Scenario 1       | Scenario 2       |
| <b>Construction</b> |                            |                          |                     |                  |                  |
| Employment and GVA  | Minor beneficial           | Minor beneficial         | None                | Minor beneficial | Minor beneficial |
| Local Expenditure   | Negligible                 | Negligible               | None                | Negligible       | Negligible       |
| <b>Operational</b>  |                            |                          |                     |                  |                  |

<sup>36</sup> Please refer to Appendix 1.1 for EIA Scenarios.

<sup>37</sup> Please refer to Appendix 1.1 for EIA Scenarios.

| Receptor(s)                                   | Likely Significant Effects    |                               | Mitigation Measures | Residual Effects              |                               |
|-----------------------------------------------|-------------------------------|-------------------------------|---------------------|-------------------------------|-------------------------------|
|                                               | Scenario 1 <sup>36</sup>      | Scenario 2 <sup>37</sup>      |                     | Scenario 1                    | Scenario 2                    |
| <b>Housing</b>                                | Minor beneficial              | Minor-moderate beneficial     | None                | Minor beneficial              | Minor-moderate beneficial     |
| <b>Population</b>                             | Negligible                    | Negligible                    | None                | Negligible                    | Negligible                    |
| <b>Employment and GVA</b>                     | Negligible                    | Negligible                    | None                | Negligible                    | Negligible                    |
| <b>Local Expenditure</b>                      | Negligible – minor beneficial | Negligible – minor beneficial | None                | Negligible – minor beneficial | Negligible – minor beneficial |
| <b>Local Authority Income</b>                 | Minor beneficial              | Minor beneficial              | None                | Minor beneficial              | Minor beneficial              |
| <b>Healthcare</b>                             | Negligible – minor adverse    | Negligible – minor adverse    | None                | Negligible – minor adverse    | Negligible – minor adverse    |
| <b>Educational Provision</b>                  | Negligible                    | Moderate beneficial           | None                | Negligible                    | Moderate beneficial           |
| <b>Crime</b>                                  | Negligible                    | Negligible                    | None                | Negligible                    | Negligible                    |
| <b>Open Space and Recreational Facilities</b> | Minor beneficial              | Minor beneficial              | None                | Minor beneficial              | Minor beneficial              |

# 15. Type 1 Cumulative Effects

## Introduction

- 15.1. This section gives consideration to 'Type 1' cumulative effects.
- 15.2. The assessment is informed by the results of the technical assessments as set out in Chapter 6 - 13 of the ES.
- 15.3. Type 1 cumulative effects are also known as 'intra-project' effects, which are the combined effects arising from the Proposed Development upon a set of defined sensitive receptors. An example would be where a local resident is affected by dust, noise and a loss of visual amenity during the construction of a scheme, with the result being a greater nuisance than each individual effect alone.
- 15.4. Type 2 cumulative effects are considered within the ES technical Chapters. The technical Chapters also had regard to the potential for Type 1 cumulative effects, however for robustness the results of a standalone assessment of these is provided below.

## Legislation, Policy and Guidance

### Legislation

- 15.5. There is no legislation outlining how cumulative effects should be assessed or determined as significant. However, there is a requirement in Part 1, Schedule 4 of the EIA Regulations to consider cumulative effects. Cumulative is not defined in the EIA Directive or Regulations however a dictionary definition is 'increasing by one addition after another'.
- 15.6. The EIA Regulations require 'a description of the likely significant effects', including cumulative effects.
- 15.7. In the context of this assessment, 'cumulative effects' refers to the interactions between different likely residual effects resulting from the Proposed Development (Type 1). Both positive and negative effects are considered across the construction and operational phases.

### Policy

- 15.8. As this Chapter considers the cumulative effects of the technical areas within the ES, all relevant policy has already been reviewed within the individual technical Chapters.

### Guidance

- 15.9. A number of guidance documents which relate to assessing cumulative effects have been used to inform the assessment and include:
- European Commission (EC) Environment DG (May 1999), 'Study on the Assessment of Indirect and Cumulative Impacts as well as Impact Interaction', Hyder Consulting; and
  - Institute of Environmental Management and Assessment (1992), Guidelines for the Environmental Assessment of Road Traffic.
- 15.10. The EC guidelines 'are not intended to be formal or prescriptive, but are designed to assist EIA practitioners in developing an approach which is appropriate to a project'.
- 15.11. Paragraph 24 of the National Planning Practice Guidance (NPPG) (Reference ID: 4-024-20170728) outlines the consideration to be given to cumulative effects in the context of EIA:

“Each application (or request for a screening opinion) should be considered on its own merits. There are occasions, however, when other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a Proposed Development. The local planning authorities should always have regard to the possible cumulative effects arising from any existing or approved development.”

## Assessment Methodology and Significance Criteria

### Methodology

- 15.12. This assessment is primarily concerned with where there is a likelihood of significant Type 1 cumulative effects occurring, in accordance with EIA practice and the NPPG guidance.
- 15.13. The assessment is based on experience and professional judgement, drawing upon relevant guidance set out above and the residual environmental effects identified within the results of the EIA technical assessments. The assessment has been undertaken by suitably qualified and experienced EIA practitioners.
- 15.14. The assessment has primarily focused on sensitive receptors identified within close proximity to the Site (e.g. local residents and businesses located in close proximity to the Site), likely cumulative effects, and their capacity to accommodate changes that will occur as a result of the combined residual environmental effects.
- 15.15. Relevant guidance has been reviewed, and an approach has been developed which uses the residual environmental effects identified within the ES. An exercise which tabulates the residual effects against receptors or receptor groups has then been carried out in order to identify the potential for Type 1 cumulative effects.
- 15.16. Negligible or neutral residual effects have been excluded from the assessment as, by their nature, they are considered to be imperceptible. Therefore, only minor, moderate or major effects have been given consideration during the assessment.
- 15.17. For the purposes of the assessment, receptor groups have been identified as those surrounding the Site and those identified within the individual technical assessments.

### Significance Criteria

- 15.18. The following terms have been used to define the significance of the effects identified:
  - Major effect: where the Proposed Development could be expected to have a very significant effect (either positive or negative) cumulatively;
  - Moderate effect: where the Proposed Development could be expected to have a noticeable effect (either positive or negative) cumulatively;
  - Minor effect: where the Proposed Development could be expected to result in a small, barely noticeable effect (either positive or negative) cumulatively; and
  - Negligible: where no discernible effect is expected as a result of the Proposed Development cumulatively.
- 15.19. The significance level attributed to each effect has been assessed based on the magnitude of change due to the combination of residual effects and the sensitivity of the affected receptor/receiving environment to change, as outlined in Chapter 2 of the ES. Magnitude of change is assessed on a scale of major, moderate, minor and negligible and the sensitivity of the affected receptor/receiving environment is assessed on a scale of high, medium, low and negligible.

## Limitations and Assumptions

- 15.20. Due to the reliance on qualitative data and subjective opinion, there are limitations related to the range and depth in which the cumulative effects have been investigated. It must be realised that analysing the cumulative effects of developments is often speculative and cannot be predicted as clearly as individual effects such as the effects upon traffic of a development, which relies heavily upon quantitative data to inform the assessment. As a result, a number of assumptions have been made throughout in terms of the outcome of the accumulation of effects and based upon professional judgement. This section and the assessment process of identifying the likely significant Type 1 cumulative effects have, however, provided a reasoned consideration of and insight into the potentially significant Type 1 cumulative effects of the Proposed Development.

## Identification of Likely Significant Type 1 Cumulative Effects

- 15.21. Based on the methodology detailed above, Table 10.1 presents the results of the review of the potential for interactions of individual effects during the construction phase of development. The potential effect interactions are then discussed further.

### Construction Phase

Table 15.1: Construction Phase Type 1 Cumulative Effects

| Sensitive Receptor Group                            | Construction Phase Residual Effects<br>(after mitigation)                                                  | Likely Significant Cumulative Effects            |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Views, visual setting, Site and townscape character | <u>Townscape and Visual Impact</u> : Temporary minor to moderate adverse                                   | No likely significant Type 1 cumulative effects  |
| Ecology and biodiversity                            | <u>Ecology</u> : Minor to moderate adverse                                                                 | No likely significant Type 1 cumulative effects  |
| Neighbouring residential properties                 | <u>Air Quality</u> : temporary minor adverse                                                               | No likely significant Type 1 cumulative effects. |
| Pedestrian and cycle linkages                       | <u>Transport and Accessibility</u> : Moderate beneficial                                                   | No likely significant Type 1 cumulative effects. |
| Employment and GVA                                  | <u>Socio-Economic</u> : Minor beneficial                                                                   | No likely significant Type 1 cumulative effects. |
| Construction Workers                                | <u>Contamination</u> : potential minor adverse effect from windblown contaminants and ground contamination | No likely significant Type 1 cumulative effects. |

- 15.22. It should be noted that Ecology (Chapter 12) has assessed an alternative baseline where conditions relate to the Site post-remediation works, which include complete vegetation clearance, as approved under planning permission ref: 129197/FO/2021). This permission has been implemented and, to date, site clearance works have been undertaken. Table 14.1 does consider however a worst-case scenario, with the baseline scenario relating to the Site's condition pre-remediation works. Please refer to Chapter 12 of this Statement for further details.

15.23. The table above illustrates there are no Type 1 potential cumulative effects.

### Operational Phase

15.24. Based on the methodology detailed above, Table 14.2 presents the results of the review of the potential for interactions of individual effects during the operational phase of development. The potential effect interactions are then discussed further.

Table 15.2: Operational Phase Type 1 Cumulative Effects

| Sensitive Receptor Group                                                      | Operational Phase Residual Effects<br>(after mitigation)                                                                                                                                                                                                                                                                                                          | Likely Significant Cumulative Effects            |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Views, visual setting, Site and townscape character                           | <u>Townscape and Visual Impact:</u><br>Minor beneficial                                                                                                                                                                                                                                                                                                           | No likely significant Type 1 cumulative effects. |
| Existing and future local residents, visitors and nearby population receptors | <u>Socio-Economic:</u> Minor – moderate beneficial on housing provided. Contamination: Minor adverse, However, this is considered to be the worst-case scenario, and it is likely that control measures will avoid any accidents and incidents occurring and that following development of the Site there will be a betterment to the current baseline conditions | No likely significant Type 1 cumulative effects. |
| Education Provision                                                           | <u>Socio-economic:</u> Moderate beneficial                                                                                                                                                                                                                                                                                                                        | No likely significant Type 1 cumulative effects. |
| Pedestrian and cycle linkages                                                 | <u>Transport and Accessibility:</u><br>Moderate beneficial                                                                                                                                                                                                                                                                                                        | No likely significant Type 1 cumulative effects. |
| Open Space and Recreation Facilities                                          | <u>Socio-Economic:</u> Minor beneficial                                                                                                                                                                                                                                                                                                                           | No likely significant Type 1 cumulative effects. |

15.25. The table above illustrates there are no Type 1 potential cumulative effects.

### Mitigation Measures

15.26. There are no Type 1 potential cumulative effects; therefore no mitigation measures are proposed.

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