1. Introduction

Introduction

1.1 Manchester City Council (MCC) (hereafter referred to as the 'Applicant') is seeking to obtain detailed planning permission for the enabling work (including construction of a temporary haul road) for the Red Bank Neighbourhood project (hereafter referred to as the 'proposed development') on an area of land which forms part of Victoria North, located to the north east of Victoria Station, to the south of Red Bank road, and immediately adjacent to Manchester City Centre (hereafter referred to as 'the site'). The site is located within the administrative authority of MCC. The planning application to which this Environmental Statement (ES) directly relates is a full planning application for the enabling works at the site. The planning application boundary is shown edged red on an Ordnance Survey (OS) base map presented in **Figure 1.1**.

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

The Site

1.3 The site is irregular in shape and occupies an area of approximately 2.83 hectares ('ha'). It is located to the north east of Victoria Station, Manchester.

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

1.5 The River Irk lies to the south and east of the site, whilst the area surrounding the site to the north and west is more urbanised in character, occupied by hotels, restaurants, commercial developments, and industrial and residential uses.

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

Development Proposals

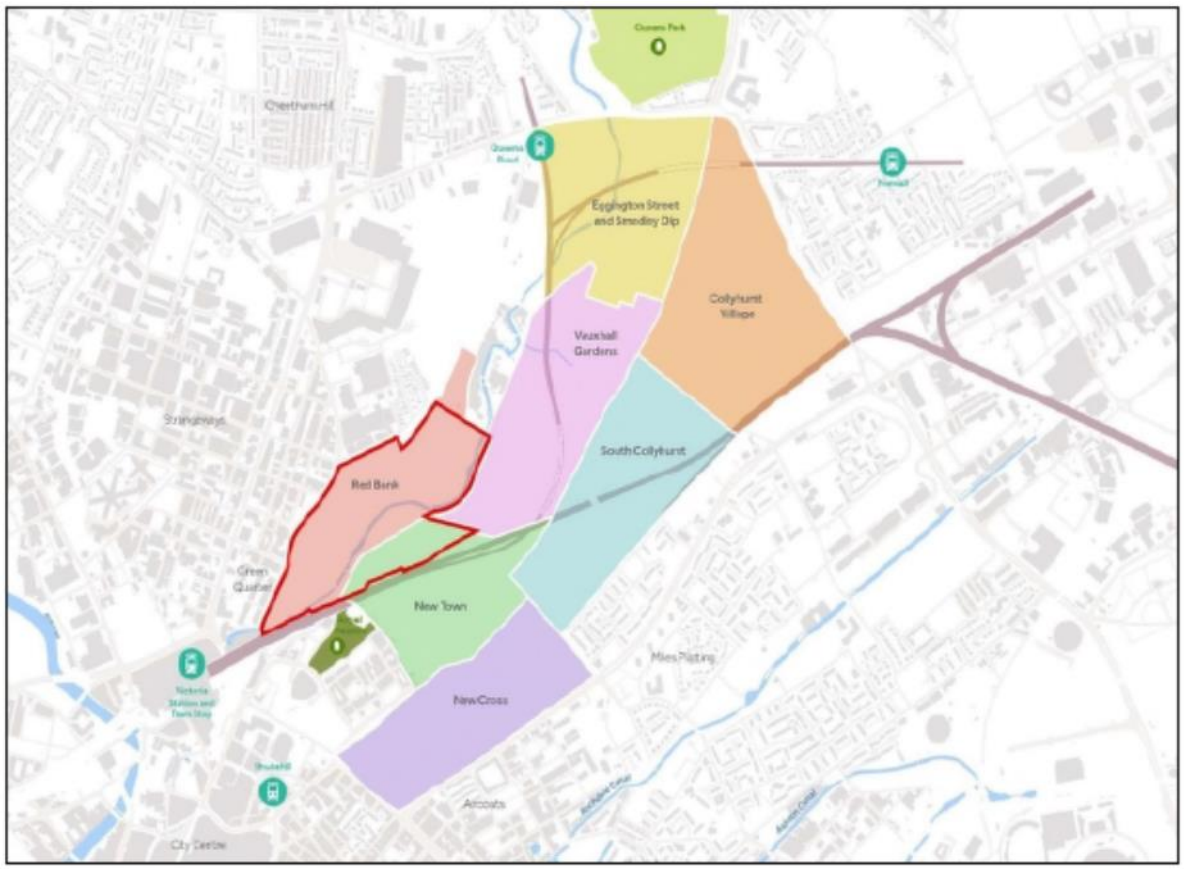
The Development Project and EIA Strategy

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

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

1.9 **Figure 1.2 (embedded)** presents the extent of area related to the Victoria North initiative, inclusive of the seven neighbourhoods identified within the SRF and an 'Initial Development Area' (the red line imposed on **Figure 1.2**). This Initial Development Area (comprising land owned / controlled by MCC, FEC and third party landowners) has been identified by the JV as having the potential to deliver an estimated 5,500 residential units across 21 housing development plots. The Initial Development Area shown is inclusive of the infrastructure enabling works and the subsequent neighbourhood application. Of the estimated 5,500 residential units that have the potential to be delivered in the Initial Development Area, FEC has created a First Phase within this area in which it is intended to deliver approximately 4.000 dwellings on land controlled / owned by the JV. It is worth noting the Initial Development Area spans two of the Northern Gateway SRF neighbourhood areas, encompassing the majority of the Red Bank area, together with the northernmost part (north of the railway line) of the New Town area.

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



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

1.11 To unlock the full potential of the area, MCC has secured £51.6m of Government Funding through the Housing Infrastructure Fund (HIF) to deliver critical infrastructure and enabling works within the Initial Development Area A key condition of the funding is that the spend availability period runs until March 2024 and, therefore, practical completion of the infrastructure and enabling works by this date is imperative.

1.12 The infrastructure and enabling works, and the plot development on land controlled and owned by MCC and FEC at Red Bank constitutes the "development project". Due to the HIF funding and programme requirements, it is necessary to approach the delivery of this development project by a number of separate planning applications. Four in total, are to be made, as follows:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1').
- HIF Infrastructure Works (referred to hereafter as 'Application 2').

- HIF Flood Defence Works (referred to hereafter as 'Application 3').
- Red Bank Neighbourhood (referred to hereafter as 'Application 4').

1.13 It is noted that, although the applications are given numbered references, this does not depict the order in which the applications are to be submitted and does not denote a pre-determined sequencing.

1.14 The site that is the focus of this ES, relating to Application 1, is shown on **Volume 2a: Main Text Figures - Figure 1.1**, as referenced earlier. The area of the site is specific to the extent of the advance enabling works and construction of the temporary haul road only.

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

Outline of the Proposed Development

1.16 The planning application for which this ES relates (Application 1) seeks full planning permission for advance enabling works to the north of Victoria Station, Manchester ('the proposed development'). The detailed application seeks the approval of:

- The demolition of Creamline dairies.
- Tree and shrub clearance to facilitate the construction of a temporary haul road.
- The construction of the temporary haul road.

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

"City Council Development for enabling works including tree and vegetation removal, creation of a temporary haul road and demolition of the Creamline Dairies buildings in association with the future delivery of the new Red Bank Neighbourhood."

1.18 Environmental constraints and potential adverse effects have been identified throughout the EIA process and, as a result, mitigation measures have been incorporated into the proposals through design. Where environmental mitigation measures have not been integrated into the proposals through design, it is expected that the requisite mitigation measures will be secured by appropriate planning conditions where relevant. These have been identified, where appropriate, in the technical chapters of this ES (Chapters 6 to 10) and summarised in Chapter 11: Summary of Mitigation and Residual Effects.

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

1.20 This document is the ES which reports the findings of the EIA and supports the planning application for the proposed development. It has been prepared by Avison Young with technical contributions from a range of specialist consultants experienced in EIA. The organisations and their roles in the project team are listed in Table 1.1 below, and see **Appendix 1.1** for team credentials.

Table 1.1: The Project Team

Discipline	Company
Client	Manchester City Council
Engineering and Structural Design	Arup BAM Nuttall
Planning Consultant and EIA Co-ordinator	Avison Young
Ecology and Trees	TEP
Townscape and Visual	Planit-IE
Drainage and Flood Risk	Arup
Ground Conditions	Arup
Climate Change	Arup

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

- **Volume 1: Non-Technical Summary** – A document providing a synopsis of the ES without utilising technical language. The summary includes a description of the Proposed Development, the potential environmental effects associated with the Proposed Development and the measures proposed to mitigate these effects.
- **Volume 2: Main Text** - This volume contains the main body of text of the ES, split into chapters. It provides an introduction, the approach to assessment, the assessment of alternatives, a description of the Proposed Development, technical assessment relating to topic scoped into the ES, cumulative and combined effects and a summary of residual effects.
- **Volume 2a**: **Main Text Figures** – This volume contains the figures associated with the chapters in Volume 2: Main Text.
- **Volume 3: Appendices** – This volume contains supporting information and a collection of technical reports upon which the conclusions of the ES are based.

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

- Chapter 1 – Introduction.

- Chapter 2 – Approach.
- Chapter 3 – Site Description.
- Chapter 4 – Alternatives.
- Chapter 5 – The Proposed Development.
- Chapter 6 – Ecology and Trees.
- Chapter 7 – Townscape and Visual.
- Chapter 8 – Drainage and Flood Risk.
- Chapter 9 – Ground Conditions.
- Chapter 10 – Climate Change.
- Chapter 11 – Summary of Mitigation and Residual Effects.

1.23 This ES provides sufficient environmental information to enable MCC, as Local Planning Authority (LPA), to make an informed decision on whether to grant planning permission. The ES relates to the planning application which is defined by the description of the development and the detailed plans for development that accompany the application.

The Planning Application Package

1.24 The planning application package consists of the following documents:

i. Application Covering letter.
ii. Application form, relevant land ownership certificate (duly signed) and relevant planning application fee.
iii. Planning, Design and Access Statement.
iv. Full set of application drawings for approval;
v. Construction Management / Logistics Plan.
vi. Construction Waste Management Plan.
vii. Demolition Method Statement.
viii. Archaeology Desk Based Assessment.
ix. Heritage Statement.
x. Transport Statement.
xi. Social Value Statement.

xii. Ecological Enhancement Statement.

xiii. Environmental Statement.

Environmental Statement Availability

1.25 The Non-Technical Summary, ES and Appendices are available for viewing at MCC Offices and on the MCC website[1]. Further copies of the ES and Appendices are available on CD at a cost of £25 from Avison Young. Contact details are as follows:

Avison Young
Norfolk House
7 Norfolk Street
M2 1DW

Contact: Richard Kevan

Tel: 0161 834 7187

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

Contact: Jennifer Atkinson

Tel: 0161 234 4651

[1] https://pa.manchester.gov.uk/online-applications/

2. Approach

Introduction

2.1 This chapter describes the methodology used to undertake the EIA in accordance with the Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (SI 2017/571) and National Planning Practice Guidance (NPPG).

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

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

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

EIA Strategy

EIA Strategy

2.5 Case law has established that EIA cannot be avoided by breaking down a large development project which is EIA development into a series of smaller phases or developments (so-called “salami slicing”). Another common pitfall in identifying “the project” for the purposes of the EIA Regulations is the existence of any ‘functional link’ between what might be (in planning terms) considered as two (or more) separate projects, but in EIA terms cannot be divorced as one project, could not exist or could not correctly function without the other.

2.6 A review of applicable case law has been undertaken to identify the appropriate EIA strategy in respect of the four applications related to the Initial Development Area, as identified in Chapter 1: Introduction. Specifically, the aim of this review has been to identify an approach that ensures a robust assessment approach is undertaken, whilst still allowing for applications to be made and approvals gained to enable the necessary infrastructure and enabling works to be carried out in accordance with the HIF funding timescale.

2.7 Provision of separate EIAs for each of the applications enables each application to proceed independently of another. At the same time, provision of an EIA for each application also allows for a full assessment to be presented of the potential impacts of the proposed development in focus for the relevant planning application, as well as an

assessment of impacts associated with the wider development project including for all of the associated planning applications. Each application will be accompanied by an Environmental Statement and as the details of the development in Applications 2-4 emerge the Environmental Statements will deal with them in more detail. Therefore, whatever is granted planning permission as part of the overall development project will have been rigorously assessed through the EIA process.

2.8 This ES is prepared in respect of the HIF Advance Enabling Works (the proposed development) (Application 1). Although the focus of this ES is to assess the proposed development, to ensure a robust worst case assessment, it includes for an In-Combination Assessment (ICA) of the other schemes related to the Red Bank Neighbourhood, as well as the wider SRF. See paragraphs 2.18 to 2.27 of this chapter for further detail regarding assessment scenarios.

2.9 Further, separate EIAs will be undertaken and associated ESs will be submitted in respect of each of the other three applications in due course.

Screening

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

2.11 The proposed development falls within Schedule 2, Category 10 Subsection (f) 'Construction of roads'. The threshold for which EIA could be triggered is whether the area of works exceeds 1 hectare (ha). The temporary haul road is 750m in length (equivalent to an area of 0.9ha) and the overall site area is 2.83ha. As such, the proposed development falls above the threshold for EIA in respect of Schedule of the EIA Regulations.

2.12 Furthermore, there is potential for there to be a significant effect in respect of ecology and trees, in particular relating to arboricultural impact, flood risk and drainage, ground conditions, climate changes and townscape and visual.

2.13 The surpassed development threshold and potential for significant effect, in addition to the need for a robust assessment approach, are full justification as to the requirement for EIA for the proposed development. In any case, as outlined in Chapter 1: Introduction, it is accepted that the proposed development will constitute EIA development, because it is in fact part of a wider project which would otherwise be EIA development, no matter whether or not it meets the screening criteria. As such, it has been agreed with MCC that a voluntary EIA is submitted to accompany the HIF Enabling Works detailed planning application.

Scoping

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

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

2.15 Formal scoping is not mandatory under Town and County Planning (Environmental Impact Assessment) Regulations 2017. Regulation 15 states '*A person who is minded to make an EIA application* ***may*** [author emphasis] *ask the relevant planning authority to state in writing their opinion as to the scope and level of detail of the information to be provided in the environmental statement (a "scoping opinion")*'. Given the requirement to submit an application and gain approval for the proposed development to enable the enabling works to be carried out in accordance with the HIF funding timescale, the programme is such that a formal scoping request has not been made to MCC.

2.16 A meeting was held with MCC on Friday 27th August 2021, attended by MCC Planning Officers and AY, during which it was agreed that an EIA would be submitted. Pre-application correspondence following this meeting has resulted in the inclusion of a number of topics for which there is potential for significant effect, inclusive of Ecology and Trees, Townscape and Visual impacts, Drainage and Flood Risk, Ground Conditions, and Climate Change.

2.17 A number of other topics were scoped out of the EIA and identified as potentially giving rise to impacts that will be not significant. These topic areas are set out below in Table 2.1.

Table 2.1: Non-Significant Effects Scoped Out of the ES

Topic
Archaeology
Heritage
Transport and Access
Air Quality and Dust
Noise and Vibration
Socioeconomics
Health
Wind Microclimate
Lighting

Topic
Daylight, Sunlight and Overshadowing
Waste
Accident and Disasters

EIA Procedure and Methodology

Consultation

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

Pre-Application Consultation

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

Community and Stakeholder Consultation

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

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

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

- The Joint Venture, Victoria North and the Strategic Regeneration Framework.

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

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

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

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

2.26 This initial consultation marks the first phase of a five-step programme of communication and engagement leading up to the submission of a hybrid application by FEC for the residential-led neighbourhood. Building on this early feedback, a next phase of consultation on the project will be held over December 2021 and January 2022. This will be the first of two "set-piece" consultations, presenting information and asking for feedback on the Red Bank masterplan principles, the four masterplan character areas and the detailed design for the City River Park.

2.27 Ahead of this next phase of consultation, we are offering a number of meetings to encourage wider participation in the process. Meeting with local amenity group the Friends of St Catherine's Wood as well as representatives of a number of green and blue infrastructure groups have taken place regarding the overall vison and strategy for the area.

EIA Assumptions

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

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

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

Assessment Approach

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

2.31 As set out above, in order for this application to proceed independently it is supported by an EIA. The EIA approach is made as robust as possible by the presentation of a series of assessment scenarios to enable absolute worst case to be identified and assessed. These assessment scenarios are presented by way of an In-Combination Assessment (ICA) in the body of the ES technical assessment chapters (Chapter 6 to Chapter 10. This ensures that:

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

2.32 The assessment scenarios are presented in Table 2.2.

Table 2.2: In-Combination Assessment Scenarios

Assessment	Stage	Scenario
In-Combination Assessment (ICA)	Stage 1 – Demolition and Construction Phase	Scenario 1a - Assessment of the impacts relating to the proposed development only

Assessment	Stage	Scenario
		Scenario 1b - Assessment of the impacts relating to the proposed development, plus impacts associated with Application 2, 3 and 4
		Scenario 1c – Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF
	Stage 2 – Completed Development and Operational Phase	Scenario 2a - Assessment of the impacts relating to the proposed development only
		Scenario 2b Assessment of the impacts relating to the proposed development, plus impacts associated with Application 2, 3 and 4
		Scenario 2c – Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF

Cumulative assessment

2.33 Further to the ICA, a Cumulative Impact Assessment (CIA) is also presented. Schemes for consideration in the CIA were identified through a planning application search of the MCC and Salford City Council (SCC) planning portals. The cumulative sites include for those approved projects within 1km of the site considered as having potential for cumulative ecological impact with the proposed development. This is the typical approach to CIA undertaken for an EIA. This process identified a total of 20 projects to be included within the cumulative assessment. The list of sites considered as part of the CIA are presented in Table 2.3 and are presented on **Figure 2.5**.

Table 2.3: Cumulative Sites

Site Ref.	Application No.	Proposal	Approx. Distance and Direction	Status
1	129393/VO/2021	City Council Development for the erection of 168, three and four storey dwellinghouses (Use Class C3a) and two, five and six storey apartment buildings to form 76 residential apartments (Use Class C3a) with associated ground floor flexible commercial unit (162 sqm) (Use Class E); and the creation of a new public park; all with associated car and parking, refuse storage, landscaping, public realm and other associated works and infrastructure following demolition of 29 existing residential dwellinghouses, the Collyhurst Village Store and associated car parking	650m north east	Approved Jun 2021
2	127971/FO/2020	Erection of a 6 storey building to form 90 residential apartments (Use Class C3a) following demolition of existing structures with associated access, car parking, amenity space, landscaping and other associated works	950m east	Approved May 2021
3	128248/FO/2020	Erection of 9 buildings ranging from 8 to 34 storeys in height to form 1202 residential apartments (Use Class C3a) and ground floor commercial uses (Use Class E) (192 sqm) together with associated car parking, new vehicular and pedestrian access, public realm, landscaping and other associated works following demolition of existing structures and buildings | Land Bound By Gould Street, Williamson Street, Bromley Street And Bilbrook Street Manchester M4 4DD	150m south	Approved June 2021
4	116366/FO/2017	Erection of four residential buildings (22 storey building, 17 storey building, 40 storey building and part 12, part 9 storey building) to form 756 residential apartments (Use Class C3a) together with ground floor commercial uses (616 sqm) (Use Classes A1, A2, A3, A4, A5, D1 and B1) with associated car parking, landscaping, amenity areas, creation of new public realm following the closure of Aspin Lane, Mincing Street and Irk Street and other associated works following demolition of existing structures | Land Bounded By Dantzic Street & Aspin Lane, Land Bounded By Gould Street & Angel Meadows And Land Bounded By Old Mount Street, School Street, Naples Street & Ludgate Street Manchester	150m south	Approved Aug 2017 Under construction
5	118120/FO/2017	Erection of a part 15, part 9, part 7 storey building to form 155 residential apartments together with ground floor commercial uses (Use Classes A1, A3 and B1) (288 sqm) with associated car parking, access arrangements and other associated works following the demolition of existing buildings and structure and the closure of Hatter Street | Land Bounded By Thompson Street / Mason Street / Bendix Street And Rochdale Road Manchester	450m south	Approved May 2018 Under construction

6	127537/FO/2020	Erection of a 11 storey 229 bedroom hotel (Use Class C1) with ancillary ground floor bar/restaurant together associated public realm and other associated works | 25 Rochdale Road Manchester M4 4HT	400m south	Approved Oct 2016
7	124973/FO/2019	Erection of an 11 storey building and a 12 storey building with plant rooms above to form a mixed use development comprising 39,184 sq.m (NIA) of Class B1a office use and commercial units of 1,286 sqm (NIA) (Use Classes A1, A2, A3, A4, B1a and D1) along with associated lower ground level car parking, hard and soft landscaping and associated works, including the creation of a new pedestrian route between Angel Street and Miller Street. | Land Bounded By Co-op Headquarters Miller Street And Angel Street Manchester	350m south	Approved Feb 2016
8	111777/FO/2016/C1	Erection of two residential buildings of a maximum 21 and 26 storeys to accommodate 520 apartments (178 x 1 bed, 286 x 2 bed and 56 x 3 bed apartments) (Use Class C3). Erection of one office building of maximum eight storeys comprising up to 11,647 sq. m (GIA) of office accommodation. Ground floor commercial space (Use Class A1, A2, A3 and B1), lower ground level car parking, access and servicing arrangements, alterations to Corporation Street, new public realm and other associated works. | New Victoria Land At Corporation Street Manchester M3 1NX	250m south east	Approved Sep 2016 Under construction
9	121375/FO/2018	Construction of a 22 storey building comprising 361 residential apartments (122 x 1 bed 2 person, 119 x 2 bed 3 person, 94 x 2 bed 4 person, 21 x 3 bed 5 person and 5 x 3 bed 6 person (34% 1 bed, 59% 2 bed and 7% 3 bed) ground floor commercial floorspace (Use Classes A1 (Shop), A3 (Restaurant and Cafe), A4 (Drinking Establishment) and A5 (Hot Food Take-away) associated landscaping, including new public realm and pedestrian route, together with servicing, cycle parking, access and other associated works following demolition of buildings at 20-22 and 24-26 High Street and 5 market stalls to Church Street.	840m south	Approved Oct 2020
10	18/71330/FUL	Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping	850m south west	Approved Oct 2018 Under construction
11	20/76134/FUL	Erection of 16-storey building plus plant comprising a hotel (Use Class C1) with ancillary bar and restaurant uses, access, servicing, landscaping and other associated works	1000m south west	Approved Feb 2020
12	17/70626/FUL	Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and	840m south west	Approved Nov 2017 Under construction

		cycle parking; public realm and landscaping; and other associated works.		
13	19/74465/HYBEIA	Hybrid planning application for demolition of existing buildings on the site and comprehensive redevelopment to create between 1,407 and 1,521 dwellings, comprising of: (a) Phase 1 (submitted in full with no matters reserved) for development of a 50-storey residential building; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new public park; highways and public realm improvements and other associated works; and, (b) Phases 2 and 3 (submitted in outline with all matters reserved) for the development of two residential buildings up to 42 storeys in height; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new highways; a public square; public realm improvements and other associated works. (EIA development, accompanied by Environmental Statement) | Land Bound By Greengate, Collier Street, Queen And King Street And Gravel Lane M3 7BN	960m south west	Validated Nov 2019
14	126944/FO/2020	Erection of a residential-led mixed use development comprising 3 no. towers (37, 26 and 18 storeys) and podium levels (6 storey) to form 634 residential apartments and townhouse accommodation (Use Class C3) together with commercial accommodation (1222 sqm) (Use Classes A1,A2,A3,A4,A5,B1, D1 and D2)); with associated residential amenity areas, refuse storage, plant (including substation), car parking, cycle storage, landscaping and new public realm including the re-instatement of Bromley Street and other associated works	140m south east	Approved Sep 2020 Under Construction
15	114860/FO/2016	Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings	145m south east	Approved October 2017
16	131708/FO/2021	Erection of a part 11, part 13 storey building to form residential apartments (Use Class C3a) together with the erection of two blocks of 3 storey townhouses (Use Class C3a) to form 237 residential homes in total with associated commercial floor (Use Class E) (132 sqm), basement car parking, landscaping and public realm, and associated engineering and infrastructure works following demolition of existing buildings and structures	450m south	Validated September 2021
17	118831/FO/2018	Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works	635m south west	Approved June 2018

18	128997/FO/2020	Erection of a ground plus 9-storey building to form 118 no. residential apartments (Use Class C3), including amenity areas, ground floor food and beverage/ commercial units (Sui Generis/ Use Class E), public realm and landscaping, with supporting infrastructure and associated works following demolition of existing building	730m south	Approved September 2021
19	124888/FO/2019	Erection of a 6-9 storey residential building (Use Class C3) comprising 80 no. dwellings including 9 no. townhouses and 71 no. apartments with residents lounge, refuse, plant, new substation, cycle storage, an internal landscaped courtyard and improvements to the adjacent footways	665m south	Approved January 2020 Under Construction
20	125678/FO/2019	Erection of 8-storey residential building (Use Class C3) comprising 73 residential units, with ground floor commercial use (Classes A1, A2, A3, B1 and D1 (excluding Places of Worship)) (205 sqm); alterations to the retained perimeter wall and chimney including the introduction of a light box; disabled car parking, highways, landscaping and other associated works	640m south	Approved December 2020

2.34 The assessment scenarios for consideration within the CIA are presented in Table 2.4.

Table 2.4: Cumulative Impact Assessment Scenarios

Assessment	Stage	Scenario
Cumulative Impact Assessment (CIA)	Stage 3 – Cumulatives	Scenario 3a - Assessment of the cumulative impacts relating to the enabling works plus impacts associated with agreed cumulative sites
		Scenario 3b - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2 (HIF Infrastructure Works), 3 (HIF Flood Defence Works) and 4 (Red Bank Neighbourhood), and the agreed cumulative sites
		Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2 (HIF Infrastructure Works), 3 (HIF Flood Defence Works) and 4 (Red Bank Neighbourhood), the wider SRF, and the agreed cumulative sites

2.35 The CIA is presented within the individual technical assessment chapters (Chapters 6 to 10). The assessment scenarios proposed ensure all potential cumulative impacts of the proposed development, the wider development project, and the NG SRF are considered as part of this EIA.

Assessment Assumptions

2.36 As outlined earlier in Chapter 1: Introduction and earlier in this chapter, the application and ES for this proposed development is coming forward in advance of the three other associated applications linked to the wider development project. In order to present as robust assessment as possible, it is necessary to present information in relation to Applications, 2, 3 and 4, which acts as the assumptions for the presentation of the ICA and CIA.

2.37 Wherever possible, definitive and fixed information relating to Applications 2, 3 and 4 is used. Where definitive information is not available, due to the design programmes for each of the applications, a maximum, upper quantum and / or worst-case position has been assumed, informed by relevant available information at the time the assessment is undertaken. This serves to ensure that the ICA and CIA presented assess the worst case and are as robust as possible.

2.38 The SRF-wide and neighbourhood Design and Development principles (Section 5 and 6 of the Northern Gateway SRF) provide a general overview of the whole framework area, and information with regards to urban form and

scale, land use, movement and public realm, and these plans were used as the basis of the assessment. Where specific information is not known at this stage with regard to Applications 2, 3 and 4, the assumptions for the purpose of working up the assessments has relied upon the detail within the SRF.

2.39 Table 2.5 details the assumptions used in this ES.

Table 2.5: Assumptions used as basis for In-Combination Assessment and Cumulative Impact Assessment

Application / Project	Applicant	Indicative Site Location Plan	Estimated Site Area (ha)	Indicative quantum of development
HIF Infrastructure Works Application	Manchester City Council	See **Figure 2.1**	16.6 ha	▪ Demolition of other existing structures ▪ Remediation and earthworks across site ▪ Construction of internal access roads and junctions ▪ Utility and services connections and diversions ▪ Provision of green infrastructure including (among others): o Creation of green links; and o Creation of new City River Park ▪
Flood Defence and Alleviation Measures Application	Manchester City Council	See **Figure 2.2**	Circa 1 ha	▪ Flood mitigation and defence works along the River Irk to reduce the area of flood zone 3 ▪ Potential for new bridge to replace Union Bridge
Red Bank Neighbourhood Application	Far East Consortium	See **Figure 2.3**	Circa 15.3 ha	• Approximately 4,000 no. residential dwellings • Indicative massing to align with the NG SRF, including a number of landmark buildings at height • Retail and commercial floorspace • Open and amenity space • Access and associated infrastructure
Northern Gateway Strategic Regeneration Framework (SRF)	n/a	See **Figure 2.4a** and **Figure 2.4b**	Circa 155 ha	• Residential-led regeneration scheme proposing approximately 15,000 dwellings over a 15-20 year period • Employment and commercial uses • Retail provision • Green and Blue infrastructure • Improved transport and access

Consistency

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

- Baseline Assessment and Identification of the Study Area;
- Identification of Sensitive Receptors;
- Identification of Embedded Mitigation Measures;
- Identification of Potential Effects during Construction and Operation of the Proposed Development (including indirect, direct, adverse and beneficial);
- Assessment of Impact Significance;
- Identification of Impact Significance;
- Identification of Mitigation Measures;
- Assessment of Residual Effects; and
- Assessment of Cumulative Effects.
- Assessment of in-combination impacts with the remaining three Victoria North applications.

Spatial and Temporal Scope of Assessment

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

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

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

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

- Construction effects may arise directly from construction activities but also from the temporary use of land (e.g. construction sites).

- Operational effects may arise from the permanent operational activities and ongoing use of the Proposed Development and new infrastructure.

2.44 The significance of the effects that will arise in each of these phases is based on any changes compared to the baseline conditions (i.e. those conditions which would exist if the proposed scheme did not go ahead).

Impact Prediction

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

> *"A description of the likely significant effects of the development on the environment resulting from inter alia:*
>
> *(a) The construction and existence of the development, including, where relevant, demolition works;*
>
> *(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;*
>
> *(c) the emission of pollutants, noise, vibration, light, heat and radiation the creation of nuisances, and the disposal and recovery of waste;*
>
> *(d) The risk to human health, cultural heritage or environment (for example accidents and disasters);*
>
> *(e) The cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;*
>
> *(f) The impact of the project on climate (for example nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;*
>
> *(g) The technologies and substances used."*

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

2.47 The following types of effect are considered:

- Direct impacts that arise from activities that form an integral part of the proposed scheme (e.g. new infrastructure/land take);
- Indirect impacts that arise from activities not explicitly forming part of the proposed scheme (e.g. noise changes due to changes in road traffic flows on existing roads resulting from the operation of the scheme);
- Secondary impacts that arise as a result of an initial effect of the proposed scheme;
- Permanent impacts that result from an irreversible change to the baseline environment (e.g. land take) or impacts which persist for the foreseeable future (e.g. visual impact);

- Temporary impacts that persist for a limited period only, for example, due to particular construction activities (e.g. noise from construction plant);
- Beneficial impacts that have a positive influence; and
- Adverse impacts that have a negative influence.
- In-combination impacts with the remaining three Victoria North applications.

Significance Criteria

2.48 The significance of effect is assessed by looking at what the changes will be against the existing or predicted baseline as a result of both the construction and operation of the schemes. It is a product of the sensitivity of the receptor, and the magnitude of the impact upon it. The criteria used to define the sensitivity of a receptor and magnitude of impact is provided in Table 2.6 and Table 2.7 below. These criteria are used as a guide only and the specific criteria for each technical assessment will be presented within each chapter.

Table 2.6: Description of the Sensitivity of an Environmental Receptor

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

2.49 Descriptions of the magnitude of impact are provided in Table 2.7 below.

Table 2.7: Description of the Magnitude of an Impact

Magnitude of Impact	Impact Type	Typical criteria descriptors
Very Large	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements

Magnitude of Impact	Impact Type	Typical criteria descriptors
	Beneficial	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality
Large	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality
Medium	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring
Small	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements
No change	n/a	No loss or alteration of characteristics, features or elements; no observable in either direction.

Identification of Significant Effects

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

- Major Beneficial;

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

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

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

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

Mitigation

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

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

2.54 Where environmental mitigation measures have not been integrated into the proposals through design, it is expected that all other requisite measures or 'further mitigation' will be secured by appropriate planning conditions or obligations. Descriptions of these mitigation measures are included in the appropriate technical chapters and summarised in Chapter 11: Summary of Mitigation and Residual Effects.

Limitations and Assumptions

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

2.56 As explained earlier, the planning application which is subject of this ES is part of a wider "development project" for EIA purposes. Three further planning applications will follow this one, during which time the detail of the wider development project will become clearer. Each of the subsequent applications will be accompanied by an ES and as the detail emerges the assessments in those ESs will consequently be more detailed. However, that is not possible at this stage, and so in producing this ES, certain assumptions have been made in respect of Applications 2, 3, 4 and the wider SRF, for the purposes of undertaking the assessment for those topics that are known to be likely to have significant effects in relation to the proposed development (Application 1). There is considered to be insufficient information available in relation to the wider development project and wider SRF to make a meaningful assessment in respect of those topics that are considered non-significant effects of the proposed development (as referred to in Table 2.1). However, each subsequent application will be scoped and an ES submitted for each of those which will fully assess the appropriate topics which are identified for those as likely to give rise to significant impacts. As such, all planning applications for the wider development project will have been robustly and rigorously assessed for EIA purposes, and whatever is granted planning permission will have been assessed.

3. Site Description

Introduction

3.1 This chapter provides a description of the site including a description of the location, a brief site history and a description of its surrounding area and context. It also summarises the potential environmental constraints to the redevelopment of the site.

Site Location

3.2 The site is irregular in shape and occupies approximately 2.83 ha of land to the north of Victoria Station, Manchester, within the ward of Cheetham. The Site Location Plan is presented at **Figure 1.1**.

3.3 The site predominantly comprises areas of post-industrial greenfield land and areas of hardstanding. Creamline Dairies is located in the north west of the site. It consists of a large industrial building with substantial hard standing with access off Red Bank. Creamline Dairies is proposed for demolition within this application. Further hardstanding is present within the north east of the site. The remaining area of the site is occupied by dense tree coverage and shrub vegetation.

3.4 The site is bound by:

- Industrial uses to the south, with the railway line and River Irk beyond this.
- Industrial uses to the east
- Red Bank road and Honey Street immediately north of the site boundary, and commercial, densely urbanised areas beyond.
- Commercial and densely urbanised areas to the west. Red Bank and Honey Street are adjacent along periphery of site boundary.

3.5 The land on which Creamline Dairies is located in the north west of the site is relatively flat. There is a retaining wall immediately adjacent along the southern edge of the Creamline Dairies area. The ground levels beyond this retaining wall are approximately 5m lower than the area of the site in which the Creamline Dairies building is situated. The remainder of the site is relatively low-lying and is relative to the ground level in which the River Irk is situated to the immediate south of the site boundary.

3.6 Figure 3.1 below shows the enabling works application site boundary (shown in red) in the context of the wider Victoria North site.

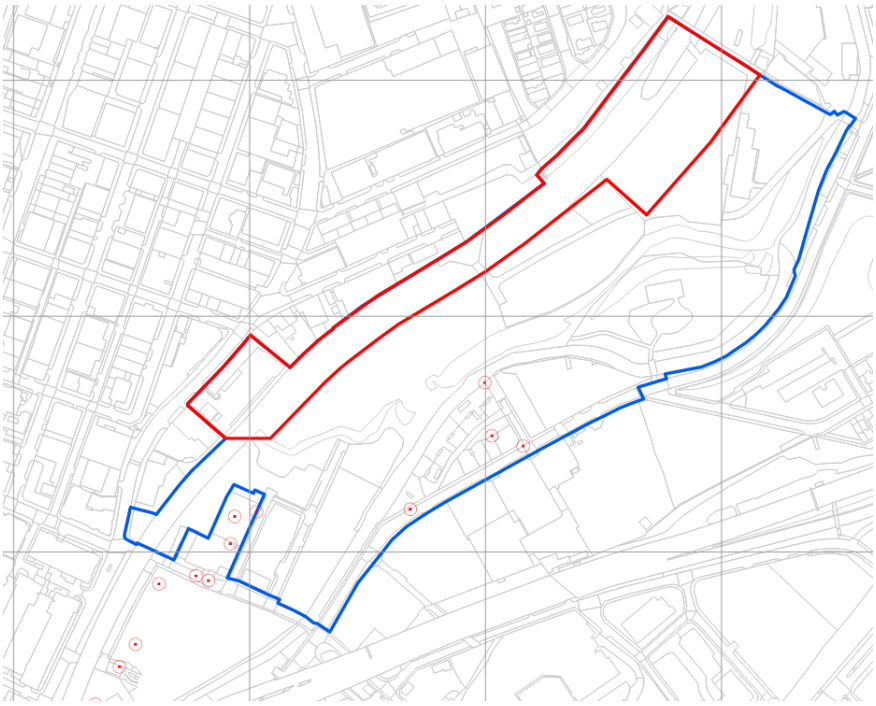


Figure 3.1 – Site location

Site Description

Site History

3.7 The site and its immediate vicinity is affected by the legacy of more than 150 years of industrial uses and Victorian / pre-Victorian infrastructure. Historically the area was used as railway sidings, following the route of the former Prestwich Branch of the Lancashire and Yorkshire Railway which started at Victoria Station to the south west before heading north west. This is now disused and forms a plateau above the River Irk valley to the south east.

Site and Surrounding Context

Ecology and Trees

3.8 One Special Protection Area (SPA) was found within the search radius; Rochdale Canal SAC. The Rochdale Canal SAC, designated for its significant population of Annex II species: floating water-plantain, is located 4.3km northwest of the site.

3.9 One Site of Special Scientific Interest (SSSI) was found within the search radius; Rochdale Canal SSSI. The Rochdale Canal SSSI, designated for its diverse assemblage of aquatic flora indicating high water quality, is located 4.3km northeast of the site. Although the site falls within the SSSI Risk Impact Zone for Rochdale SSSI, the parameters of the proposed development do not meet the risk IRZ threshold.

3.10 There are no statutory locally ecologically designated sites within 2km of the site. There are, however, four non-statutory Sites of Biological Importance (SBIs) lie within 2km, including:

- Rochdale Canal: Scott's Lane to Ducie Street Basin SBI located 1.1km south of the site.
- Ashton Canal (West) SBI located 1.5km south of the site.
- Reservoirs at Harpurhey SBI located 1.7km north east of the site.
- River Irwell SBI located 2km south west of the site.

3.11 The majority of the site itself is dominated by semi-natural broad-leaved woodland. The woodland is predominantly self-seeded silver birch Betula pendula regeneration. The age and height structure of the woodland is homogenous and based on the diameter of the tree trunks the majority of the tree stock is approximately 20 years old. Goat willow Salix caprea and buddleia Buddleja davidii are occasionally noted through the woodland. This young woodland has limited understorey, with areas of bare ground or large stands of Himalayan balsam present. Although classifying as semi-natural woodland in terms of habitat code, it does not meet the necessary criteria to be classified as S41 NERC habitat of principal importance. However, the woodland does meet the 'Lowland Broadleaved Woodland Greater Manchester BAP' with the semi-natural secondary woods criteria, where woodland has grown up after the land has been used for industry.

3.12 The remainder of the site is either hardstanding with ephemeral vegetation growth on previously developed land, or buildings associated with Creamline Dairies. Stands of buddleia are scattered throughout the areas of hardstanding. Himalayan balsam dominates the understorey of the semi-natural woodland. No protected plant species (Schedule 8 of the Wildlife and Countryside Act 1981 as amended), were identified within the site or immediately adjacent.

Townscape and Visual

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

Landscape Character

3.14 The site is located within the National Landscape Character Area 55: Manchester Conurbation. The Character Area covers a number of settlements primarily within the M60 ring road. The conurbation is centred on low hills,

crossed by several river valleys that thread through the urban fabric. River valleys form important corridors of semi-natural habitats and natural greenspace – with open grassland, woodland and wetland – linking urban centres with open countryside. The industrial heritage now provides sites of wildlife interest in the urban environment. The history of the landscape is evident through the legacy of industrial archaeology, particularly relating to the textile industry.

3.15 The character of the site reflects the wider landscape character as defined at the national level.

Townscape Character

3.16 The River Irk to the south of the site is physically detached from the site but forms a key feature within the site context. The river, in conjunction with the complex ground levels, forms a barrier to north-south connections between the site and the city centre fringes to the south. The railway line is located south of the river and forms an additional barrier to north-south movement. To the north, the industrial heritage of the river corridor remains evident, with large floorplate industrial/commercial buildings located along the site's northern edge. Buildings to the north of the site are predominantly low in height, at 1-2 storeys.

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

Drainage and Flood Risk

3.18 The site sits within the River Irk catchment and the river is located 60-100m south of the site boundary. The river flows in a south-westerly direction towards the confluence with the River Irwell, located approximately 900m downstream.

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

3.20 The site sits entirely in Flood Zone 1 as defined by the Environment Agency Flood Map for Planning. This is classified to be at 'Low Risk' of fluvial flooding. This comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).

3.21 The EA surface water flooding maps show that there are localised areas of low, medium, and high risk for surface water flooding. The surface flooding follows the alignment of the plateau with the depth of the flooding being less than 300mm for most of the site.

3.22 Within the site there are localised areas of low, medium and high risk for surface water flooding. There are no existing sewers in the area, so surface water flooding is assumed to occur due to localised low points. Although most of the site is brownfield, initial geotechnical investigation indicates that infiltration varies due to large areas of made ground beneath the site, which may also contribute to surface water flooding. The site sits within the Conurbation Core Critical Drainage Area (CDA) as identified in the Manchester, Salford and Trafford SFRA. This means that the area is particularly sensitive to an increase in surface water runoff due to new development and is likely associated with historic flooding in the area. This could be a result of the capacity of the existing sewer network or other watercourses including culverts.

Ground Conditions

3.23 Glacial till deposits are present underlying made ground in areas north of the River Irk. Glacial till is anticipated to be present below much of the site. Limited alluvial deposits have been identified associated with the river.

3.24 Bedrock underlying most of the site consists of sandstones of the Chester Formation, with older Permian strata (Manchester Marl and Collyhurst Sandstone Formations) sub-cropping below superficial deposits in the north eastern part of the site.

3.25 The main aquifers beneath the site are the Chester and Collyhurst Formations (Principal Aquifers) with the Manchester Marl a Secondary B Aquifer.

Climate Change

3.26 The UK's most recent final GHG emissions national statistics (for 2019)[1], set out the total UK GHG emissions for 2019 at 454.8 million tonnes of carbon dioxide equivalents ($MtCO_{2e}$). UK total emissions are showing a general downward trend, with 2019 UK total GHG emissions down 2.8% from 468.1 $MtCO_{2e}$ in 2018. In 2019, the largest emitting sector was transport, accounting for 27% of the UK GHG emissions.

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

3.28 The proposed development is located within the North-West and North Wales climate district (Met Office, 2020). Table 3.1 describes the baseline climate data for the region[3].

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

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

Parameter	North England Regional Climate Observations
Temperature	Mean annual temperatures over the region depend very much on altitude and, to some extent, proximity to the coast.
Rainfall	The exposure of NW England to westerly maritime air masses and the presence of extensive areas of high ground mean that the region has some of the wettest places in the UK. Manchester averages 830mm. Whilst rainfall is generally well distributed through the year, there is a seasonal pattern. The driest season is spring whilst there is an autumn/winter maximum, when the Atlantic depressions are at their most vigorous.
Wind	NW England is among the most exposed parts of the UK as it is close to the Atlantic and contains large upland areas. The region experiences 5-10 gales per year, defined as days that the wind reaches a mean speed greater than 34 knots over ten consecutive minutes.
Sunshine	Sunshine duration is controlled by the length of day and cloudiness. It decreases with increasing altitude, latitude and distance from the coast. Average annual sunshine hours over NW England range from 1200 hours to 1500 hours.
Ground frost	Ground frost refers to a temperature below 0oC measured on a grass surface. In NW England ground frost occurs on average between 75 and 150 days per year.
Snowfall	The occurrence of snow is closely linked to temperature. Over most of the area, snowfall is normally confined to the months from November to April, but upland areas may have occasional falls in October and May. On average, the number of days with snow falling is about 20 days in lower-lying parts of the mainland but as much as 50 days over the highest ground.

Accessibility

3.29 The site is within a ten-minute walk of the City Centre.

3.30 Cheetham Hill Road to the west of the site has four bus routes directly into the City Centre. The closest bus stop to the site is St Chad's Church, located 150m west.

3.31 Manchester Victoria is the nearest train station and is located approximately 590m south west of the site. The station predominantly provides local and regional mainline services to the north of England.

3.32 Metrolink services are also available in the area, the closest of which is located at Victoria Station 490m south of the site.

3.33 Transport for Greater Manchester (TfGM) provide a rating for a location's accessibility to public transport known as a Greater Manchester Accessibility Level (GMAL). Each area is graded between 1 and 8, where a score of 1 is very low access to public transport, and 8 is very high access to public transport. According to TfGM's GMAL dataset[4] the site has a GMAL of 5 indicating a moderate-high level of accessibility.

Heritage

3.34 There are no designated heritage assets (Scheduled Monuments, Grade I, II* and II Listed Buildings, Conservation Areas, Registered Parks and Gardens or Registered Battlefields) within the site boundary. There are 16 grade II listed buildings and 1 Grade II* listed building within 500m radius of the site, however many of these assets have no intervisibility with the subject site given the local topography and the intervening built form.

3.35 The site is not located within a Conservation Area nor are there any Conservation Areas in the immediate vicinity of the site. Shudehill Conservation Area is located approximately 544m southwest of the site, but there is no intervisibility between the site and this Conservation Area due to the distance between the two, local topography and intervening built form.

Air Quality

3.36 The site does not lie within the GMCA AQMA. This AQMA covers the city centre and its arterial routes. At its closest this is 150m west of the site adjacent to Cheetham Hill Road.

Noise

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

Summary

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

- The site is not located in close proximity to any statutory ecological designations.
- The majority of the site itself is dominated by semi-natural broad-leaved woodland (self-seeded silver birch) Betula pendula regeneration.

[4] https://data.gov.uk/dataset/d9dfbf0a-3cd7-4b12-a39f-0ec717423ee4/gm-accessibility-levels-gmal

- The site's character is centred on the historic industrial legacy, not least by the presence of redundant areas of hard standing and areas of previous demolition.
- The site is largely devoid of built development and forms a significant 'gap' in the urban grain of the surrounding area.
- The site is in Flood Zone 1.
- Flood risk from all sources, other than surface water, is considered to be low.
- Principal and Secondary B aquifers lie beneath the site.
- There are no designated heritage assets within the site boundary, and those within close vicinity of the site have no intervisibility with the site.
- The site is not located within a Conservation Area and there are none within the immediate vicinity of the site.
- The site is located in an accessible location in Manchester City Centre with a GMAL rating of 5.
- The site is located within the Greater Manchester AQMA.
- The noise climate on site is dominated by traffic noise from the surrounding road network as well as train lines associated with nearby Victoria Station.

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

4. Alternatives

Introduction

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

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

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

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

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

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

No Development Option

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

4.7 In the absence of the proposed development, it is not expected that there would be any significant changes to the baseline conditions. There is no indication that in the absence of development the use and therefore management

of the site would alter and therefore it is considered that the environmental conditions of the site would remain at its existing level as described in Chapter 3: Site Description.

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

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

Ecology

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

Townscape and Visual

4.11 In the absence of the proposed development, there would be no change to the site character and no temporary disruption to localised views. However, by association, there would also not be the opportunity for redevelopment of the site in the context of Red Bank Neighbourhood and no potential for beneficial townscape and visual impact that are expected to occur as a result.

Flood Risk and Drainage

4.12 In the absence of the proposed development, there would be no change to the drainage patterns or risk of negative impact on water quality. By association, in respect of the wider development project, there would be no potential improvement in water quality of the River Irk or surface water flooding risk.

Ground Conditions

4.13 In the absence of the proposed development, there would be no change to the ground conditions on site and no risk of potential for impact on any identified sensitive receptors, both relating to the construction and use of this proposed development and in relation to the wider development project.

Climate Change

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

Design Evolution

4.15 The Applicant and the design team for the full application have regularly liaised with MCC during a series of pre-application meetings and correspondence in order to ensure that the evolving design meets the aspirations for the site.

4.16 The objective of the proposed development is to create appropriate area to facilitate the construction of a temporary haul road which will enable the associated works, to be brought forward through future applications (Applications 2-4, see Chapter 1 for more detail) and, ultimately, the Red Bank Neighbourhood. The design evolution of the proposed development has centred on the exact alignment of the temporary haul road, the access from Red Bank, and how to minimise the area of trees to be removed in relation to the advance enabling works.

5. The Proposed Development

Introduction

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

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

5.2 This chapter and the accompanying figures define the application area, the study area, the maximum quantum of development proposed, the means of access and describes the Proposed Development in line with Schedule 4 of the EIA Regulations as far as possible considering the non-built development nature of the application. A description of the broad construction methods and processes is presented towards the end of this chapter.

5.3 This ES is prepared in respect of the HIF Advance Enabling Works (the proposed development) (Application 1). Although the focus of this ES is to assess the proposed development, to ensure a robust worst-case assessment, it includes for an In-Combination Assessment (ICA) of the other schemes related to the Red Bank Neighbourhood, as well as the wider SRF. Three further planning applications will follow this one for the wider HIF works, flood alleviation works and the Redbank neighbourhood, during which time the detail of the wider development project will become clearer. Each of the subsequent applications will be accompanied by an ES and as the detail emerges the assessments in those ESs will consequently be more detailed. As the detail for applications 2-4 are still being worked up the assessment of the wider development within this ES is necessarily high level.

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

Description of the Development

5.5 This planning application seeks full planning permission for:

"City Council Development for enabling works including tree and vegetation removal, creation of a temporary haul road and demolition of the Creamline Dairies buildings in association with the future delivery of the new Red Bank Neighbourhood."

5.6 To confirm, the key elements of the proposed development sought for approval as part of the planning application are as follows:

- The demolition of Creamline Dairies.
- Tree and shrub clearance to facilitate the construction of a temporary haul road.
- The construction of the temporary haul road.

Detailed Design Parameters

5.7 As detailed in **Chapter 2: Approach**, the assessment of effects will be undertaken on the basis of the quantum of development and the planning application drawings. These plans, along with the written description of the proposed enabling works, allow the likely significant effects of the proposals to be fully assessed and appropriate mitigation secured. The quantum of development which has been used to inform the assessment of likely significant environmental effects is presented in Table 5.1 below.

Table 5.1 Quantum of Development

Proposals	Quantum
Site Area	2.83 ha
Area of Demolition	0.34 ha
Area of Tree Clearance	1.05 ha
Length of Haul Road	750m

Proposals	Quantum
Area of Haul Road	0.9 ha
Estimated quantum of material generated during demolition. To be recycled on site	684m^3 of concrete 250m^3 mixed hardcore

5.8 As the application is being applied for in detail a set of detailed plans are submitted for approval. These plans provide information on the likely form and layout of development and allow informed assumptions to be made within the EIA.

Table 5.2 Detailed plans submitted for approval

Detailed Plan	Purpose	Drawing No. / Reference	Figure reference
Enabling Works Site Location Plan	Displays location of site in the context of the surrounding area	VNIF-ARP-00-YYY-DR-G-0005	**Figure 1.1**
Demolition Plan	Defines the proposed demolition on site	VNIF-ARP-00-YYY-DR-CS-0001 Rev P01.04	**Figure 5.1**
Proposed Haul Road Alignment	Indicates proposed haul road placement	VNIF-ARP-00-YYY-DR-CH-1001	**Figure 5.2**

5.9 The following sections describe the key elements of the proposed development sought for approval as part of the planning application:

The Demolition of Creamline Dairies

5.10 The proposed development includes the demolition of Creamline Dairies located in the north west of the site. The Demolition Plan outlines the location of the structures to be demolished (see **Figure 5.1**). As noted in Table 5.1, the expected demolition area is 0.34 ha.

5.11 Existing access via Red Bank road is proposed to be used for all plant deliveries and the removal of materials.

5.12 All structures will be demolished in accordance with best-practice principles, including BS: 6187: 2011. The methodology and mitigation of adverse effects through the adoption of best-practice demolition principles is outlined in the Outline Methodology Creamline Demolition Plan (**Appendix 5.1**).

5.13 A range of ecological surveys have been undertaken and no evidence of protected species has been noted. During the induction all team members will be instructed to be mindful for the presence of bats. If suspected bat droppings are found or new roosts identified all work will stop immediately and advice sought from a professional ecologist.

5.14 Best-practice principles related to vibration, noise and dust will be followed, and mitigation measures will be implemented in accordance with the management plan

5.15 An estimated 684m^3 of concrete and 250m^3 of hardcore is to be generated from the demolition works. All of this material is proposed to be retained on site for reprocessing and reuse within the Initial Development Area as defined in Chapter 1. Tree groups comprising approximately 1.05ha are proposed to be removed. The trees will be felled using a 360degree excavator and an articulatable dump truck used to move the felled trees. The felled trees will be transported to a secure zone formed by tree surgeons for chipping. Chipped material will be stored for reuse. Where deemed appropriate, trees will be stripped of their branches and sectioned for reuse within the scheme without being chipped.

Construction of Temporary Haul Road

5.16 The proposed alignment of the haul road is shown on **Figure 5.2**.

5.17 As noted in Table 5.1, the length and area of the haul road is expected to be 750m in length (equivalent to an area of 0.9 ha) and will be constructed along the alignment of the old railway sidings.

5.18 The haul road is to be between approximately 5m and 10m from the boundary of the site and will be approximately 10m in width. To provide access from the existing public highway to the relatively low-lying Red Bank area of the Site, the proposed haul road will slope downward to the south east.

5.19 Access to the site is proposed via the P&P bridge. The plant for the operation will consist of:

- 360-degree excavators up to 30 tonnes in weight.
- Articulated dump trucks.
- Compaction equipment including rollers and plate compactors.

5.20 Prior to the commencement of the haul road works, approximately 3,270m^3 of imported capping material will be collected and stockpiled. This will be stored on site to ensure that, upon commencement, there is sufficient material available to cover the formation works as they proceed and prevent delay.

5.21 The excavation works will begin at the north west of the site from the current Creamline Dairies area, working east/south eastwards. As works proceed, approximately 750m^3 of tarmac will be imported for use in the road construction. The excavated materials will be transported to the onsite stockpile for its reuse later.

5.22 The final access from Red Bank road is proposed to commence upon the completion of the demolition of Creamline Dairies. After the demolition of the Creamline Dairies buildings and removal of existing paving across the site, a cutting will be excavated across the former Creamline Dairies site. This cutting will reach a maximum depth of c. 2.5m at the boundary between the Creamline Dairies site and the Red Bank area, at which point, the cutting will encounter the rear face of the existing retaining wall before transitioning onto a c. 2.5m high embankment within the Red Bank area. To enable the haul road to enter the Red Bank area, a c. 30m section of the existing retaining wall will need to be dismantled.

5.23 It is intended that elements of the haul road construction will be suitable for inclusion as part of the proposed permanent road system that will ultimately serve the developed site (which is to be addressed via a subsequent planning application, Application 2.

5.24 Set out in the figures below is a summary of the haul road construction, site access and welfare arrangements.

Figure 5.3 Haul Road Construction




Al Murtaza Trust
Celestial Church Of Christ
Rock Of God Parish
River Irk
St Catherine's
River Irk
Excavator
Articulated dump truck
Roller/compactor
As dug stock pile
Imported stone stock pile


Al Murtaza Trust
Celestial Church Of Christ
Rock Of God Parish
River Irk
St Catherine's
River Irk
Excavator
Articulated dump truck
Roller/compactor
As dug stock pile
Imported stone stock pile



Programme

5.25 An indicative programme for the works (subject to planning approval) is provided below:

- Mobilisation – January 2022.
- Site establishment – January 2022.
- Demolition of Creamline Dairies – February 2022.
- Site/vegetation clearance – February to April 2022.
- Treatment of invasive species – January to June 2022.
- Construction of the temporary haul road – March to June 2022.

Summary

5.26 This chapter has presented a description of the proposed enabling works which is supported by a set of detailed proposal drawings which together forms the basis for the assessments described in this ES.

5.27 The potential environmental impacts of the enabling works have been considered and all controls or measures to mitigate these effects are in line with current environmental standards and legislative requirements. Further detail regarding the impacts have been presented in the technical chapters, where applicable.

5.28 The Applicant will develop and implement a CEMP for the site prior to construction, as well as a range of additional management plans, thereby ensuring that any potential environmental effects are within suitable standards or mitigated in accordance with measures identified through the EIA process, where no standards exist.

6. Ecology and Trees

Introduction

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

6.2 A number of associated developments are proposed in relation to the Red Bank Neighbourhood project, including:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1').
- HIF Infrastructure Works (referred to hereafter as 'Application 2').
- HIF Flood Defence Works (referred to hereafter as 'Application 3').
- Red Bank Neighbourhood (referred to hereafter as 'Application 4').

6.3 This chapter assesses the ecological and nature conservation effects of the HIF Advance Enabling Works (including construction of a temporary haul road) (hereafter referred to as the 'proposed development'). See Figures 1.1 and 5.1-5.3 for information relating to this proposed development.

6.4 The chapter also presents a high-level assessment of the ecological and nature conservation effects of the proposed development combined with the wider development project (inclusive of Applications 2, 3 and 4), and also of the wider SRF for which it is a part. See Chapter 2 and supporting Figures 2.1 to 2.4b for information relating to the available information in respect of the wider development project. The chapter describes the methods used to assess the likely significant effects, the baseline conditions currently existing at the site and surroundings, the potential direct and indirect effects of the development arising in terms of ecology and nature conservation, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects in relation to ecology and nature conservation. It has been written by The Environment Partnership (TEP).

Planning Policy Context

6.5 This section identifies the planning policies and legislation of relevance to the ecological impact assessment of the proposed development.

International Legislation and Agreements

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

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

National Legislation

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

- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 conveys protection to certain habitats and species[1].
- The Wildlife & Countryside Act 1981 (as amended) conveys protection to certain native animals and plants and controls the release of certain non-native species[2].
- The Countryside & Rights of Way Act 2000 extends the protection of certain species in the Wildlife & Countryside Act to include reckless acts (i.e. not just intentional acts). Part III requires that government departments have regard for the conservation of biodiversity, something that is extended by the NERC Act 2006[3].
- The Natural Environment and Rural Communities (NERC) Act 2006 requires planning authorities to consider impacts on "species of principal importance for the conservation of biodiversity" when determining planning applications[4]. Section 41 (S41) provides for the establishment of a list of habitats and species considered to be of "principal importance for the purposes of conserving biodiversity" and for which biodiversity conservation should be prioritised, irrespective of whether they are covered by other legislation.

1 Conservation of Habitats and Species Regulations 2010 (as amended). London: The Stationery Office.
[2] Wildlife & Countryside Act 1981 (as amended). London: The Stationery Office.
[3] Countryside & Rights of Way Act 2000. London: The Stationery Office.
[4] Natural Environment and Rural Communities (NERC) Act 2006. London: The Stationery Office.

- The Hedgerows Regulations 1997 provides protection to 'important' hedgerows from being uprooted or destroyed. Importance is determined based on criteria covering adjacent land use, age, historic value and ecological value[5].
- The Protection of Badgers Act 1992 provides protection of badgers from killing, injury and certain acts of cruelty and protection of setts from damage, obstruction or destruction[6].

National Planning Policy Framework[7]

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

6.9 The NPPF Chapter 15: Conserving and Enhancing the Natural Environment (paragraphs 174 – 182) identifies the importance the Government places on development enhancing the natural environment by protecting and enhancing valued landscapes, geological conservation interests and soils. It recognises the wider benefits of ecosystems beyond their inherent value to wildlife. The NPPF emphasises the protection and enhancement of valued landscapes, sites of biodiversity or geological value. It also emphasises the principle that new development should minimise impacts and provide net gains for biodiversity, particularly by establishing coherent ecological networks that are more resilient to current and future pressures.

6.10 Other national policy which supports the NPPF include:

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

Local Planning Policy

6.11 Local planning policy of relevance to nature conservation generally seeks to avoid effects on designated sites and protected habitats and species, whilst also seeking to ensure maintenance and creation of wildlife networks and no net loss of biodiversity. Within Manchester's Local Development Framework Core Strategy Development Plan (adopted 11th July 2012) there are two core local policies of relevance to the proposed development site:

- Policy EN9 Green Infrastructure – maintaining and enhancing existing green infrastructure in terms of its quantity, quality and multiple functions.

[5] Hedgerows Regulations 1997. London: The Stationery Office.
[6] Protection of Badgers Act 1992. London: The Stationery Office.
[7] Department for Communities and Local Government (2021) National Planning Policy Framework, DCLG, London
[8] Office of the Deputy Prime Minister (Circular 06/2005): Biodiversity and Geological Conservation – Statutory Obligations and their Impacts. London: The Stationery Office.
[9] Lawton, J. (2010). Making Space for Nature: A review of England's wildlife sites and ecological network. DEFRA, London.
[10] HM Government (2011) The Natural Choice: Securing the Value of Nature. London: The Stationery Office.
[11] DEFRA (2011). Biodiversity 2020: A strategy for England's wildlife and ecosystem services. London: The Stationery Office

- Policy EN15 Biodiversity and Geological Conservation – maintaining and enhancing sites of biodiversity and geological value throughout the City. Particular consideration within the policy is given to sites with international or national designations, local designations (SBIs or LNRs), protected and priority species, site of geological importance and existing tree/woodland cover.

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

6.12 The SRF is now a material consideration in the determination of all planning applications relevant to the study area. Whilst it does not form part of the Development Plan, it has been prepared to be consistent with the policies of the Council's adopted Development Plan.

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

Other Relevant Policy, Standards and Guidance

6.14 The Greater Manchester Biodiversity Action Plan[12] (GMBAP) is currently managed by Greater Manchester Ecology Unit. This aim of the GMBAP is to conserve, protect and enhance biological diversity in Greater Manchester. The habitat and species action plans of key relevance to this proposal are:

- Native woodlands.
- Urban managed greenspace.
- Bats.

6.15 The Birds of Conservation Concern 4 (BoCC) report (RSPB, 2015) splits UK birds into three categories of conservation importance – Red, Amber and Green. Red is the highest conservation priority, and includes species that are globally threatened, or have experienced historical UK population decline, a rapid decline in UK breeding population, or a severe contraction of UK breeding range. Amber is the next most critical group, followed by Green, which includes birds whose populations are at least risk.

Assessment Methodology and Significance Criteria

Overview

6.16 The assessment within this Chapter has been carried out with due consideration of the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines (2018) for Ecological Impact Assessment (EcIA). The guidelines provide a robust framework for EcIA, which is informed by the interpretation of contextual information and professional judgement. A narrative description of each ecological feature and the predicted

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

effects of the proposed development are provided to allow the decision-maker to reach a more fully informed decision.

6.17 The proposed development site is located within Cheetham Hill, Manchester. The site is located in an urban setting and the wider landscape comprises mainly of commercial/industrial development. The site is bounded to the north by Red Bank and includes an area known as 'Creamline Dairies'. To the south of the site is an area of woodland known as St Catherine's wood and beyond this is the River Irk.

6.18 This assessment (for Application 1) covers advanced enabling works to facilitate future development (Applications 2, 3 and 4). As mentioned in the Introduction to this chapter, a high-level assessment will be done of the wider development project and the SRF as well.

6.19 The assessment scenarios in respect of this ES are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
    - Scenario 1a - Assessment of the impacts relating to the proposed enabling works only
    - Scenario 1b - Assessment of the impacts relating to the enabling works, plus impacts associated with Application 2, 3, and 4.
    - Scenario 1c - Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF.
- Assessment Stage 2 - Completed Development and Operational Phase:
    - Scenario 2a - Assessment of the impacts relating to the enabling works only
    - Scenario 2b Assessment of the impacts relating to the proposed development, plus impacts associated with Application 2, 3, and 4.
    - Assessment 2c - Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF.

Study Area

6.20 The study area of this EcIA reflects the 'zones of influence' of the proposed development relevant to the identified ecological receptors. To identify the zones of influence, consideration was given to potential direct and indirect impacts that may occur during the lifespan of the project. Consideration was also given to conservation objectives of designated sites. The study area for each ecological feature was determined accordingly, as set out in Baseline Survey Methods.

Baseline Survey Methods

Desk Based Assessment

6.21 A desk-based assessment was undertaken in September 2021 which comprised the gathering of records of protected species, habitats and protected sites from the local biological record centres from Greater Manchester Ecology Unit (GMEU). Existing records/information was also gathered from free online resources. This included obtaining information on any international wildlife designation within 10km, national wildlife sites within 5km and any local designations within 2km of the site, along with records of protected or notable species within 2km. Species records can provide a useful indication of the species present within the search area, although the absence of a given species from the dataset cannot be taken to represent actual absence. An ecology technical report for the wider Northern Gateway site produced by Paul Chester & Associates in 2019 (Report Ref: PCAJ168) was also reviewed; survey results specifically for the breeding bird and bat activity surveys was reviewed and used as part of this assessment.

Extended Phase 1 Habitat Survey

6.22 An extended Phase 1 habitat survey of land within the site and the immediate surrounds was undertaken in accordance with the standard method set out in the Handbook for Phase 1 habitat survey JNCC (2010)[13] and the CIEEM Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017)[14]. The survey included habitat assessments for protected and Section 41 (S41) priority species. The Phase 1 habitat survey was undertaken on the 22nd and 29th March 2021. The survey was undertaken by TEP ecologists Steph Davies and Damian Young, qualified as Level 3 and 4 respectively under the Field Identification Skills Certificate scheme (FISC).

UKHAB Condition Assessment

6.23 Alongside the Phase 1 Habitat Survey a UKHAB condition assessment of the pre-development habitats was also undertaken by TEP ecologist Damian Young. The habitat condition assessment was originally undertaken using the guidance presented in Biodiversity Metric 2.0 - Technical Supplement[15]. Following release of Biodiversity Metric 3.0 in July 2021, a desk-based exercise using existing field notes and photographic evidence, was undertaken to update the condition assessment based on the updated criteria presented in the Biodiversity Metric 3.0 - Technical Supplement[16]. Due to the relatively simple nature of the habitats within the sites, there are not considered to be any limitations with this translation to the Biodiversity Metric 3.0 condition assessment.

Tree Survey

6.24 An arboricultural survey was undertaken by TEP Arborist Angus Blankenstein on the 29th March 2021 in accordance with British Standard BS 5837:2012 Trees in Relation to Design, Demolition and Construction -

[13] JNCC (2010). Handbook for Phase 1 habitat survey – a technique for environmental audit. Peterborough, JNCC.
[14] CIEEM (2017) Guidelines for Preliminary Ecological Appraisal. Chartered Institute of Ecology and Environmental Management
[15] Ian Crosher , Susannah Gold , Max Heaver , Matt Heydon , Lauren Moore , Stephen Panks , Sarah Scott, Dave Stone & Nick White. 2019. The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value: technical supplement (Beta version, July 2019). Natural England
[16] Stephen Panks A, Nick White A, Amanda Newsome A, Jack Potter A, Matt Heydon A, Edward Mayhew A, Maria Alvarez A, Trudy Russell A, Sarah J. Scott B, Max Heaver C, Sarah H. Scott C, Jo Treweek D, Bill Butcher E and Dave Stone A 2021. Biodiversity metric 3.0: Auditing and accounting for biodiversity – Technical Supplement. Natural England.

Recommendations. A schedule of all trees and tree groups including data on species, condition, age, management recommendations and BS 5837:2012 quality categories were compiled during the survey. A summary of the quality criteria for each category is provided in Table 6.1, further details can be found in the Arboricultural Impact Assessment (AIA) provided at **Appendix 6.4.**

Table 6.1: *Summary of BS5837:2021 Tree Quality Categorisation Criteria*

Tree Category	Description
Category A	Trees of high value including those that are particularly good examples of their species and/or those that have visual importance or significant conservation or other value.
Category B	Trees of moderate value including those that do not qualify as Category A due to impaired condition and/or those that collectively have higher value than they would as individuals; also trees with material conservation or other value.
Category C	Trees of low value including those with very limited merit or impaired condition; trees offering transient or temporary landscape benefits.
Category U	Trees with irremediable defects and anticipated early loss due to collapse; dead trees or those in immediate decline and those with infectious pathogens that threaten other trees.

6.25 In addition, there are three subcategories which have been applied identifying the form taken by the value of each tree:

- 1 Mainly arboricultural values.
- 2 Mainly landscape values.
- 3 Mainly cultural values, including conservation.

Bat Surveys

Ground Based Bat Tree Assessment

6.26 A daytime ground-based assessment of trees to identify any features of potential value for roosting bats was undertaken on 22nd and 29th March 2021, by licensed bat surveyor Steph Davies (2020-44415-CLS-CLS). This involved searching trees with close focusing binoculars to look for any evidence of use by bats, such as droppings, staining or scratch marks. Potential roost features, such as holes, cracks, crevices or loose bark were

also identified and noted. Trees were categorised following the ground-based assessment according to the Bat Conservation Trust (BCT) Guidelines 2016[17].

Daytime Building Inspection for Bats

6.27 A daytime external bat inspection of six buildings present within the site boundary (B1-B6), was also undertaken by licensed bat surveyor Steph Davies on the 22nd and 29th March 2021. The daytime assessment was carried out in accordance with the Bat Conservation Trust (BCT) Guidelines 2016. However, a precautionary approach to assessment was taken, as no internal access to the buildings was taken due to health and safety concerns surrounding COVID-19.

Badger Survey

6.28 A badger survey of the site was undertaken on the 22nd and 29th March 2021 by TEP ecologist Damian Young. The site was surveyed for evidence of badger setts or other badger activity such as paths, latrines or signs of foraging. Methodologies used and any setts recorded were classified according to published criteria (Harris, Cresswell & Jefferies, 1988)[18]. Where possible and accessible to do so, a 30m buffer zone around the proposed development boundary was also surveyed.

Approach to Ecological Impact Assessment

6.29 The EcIA method follows the current guidance, including the Chartered Institute of Ecology and Environmental Management ('CIEEM') Guidelines for Ecological Impact Assessment (2018)[19].

6.30 In summary, the following procedure was undertaken during this EcIA:

- Establish a robust and accurate ecological baseline for the site.
- Identify and evaluate the nature conservation/biodiversity interest present.
- Identify any potential effects arising from the Proposed Development (construction and operational stages).
- Establish the character and significance of those identified effects.
- Identify mitigation measures to address the significant effects.
- Assess any residual effects and the need for any compensation.
- Assess cumulative effects from other surrounding developments.

Valuing Ecological Features

6.31 The CIEEM EcIA guidance (2018) confirms that detailed assessment of ecological features that are 'widespread, unthreatened and resilient to project impacts' is not necessary. It is therefore necessary to determine which

[17] Bat Conservation Trust (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). Bat Conservation Trust
[18] Harris S., Creswell P., & Jefferies, D J. (1988). Surveying Badgers. The Mammal Society.
[19] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester

ecological features are sufficiently important (and potentially affected by the proposed development). Decisions on relative importance will be outlined in the assessment and consider quality, extent, rarity (including local rarity) and threats or declines of a feature. Relevant statutory and non-statutory designations, legislation and policies will be taken account of, although not all populations of legally protected species show the same rarity, so contextual information is vital. Importance could also relate to the supportive function of the feature (i.e. providing a buffer, connections or opportunities for expansion / climate change resilience of a neighbouring feature).

6.32 The importance of a feature is identified within a defined geographical context, the scales relevant to the proposed development and its ecological features are presented in Table 6.2 below. These criteria provide a starting point for the assessment but specific site conditions together with information on the local and wider context may result in different criteria being applied.

Table 6.2: *Evaluation of Ecological Features*

Level of Importance	Example
International and European	Designated or proposed/candidate Special Areas for Conservation (SAC), Special Protection Areas (SPA) and Ramsar Sites and their qualifying features, some of which may depend on land outside the designation boundaries. Candidate or proposed designations are treated as of equal value to fully designated sites. Under the NPPF, land that is set aside as compensation for adverse effects of development on European Sites should also be regarded as of European value. Species populations or habitat areas (such as those listed in Annex I, II or IV of the Habitats Directive or Annex I of the Birds Directive) of international importance due to relative size, rarity or quality of the feature.
National	Designated or proposed Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Marine Nature Reserves (MNR) and their qualifying features, some of which may depend on land outside the designation boundaries. A viable area of ancient woodland. Species populations or habitat areas of national importance (including legally protected or NERC Act S41 species or habitats) due to relative size, rarity or quality of the feature.
Regional	Designated or proposed Site of Biological Importance (SBI), Local Wildlife Sites (LWS), Sites of Nature Conservation Importance (SNCI) and their qualifying features where they occur within the designation boundaries. 'Important' hedgerows (as described under the Hedgerows Regulations 1997) where these occur as an extensive network. Species populations or habitat areas (including legally protected or NERC Act S41) or

Level of Importance	Example
	Nationally Scarce species or habitats of district or regional importance due to relative size, rarity or quality of the feature. Sites should comfortably exceed Site of Nature Conservation Importance (SNCI) criteria if these exist, but not meet SSSI selection criteria.
Local	Local Nature Reserves (LNR) unless also designated at a higher level, and other nature conservation designations (under local planning policies). Green infrastructure designations where these contribute to local landscape connectivity and/or buffer other ecological features valued at least this geographic scale. Species populations or habitat areas (including legally protected or NERC Act S41 species or habitats) of local importance due to relative size or quality. Features that appreciably enrich the local ecological resource, although these may themselves be common and widespread, such as long-established hedgerows, woodlands and ponds.
Negligible	Habitats of little or no ecological value or function e.g. densely urbanised environments, amenity grassland, hard standing etc.

Characterisation of Effect

6.33 Although not necessary, it is good practice to describe potential impacts without and with mitigation. The proposals may result in multiple potential impacts on an important ecological feature, the CIEEM approach requires that only those that are likely to occur and have significant impacts need be assessed, although a precautionary approach to scoping potential impacts is recommended. The following characteristics are used to describe impacts (not all may be relevant in all cases):

- Positive or negative.
- Extent.
- Magnitude.
- Duration.
- Timing.
- Frequency.
- Reversibility.

Likelihood of Effect

6.34 The following four-point scale has been used to express the degree of confidence in the prediction of impact significance, for residual impacts this scale will also indicate the reliability of mitigation proposals.

- Certain/near certain.
- Probable.
- Possible.
- Extremely unlikely.

Significance Criteria

6.35 Once an impact has been described it is necessary to determine if the effect is 'significant'. In the context of CIEEM EcIA guidance a significant effect is one that either supports or undermines biodiversity conservation objectives for 'important ecological features'. This can include impacts on the structure and function of sites and habitats or the conservation status of habitats and species (i.e. whether or not the impact alters the extent, distribution or abundance of the feature). The decision on significance is made irrespective of the geographical scale of importance of the feature; if an effect is found not to be significant at the level at which the receptor has been valued, it may be significant at a more local level. A significant negative effect is not necessarily one that would make the proposals unacceptable.

Conversion Matrix

6.36 CIEEM guidelines for EcIA moves away from the traditional matrix assessment of significant effects. In these matrices, the significance of an adverse impact (or beneficial result) is calculated as the product of the magnitude of the impact and the value or sensitivity of the nature conservation resources affected. CIEEM guidelines propose an alternative approach which accommodates factors such as the size or conservation status of a species population, habitat quality or the natural geographical range of a species/habitat, for example.

6.37 Although the significance of impacts on ecological features has been determined in accordance with CIEEM Guidelines, in order to allow consistent comparison of the significance of ecological effects with other Chapters, it is proposed to transpose any significant residual effects, derived after following CIEEM guidelines, into the more traditional levels of significance used in EIA based on the character of the remaining effects. Table 6.3 provides a framework for transposing the significance of residual ecological effects.

Table 6.3: *Conversion Matrix*

Characterisation of affects using CIEEM scale of significance	Classification of Impact: CIEEM	Classification of Impact: Traditional
▪ Loss of, permanent damage to or adverse impact on any part of a site of international or national importance;		Major Adverse

Characterisation of affects using CIEEM scale of significance	Classification of Impact: CIEEM	Classification of Impact: Traditional
▪ Loss of a substantial part or key feature of a site of regional importance; ▪ Loss of favourable conservation status (FCS) of a legally protected species; ▪ Loss of or moderate damage to a population of nationally rare or scarce species.	Negative Significant Effect	
▪ Temporary disturbance to a site of international or national importance, but no permanent damage; ▪ Loss of or permanent damage to any part of a site of regional importance; ▪ Loss of a key feature of local importance; ▪ A substantial reduction in the numbers of legally protected species such that there is no loss of FCS but the population is significantly more vulnerable; ▪ Reduction in the amount of habitat available for a nationally rare or scarce species, or species that are notable at a regional or regional level.		Moderate Adverse
▪ Temporary disturbance to a site of regional value, but no permanent damage; ▪ Loss of, or permanent damage to, a feature with some ecological value in a local context but that has no nature conservation designation; ▪ A minor impact on legally protected species but no significant habitat loss or reduction in FCS; ▪ A minor impact on populations of nationally rare or scarce species or species that are notable at a regional or regional level.		Minor Adverse
▪ No impacts on-sites of international, national or regional importance; ▪ Temporary disturbance or damage to a small part of a feature of local importance; ▪ Loss of or damage to land of negligible nature conservation value; ▪ No reduction in the population of legally protected, nationally rare, nationally scarce or notable (regional level) species on the site or its immediate vicinity. ▪	No Significant Effect	Negligible
▪ Beneficial and adverse impacts balance such that resulting impact has no overall affect upon receptor.		Neutral
▪ A small but clear and measurable gain in general wildlife interest, e.g. small-scale new habitats of wildlife value created where none existed before or where the new habitats exceeds in area that habitats lost.	Positive Significant Effect	Minor Beneficial
▪ Larger new scale habitats (e.g. net gains over 1 ha in area) created leading to significant measurable gains in relation to the objectives of biodiversity action plans.		Moderate Beneficial
▪ Major gains in new habitats (net gains of at least 10 ha) of high significance for biodiversity being those habitats, or habitats supporting viable species populations, of national or international importance cited in Annexes I and II of the habitats Directive or Annex I of the Birds Directive.		Major Beneficial

Assumptions/Limitations

Establishing the Baseline

6.38 The assessment is made on the best available data, based on the information that has been gathered from stakeholders, other data sources and the surveys undertaken in 2021. All surveys were completed within appropriate seasons over appropriate periods in accordance with industry standards for the specific survey. Nevertheless, the surveys will only identify habitats present at the site at the time of surveys. Additionally, where the species investigated are mobile they can move into and out of areas over time. For these reasons a precautionary approach has been taken in the prediction of impacts. Where there is any doubt, except where specifically noted, a species is assumed present and an impact is given the higher level of significance. Any limitations to the surveys undertaken are identified within the relevant sections within the Baseline Conditions.

6.39 It is assumed for the purposes of this EcIA that the current land uses adjacent to the site will remain as they are at the time of the ES submission, except in cases where planning permission has already been granted for development. For consented developments, it is assumed that the developments will take place. These have been considered in the cumulative assessment. The potential for changes of land use on adjacent land arising from plan allocations and pending planning applications has also been considered in the cumulative assessment.

Climate Change

6.40 European guidance requires that EcIA considers the effects of projects on climate change and on biodiversity. The European Commission (EC) guidance indicates that impacts which are only likely to be experienced in the next 20 years should be based on current weather patterns or near-future projections if available and relevant. Beyond 20 years, identified potential impacts (associated with operation of the proposed development) may need to consider the projected climate. Climate change has therefore been taken into account in the assessment of operational effects.

Consultation

6.41 Table 6.4 outlines the pre-application consultation currently undertaken with the relevant stakeholders for the proposed development.

Table 6.4: *Consultation*

Consultee	Date and Time	Comments	Actions
Greater Manchester Ecology Unit – Derek Richardson	16/08/21 Initial email sent 12:34. GMEU response 20:56.	Bat Activity - *"We would accept that records of bat activity collected during nocturnal roost surveys of buildings could be used when assessing the site for commuting & foraging bat activity, but we would also give bats the benefit of the doubt and recommend that landscape plans for the site take bats fully into account (e.g. linear planting, sensitive lighting,*	GMEU agreed with approach that bat activity surveys unnecessary in light of the health and safety concerns on this site.

Consultee	Date and Time	Comments	Actions
		planting of value to bats etc)".	
		Other Protected Species Surveys – *"We would accept that surveys for water voles, otters, amphibians and reptiles could be scoped out. We hold no records of these species/groups being recorded on or near the site. However, if there are plans to improve the watercourse for wildlife these plans should make provision for future colonisation by these species, in line with the aspirations of the Local Nature Recovery Strategy"*	GMEU agreed with approach that water voles, otters amphibians and reptile surveys could be scoped out.

Baseline Conditions

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

Nature Conservation Designations

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

Internationally designated sites

6.44 A data search for internationally designated sites was undertaken within 10km of the site. One Special Protection Area (SPA) was found within the search radius; Rochdale Canal SAC. The Rochdale Canal SAC, designated for its significant population of Annex II species: floating water-plantain, is located 4.3km northwest of the site. Due to the distance and significant inner city barriers between the site and the SAC, it is not considered that there are any potential direct or indirect pathways of likely significant effect. Rochdale Canal SAC has therefore been scoped out of further assessment.

Nationally designated sites

6.45 A data search for nationally designated sites was undertaken within 5km of the site. One Site of Special Scientific Interest (SSSI) was found within the search radius; Rochdale Canal SSSI. The Rochdale Canal SSSI, designated for its diverse assemblage of aquatic flora indicating high water quality, is located 4.3km northeast of the site. Due to the distance and significant inner city barriers between the site and the SSSI, it is not considered that there are any potential direct or indirect pathways of likely significant effect.

6.46 Although the site falls within the SSSI Risk Impact Zone for Rochdale SSSI, the parameters of the proposed development do not meet the risk IRZ threshold. Rochdale Canal SSSI has therefore been scoped out of further

assessment. It is also unlikely that the Rochdale Canal SSSI will be impacted by the future planning applications, although a detailed assessment will be made through the EIA process.

Locally designated sites

6.47 There are no statutory locally designated wildlife sites within 2km of the site. There are however four non-statutory Sites of Biological Importance (SBIs) within the search radius, as detailed within Table 6.5.

Table 6.5: *Locally designated sites within 2km*

Name of Designation	Distance from Site	Designation Reason
Rochdale Canal: Scott's Lane to Ducie Street Basin SBI	1.1km south	The site is a canal and therefore classifies as Greater Manchester LBAP habitat. The canal is known to support floating water plantain.
Ashton Canal (West) SBI	1.5km south	The site is a canal and therefore classifies as Greater Manchester LBAP habitat.
Reservoirs at Harpurhey SBI	1.7km northeast	The site supports reedbed, swamp, fen and pond habitat (LBAP habitat).
River Irwell SBI	2km southwest	The site is a canal and therefore classifies as Greater Manchester LBAP habitat. Also notable presence of otter.

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

Habitats and Flora

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

Semi-natural Woodland

6.50 The majority of the site is dominated by semi-natural broad-leaved woodland. The woodland is predominantly self-seeded silver birch Betula pendula regeneration. The age and height structure of the woodland is homogenous and based on the diameter of the tree trunks the majority of the tree stock is approximately 20 years old. Goat willow Salix caprea and buddleia Buddleja davidii are occasionally noted through the woodland.

This young woodland has limited understorey, with areas of bare ground or large stands of Himalayan balsam present. Although classifying as semi-natural woodland in terms of habitat code, it does not meet the necessary criteria to be classified as S41 NERC habitat of principal importance. However, the woodland does meet the 'Lowland Broadleaved Woodland Greater Manchester BAP' with the semi-natural secondary woods criteria, where woodland has grown up after the land has been used for industry.

6.51 The complete findings of the arboricultural surveys, assessment and recommendations are presented in the Arboricultural Impact Assessment (AIA) report (**Appendix 6.4**). The tree survey assessment identifies a total of 1 individual tree and 9 tree groups. Of these 1 has been assessed as Category B, and 8 as Category C in accordance with BS5837:2012. None of the trees within the site are considered to be veteran. Semi-natural woodland has therefore been taken forward in this assessment as an important ecological feature at the Regional Level.

Other Habitats

6.52 The remainder of the site is either hardstanding with ephemeral vegetation growth on previously developed land, or buildings associated with Creamline Dairies. Stands of buddleia are scattered throughout the areas of hardstanding. Detailed building descriptions and photographs are provided within **Appendix 6.3**. Hardstanding with ephemeral vegetation and buildings are both scoped out of further assessment due to the low quality value for biodiversity of both potential features, in line with CIEEM guidance.

Invasive plant species

6.53 Himalayan balsam Impatiens glandulifera is an invasive plant species that is listed under Schedule 9 of the Wildlife and Countryside Act 1981. Himalayan balsam dominates the understorey of the semi-natural woodland. As an invasive plant species Himalayan balsam is not classified as an important ecological feature but mitigation measures in relation to this species will be detailed later in this assessment.

Protected Plant Species

6.54 No protected plant species (Schedule 8 of the Wildlife and Countryside Act 1981 as amended), were identified within the site or immediately adjacent

Fauna

Bats

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

6.56 The ground based tree assessment found that all trees present within the site and within close proximity to the proposed development boundary offered negligible potential for roosting bats. All trees were found to be lacking in suitable features, such as cracks, crevices or dense ivy growth, necessary to support roosting bats.

6.57 Within the southwest of the site there are six buildings; this area was previously known as Creamline Dairies (B1-B6). The location of these six buildings in context of the wider site is shown on **Figure 6.1**. All buildings were subject to an assessment for roosting bat potential, and all were subsequently categorised as offering negligible potential with no suitable features for roosting bats observed.

6.58 No trees or buildings present within the site were found to offer roosting bat potential; therefore roosting bats have been scoped out of further assessment.

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

6.60 Nocturnal roost surveys of buildings along Dantzic Street (outside the site boundary) were undertaken by TEP in 2021 a part of Application 4. These surveys identified the presence of foraging and/or commuting common pipistrelle and noctule bats. General foraging and commuting activity was noted along the River Irk and within St. Catherine's Wood. These results are akin to the findings of PCA. For the purpose of this assessment bat foraging and commuting have been combined and taken forward in this assessment as an important ecological feature at the Local level.

Badger

6.61 No evidence of badger using the site was identified during the survey. No badger setts of any classification were found within the woodland or surrounding habitat. Nor were any field signs of badger foraging/commuting activities, such as tracks, snuffle holes, latrines or feeding remains found across the site. Therefore, badgers have been scoped out of further assessment.

Breeding Birds

6.62 Although no breeding bird surveys were undertaken by TEP in 2021, the proposed development site and the adjacent St Catherine's Wood was part of a wider breeding bird survey of the Northern Gateway area, undertaken by PCA in 2018. The PCA report identified a range of bird species including blackbird, blackcap, bluetit, bullfinch, carrion crow, chaffinch, coal tit, dunnock, goldfinch, long-tailed tit, robin, song thrush, treecreeper, wood pigeon and wren using the Redbank area, which includes the proposed development site and the adjacent St Catherine's Wood. Of these species bullfinch and songthrush both classify as S41 priority species, as well as being listed as locally important species identified within the Greater Manchester Action Plan. The woodland habitat within the site provides an open habitat structure which limits the nesting opportunities for birds. High levels of disturbance from the surrounding area is likely to have a negative effect on successful breeding within the site. The buildings also offer some nesting potential for breeding birds.

6.63 All of the bird species recorded are typical of the habitats present and are mostly common or widespread in the vicinity of the site. Following a review of the Manchester local wildlife site criteria, this site would not qualify as a local wildlife site under any of the qualifying criteria relating to breeding birds and therefore is not considered important at a regional level. Breeding birds are taken forward in this assessment as an important ecological feature at the Local level.

Water Vole & Otter

6.64 There are no habitats suitable to support water vole or otter present within or within immediate proximity to the proposed development boundary. The closest watercourse is the River Irk which is located approximately 60m to the south of proposed development site, with no impact on the watercourse anticipated as a result of works. No records of either otter or water vole have been noted in the Irk catchment for many years. No detailed riparian mammal surveys were therefore undertaken. Water vole and otter have both been scoped out of further assessment.

Herptiles

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

6.66 No records of reptiles were obtained from the desk based searches and reptiles are not known to be present in the local area. Detailed reptile surveys were deemed unnecessary for this site, which was agreed in advance with GMEU. Reptiles have been scoped out of further assessment.

Invertebrates

6.67 Whilst no detailed invertebrate surveys were undertaken, the homogenous nature of the terrestrial habitat present, along with a general lack of high floristic diversity, is indicative of habitat which is unlikely to be of any particular value to this group of species. No aquatic habitat is present within the site or within close proximity. Terrestrial and aquatic invertebrates have been scoped out of further assessment.

Identification of Ecological Features

6.68 This section summarises the potential ecological features that could be impacted by the proposed development and outlines the ecological value assigned to each feature.

6.69 Features which are not present, or are extremely unlikely to be present, or are accorded an ecological value of less than Local have not been taken forward for assessment. However, some of these features which have been scoped out of the impact assessment, will still require mitigation as part of the proposed development on the basis of their legal requirements, their implications on nature conservation policies and plans, or for animal welfare reasons.

6.70 Table 6.6 provides a summary of the preceding paragraphs. A number of features scoped out of the assessment for Application 1 are likely to be scoped in for the later applications, including River Irwell SBI, roosting bats and otter,

Table 6.6: *Valuation of ecological features*

Feature	Ecological Value	Scoped in/out of assessment
Nature Conservation Designations		
Rochdale Canal SAC	International	Scoped Out
Rochdale Canal SSSI	National	Scoped Out
Rochdale Canal: Scott's Lane to Ducie Street Basin SBI	Regional	Scoped Out
Ashton Canal (West) SBI	Regional	Scoped Out
Reservoirs at Harpurhey SBI	Regional	Scoped Out
River Irwell SBI	Regional	Scoped Out
Habitats & Flora		
Semi-natural Woodland	Regional	**Scoped In**
Other Habitats: Hardstanding & Ephemeral and buildings	Less than Local	Scoped Out
Invasive Species: Himalayan balsam	N/A	*Requirements relating to control of invasive species considered under semi-natural woodland*
Fauna		
Bats: Roosting	N/A	Scoped Out
Bats: Foraging & Commuting	Local	**Scoped In**
Badger	N/A	Scoped Out
Breeding Birds	Local	**Scoped In**
Water vole	N/A	Scoped Out
Otter	N/A	Scoped Out
Amphibians	N/A	Scoped Out
Reptiles	N/A	Scoped Out
Invertebrates	N/A	Scoped Out

Embedded Mitigation

6.71 This section sets out the measures that have been incorporated into the scheme design as the masterplan has evolved to avoid or minimise potential effects on ecological features. It also includes environmental protection measures that are standard construction working practices that would always be employed and have a very high degree of success.

Demolition and Construction

6.72 The proposed advanced enabling works, specifically the construction of a temporary haul road, has been designed in such a way to avoid the better quality habitats in the local area. Although some woodland loss is unavoidable, impact has been minimised as far as possible and the exact route has been guided by the results of the arboriculture and ecology surveys.

The Completed and Operational Development

6.73 For this proposed development, there are no completed or operational development embedded mitigation measures with regard to ecology or arboriculture.

Assessment of Likely Significant Effects

Scenarios 1a and 2a: Impacts of the proposed development only

Assessment Scenario 1a: Impacts of the proposed development only during demolition and construction

Semi-Natural Woodland

6.74 The proposed development would result in the direct loss of 1.05ha of semi-natural broadleaved woodland. The area of woodland to be lost has been assessed as poor quality woodland, due to its young age, lack of species diversity and poor ground flora. Loss of young semi-natural woodland is a certain impact. Direct loss of 1.05ha of young semi-natural woodland is considered to be a negative significant effect but only at the Local level due to the small scale nature of the woodland loss.

6.75 Direct impacts on adjacent woodland during construction are possible, with the accidental encroachment into tree protection areas causing further damage to the woodland. In the absence of mitigation direct impacts on retained woodland are considered to be a negative significant effect at the Regional level.

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

6.77 Construction activities may result in the degradation or damage of retained woodland adjacent to the site (i.e. pollution events), however when taking into account the CEMP as an embedded mitigation measure, there would be no significant effects.

6.78 The Schedule 9 invasive species Himalayan balsam is present in various area throughout the woodland, including in areas due to be lost as a result of the proposed development. Vegetation removal and other ground works have the potential to cause the spread of Himalayan balsam within the site. Construction activities also introduce the risk of spread of Himalayan balsam off site and into woodland in the wider area, through wind and movement of construction vehicles. Spread of Schedule 9 invasive species is contrary to national legislation and therefore in the absence of mitigation is a negative significant effect.

Bat Foraging & Commuting

6.79 Loss of semi-natural woodland during construction could disrupt bat foraging and commuting behaviour. Loss of woodland would reduce the habitat availability, albeit only a small area of woodland is proposed to be lost, and potentially increase the energetic cost of foraging bats in the local area. However a band of tree cover will still remain which will act as sufficient bat commuting habitat, ensuring no fragmentation effect is encountered, allowing bats to access potential foraging habitat in the local area. Bat activity was generally low across the site and the assemblage is restricted to primarily common pipistrelle, with rare occurrences of noctule, soprano pipistrelle and Leisler's. Greater levels of bat activity were associated with the nearby river corridor. The loss of bat foraging and commuting habitat is considered a negative significant effect at the Local level.

6.80 Any proposed construction lighting could have detrimental impact on bat foraging and commuting bats in the absence of mitigation both within and adjacent to the site. Artificial lighting has the potential to light up key commuting routes as well as foraging hotspots and therefore disrupting normal behaviours and increasing energetic costs for bats. Artificial construction lighting also has the potential to light up tree canopies and therefore potential bat roosting features themselves in the wider area. The potential impact of lighting on bat roosting and foraging/commuting is considered a negative significant effect at the Local level.

Breeding Birds

6.81 The proposed development would result in the permanent loss of nesting habitat for a range of common and local bird species. There is therefore the potential for disturbance/displacement effect on breeding birds that are currently using the site, due to the loss of feeding, roosting and nesting habitat. In the absence of mitigation the loss of bird feeding, roosting and nesting habitat is considered a negative significant effect at the Local level.

6.82 In the absence of mitigation there is also the potential for nesting birds to be killed or injured along with the damage and destruction of nests as a result of vegetation clearance during construction, especially if during the key breeding season of March to August inclusive. The potential effect of killing, injuring or disturbing breeding birds is considered to be a negative significant effect at the Local level.

Assessment Scenario 2a: Impacts of the proposed development only at completed development and operational stage

6.83 For this proposed development, there are no completed or operational development significant effects with regard to ecology or arboriculture. All habitat loss occurs during the construction phase and have already been assessed as permanent. Disturbance impacts beyond construction activities are not anticipated from this application, however as this application comprises enabling works for future applications there would be further construction and operational activities in the same location resulting from associated development. The potential for impacts to arise from associated future applications is assessed within the cumulative section.

Combined Assessment: Assessment Scenarios 1b, 1c, 2b and 2c considering impacts of the proposed development alongside the wider development project and SRF

6.84 The combined assessment identifies whether any non-significant effects on ecology arising from this proposed development could become significant, or whether the significance of any effects arising from this proposed development would increase when considered alongside similar effects from the associated future development in Applications 2, 3 and 4 and wider SRF. The design of certain aspects of the works within these associated applications, and the associated detailed assessments of the impact of these works on ecology and nature conservation, are ongoing. The combined assessment is therefore undertaken at a high-level and is based on the information available at the time of writing.

6.85 Potential effects that may arise from Applications 2, 3 and 4, and the wider SRF are summarised in Error! Reference source not found.**7**. The results of the combined assessment are summarised in Error! Reference source not found.**8**.

Table 6.7: *Associated Future Development – Indicative Descriptions and high-level assessment*

Site Ref.	Scoped In / Scoped Out	Justification
Future Application 2 - HIF Infrastructure Works	Scoped In	Based on a high level reasonable worst case assessment of the likely future impacts on the Application 2 site, there are likely ecological significant effects that need to be considered cumulatively. Of the three ecological features carried forward in the Application 1 assessment semi-natural woodland, bat foraging/commuting and breeding birds are all 'scoped in' to this cumulative assessment. Further details are provided within the associated development section below.
Future Application 3 - HIF Flood Defence Works	Scoped In	Based on a high level reasonable worst case assessment of the likely future impacts on the Application 3 site, there are possible ecological significant effects that need to be considered cumulatively. Of the three ecological features carried forward in the Application 1 assessment bat foraging/commuting and breeding birds are all 'scoped in' to this cumulative assessment but semi-natural woodland is scoped out. Further details are provided within the associated development section below.
Future Application 4 - Red Bank Neighbourhood	Scoped In	Based on a high level reasonable worst case assessment of the likely future impacts on the Application 4 site, there are likely ecological significant effects that need to be considered cumulatively. Of the three ecological features carried forward in the Application 1 assessment semi-natural woodland, bat foraging/commuting and breeding birds are all 'scoped in' to this cumulative assessment. Further details are provided within the associated development section below.
Northern Gateway Strategic Regeneration Framework (SRF)	Scoped In	Based on a high level worst case assessment of the likely future impacts on the site, of the wider SRF site, there are likely ecological significant effects that need to be considered cumulatively. Of the three ecological features carried forward in the Application 1 assessment semi-natural woodland, bat foraging/commuting and breeding birds are all 'scoped in' to this cumulative assessment. Further details are provided within the associated development section below.

Table 6.8: *In-Combination Assessment*

Plan / Proposal	Semi-Natural Woodland	Bat Foraging & Commuting	Breeding Birds
Summary of Effects from this Application (Application 1, HIF Advance Enabling Works)	Certain loss of 1.05ha of young semi-natural woodland. No mitigation is proposed under this Application for woodland loss and therefore a negative significant effect but only at the Local level (Minor Adverse) is predicted to arise. No fragmentation effect is anticipated with significant connected woodland still remaining following the required tree removal works. Damaging effects on retained woodland through encroachment of construction phase activities would be avoided through adherence to arboricultural method statement. The potential spread of invasive species by construction activities would be mitigated through the implementation of a Himalayan balsam management plan.	Loss of bat low/moderate foraging habitat. No mitigation is proposed under this Application for bat habitat losses and therefore a negative significant effect but only at the Local level (Minor Adverse) is predicted to arise. No fragmentation effect is anticipated as a connected green corridor will still remain following the required tree removal works, allowing bats to cross the landscape. The known off site roost will also have sufficient remaining tree cover in close proximity to ensure no fragmentation effect is encountered. Construction lighting impacts on off site retained commuting corridors and foraging habitat would be avoided through adherence to a bat-sensitive lighting strategy.	Loss of bird nesting and foraging habitat (woodland/trees). No mitigation is proposed under this Application for bird habitat losses and therefore a negative significant effect but only at the Local level (Minor Adverse) is predicted to arise. No fragmentation effect is anticipated based on the mobile nature and habits of birds species recorded in the general area and those species likely to use the habitats on site. Killing and injury of birds during site clearance would be avoided through adherence to a bird-sensitive method statement.
Summary of combined Effects: Application 2 HIF Infrastructure Works	Based on site information and proposals available to date, it is likely that there would be loss of semi-natural woodland in order to facilitate the HIF infrastructure works and these losses would have temporal overlap with the Application 1 woodland	In the absence of mitigation, the additional loss of woodland and scrub habitat would increase the impact on bat foraging, albeit only marginally. However, the proposed habitat enhancement measures as part of Application 2, would go some way	During the construction phase it is likely that loss of breeding bird habitats would increase but cumulatively with Application 1 this is unlikely to increase the significance of effect from the Local level currently predicted. In

	losses. Although no proposals are currently available in the region of 2ha of additional semi—natural woodland loss would be necessary which when combined with the 1.05ha of loss under Application 1 is likely to have a cumulative effect. However, proposals for Application 2 also include substantial green infrastructure works. Greenspace proposals have yet to be developed but they would be designed with 10% biodiversity net gain in mind and would take account of loss resulting from Application 1. Mitigation for woodland loss would include both habitat enhancement and creation measures. It is therefore likely that the residual significant effect on direct loss of semi-natural woodland would in the long term be reduced from a negative significant effect at the local level, when assessed cumulatively with likely woodland loss and mitigation proposals for Application 2. Fragmentation effects on semi-natural woodland are possible under Application 2 which would increase the fragmentation effects when considered cumulatively with Application 1. Damaging effects on retained woodland through encroachment of construction phase activities and pressures from operational activities are likely avoided through adherence to an arboricultural method statement and minimised through a	towards neutralising this residual negative significant effect. Bat commuting is unlikely to be impacted further, with the river (which is likely to be the most important commuting feature) remaining within proposals. There will be a possible fragmentation impact on bat populations associated with the vegetation works creating gaps in green links and lighting necessary for Application 2. Fragmentation effects associated with the known bat roost present in a building off Dantzic Street are also possible due to the loss of additional woodland and scrub habitat. When considered cumulatively with Application 1 there is therefore a possible cumulative negative significant effect on commuting bats. It is expected that construction lighting impacts on retained commuting corridors and foraging habitat would be avoided through adherence to a bat-sensitive lighting strategy.	the long term, the operational phase is likely to result in a neutral or locally positive effect on breeding birds due to the habitat creation and enhancement required to meet the 10% BNG commitment for Applications 1 and 2. Legal requirements mean that restrictions on vegetation clearance during the nesting season would be included within Application 2 and would not result in cumulative effects.

	minimum 30 year management plan (as required by BNG). Legal requirements mean that the potential spread of invasive species by construction activities would be mitigated through the implementation of a Himalayan balsam and Japanese knotweed management plan.		
Summary of combined Effects: Application 3 HIF Flood Defence Works	Based on initial site information and aerial imagery it is considered unlikely that significant additional semi-natural woodland habitat would be lost as a result of Application 3 works. It is therefore likely that there would be no cumulative effect on semi-natural woodland as a result of these works. Legal requirements mean that the potential spread of Schedule 9 plants by construction activities would be mitigated through the implementation of invasive species management plan.	Temporary loss of vegetation along the banks of the river during the works is likely to be necessary to facilitate the flood defence and alleviation works. However, proposals under Application 3 also include the enhancement of sections of the River Irk, specifically for ecological benefit. Works are temporary and therefore no change in the medium to long term is anticipated with potential for positive effects if riverine biodiversity increases as a result of the works. It is expected that construction lighting impacts on the river corridor would be minimised through adherence to a bat-sensitive lighting strategy and would not result in cumulative effects.	Additional vegetation loss as a result of Application 3 would potentially reduce the available nesting and foraging habitat, in the absence of mitigation. However, this vegetation loss is likely to be small scale and temporary in nature. In addition, any riverine bird species associated with the River Irk are unlikely to be reliant on habitats within Application 1. There is likely to be no change to the Local negative significant effect on breeding birds when assessed cumulatively with Application 1, although the effect is likely to be reduced following the habitat creation/enhancement measures. Legal requirements mean that restrictions on vegetation clearance during the nesting season would be included within Application 3 and would not result in cumulative effects.
Summary of combined	It is anticipated that all loss of semi-natural	The majority of vegetation clearance works would be	The majority of vegetation clearance works

Effects: Application 4 Red Bank Neighbourhood	woodland required to facilitate Application 4 works would already have been undertaken, either under the enabling (Application 1) or the HIF Infrastructure Works (Application 2). No negative significant effect on semi-natural woodland is envisaged as a result of Application 4 and therefore their cumulative effects on this ecological feature. Damaging effects on retained woodland through encroachment of construction phase activities are likely avoided through adherence to an arboricultural method statement Legal requirements mean that the potential spread of Schedule 9 plants by construction activities would be mitigated through the implementation of invasive species management plan.	undertaken under Application 2, along with green infrastructure enhancement and creation measures. No negative significant effect on bat foraging or commuting is envisaged as a result of Application 4 and therefore there is no change to the cumulative effect on this ecological feature. It is expected that construction and operational phase lighting strategies would be implemented for the Redbank Built Development works which would include bat sensitive measures, and these would avoid cumulative significant effects on bat populations.	would be undertaken under Application 2, along with green infrastructure enhancement and creation measures. No negative significant effect on breeding birds is envisaged as a result of Application 4 and therefore there is no change to the cumulative effect on this ecological feature. Legal requirements mean that restrictions on vegetation clearance during the nesting season would also be included within Application 4 and would not result in cumulative effects.
Summary of combined Effects: Northern Gateway Strategic Regeneration Framework	There is likely to be additional woodland loss across the SRF area, specifically within the South Collyhurst and Vauxhall Gardens areas. However, a commitment has been made to increase the area of native woodland within the Northern Gateway development, taking into account key woodland types referred to in the Local Biodiversity Action Plan. In addition, there is a commitment to the delivery of biodiversity net gain, the delivery mechanism for which has been set out in the Northern Gateway Biodiversity Plan, which serves the key purpose of formalising biodiversity	The SRF area is highly urbanised with only pockets of green space throughout. Bat foraging and commuting routes are likely focused on key green routes through the existing area, such as the River Irk. The River Irk Corridor has been designed into the strategic masterplan with landscaping measures to enhance this area clearly set out, including measures specifically for foraging and commuting bats. With mitigation measures in place, it is anticipated that no residual significant effect on foraging and commuting bats and possibly even a positive effect in the long	The SRF area provides a variety of different habitat types for breeding birds, including buildings, gardens, woodland and scrub. The River Irk and adjacent habitat also provides habitat for several riverine species such as kingfisher. The surveys undertaken by Paul Chester & Associated found the majority of bird species identified to be suited to living in an urban environment. The proposed green infrastructure works across the strategic masterplan would ensure an increase in green areas and therefore suitable habitat for

	enhancement objectives at the outset. Through these commitments to habitat creation and enhancement, mitigation measures for woodland loss would ensure no residual significant effect and possibly even a positive effect in the long term.	term.	nesting birds. With mitigation measures in place the carrying capacity of the overall available habitat is likely be retained, with no residual significant effects on breeding birds and possibly even a positive effect on certain species in the long term.
Summary of combined Effects from all plans / proposals combined.	No effects on woodland habitat are likely to arise from Applications 3 or 4. Application 1 and Application 2 would have cumulative effects on woodland loss. However, due to the commitment to achieving 10% BNG, losses arising from both these applications would in the long term be mitigated or compensated via Application 2. Furthermore, the significance of effect from the cumulative losses would not increase from the Local level currently predicted. Cumulative woodland losses from the wider SRF alongside Applications 1 and 2 could increase the significance of effect depending on the timing and extent of tree removal and allowing for establishment periods of any new planting. However, given the commitments within the Northern Gateway Biodiversity Plan, it is likely there would be an overall positive effect on woodland habitat in the long term.	Impacts on the bat community can arise from habitat loss including foraging, commuting and roosting habitat. It can also result from disturbance in this case primarily likely due lighting preventing bats from utilising retained habitats. There are no bat roosts present within Application 1 and no effects on off-site roosts are anticipated to arise from Application 1 and are therefore not considered in this cumulative assessment. Loss of bat foraging and commuting habitats would result from Applications 1, 2 and 3 and from the wider SRF. These could cumulatively create increased negative effects on bats during the construction phase but the potential for this to arise depends on the timing and extent of bat habitat loss. The potential for the significance of effect to increase would only be likely if the wider SRF works were timed to coincide with the other applications which is unlikely. The potential for cumulative effects to arise is further decreased by the retention and enhancement of the River Irk within the strategic masterplan. Construction phase lighting impacts would likely be avoided through standard bat-friendly working methods for Applications 1, 2, 4 and the wider SRF and at least minimised for Application 3. Construction phase fragmentation of bat habitats could result from Application 2 but if identified could	Construction phase injury or killing of birds during construction phase will be avoided through standard bird friendly working methods. Loss of bird habitats would result from Applications 1, 2 and 3 and from the wider SRF. These could cumulatively create increased negative effects on birds during the construction phase but the potential for this to arise depends on the timing and extent of bird habitat loss. The potential for the significance of effect to increase would only be likely if the wider SRF works were timed to coincide with the other applications which is unlikely. The potential for cumulative effects to arise is further decreased by the retention and enhancement of the River Irk within the strategic masterplan. Given the existing structure and use of the local landscape and generally urban nature of the bird community, operational phase fragmentation and disturbance effects on bird populations are unlikely to arise. Given the commitments within the Northern Gateway Biodiversity Plan, it is likely there would be an overall increase in quality and/or

		be mitigated through temporary measures to maintain connectivity (e.g. bat flyways) or provide foraging (e.g. seeding soil storage). There are no operational lighting impacts for Application 1, 2 and 3 and impacts should be avoided or minimised for Application 4 and the wider SRF. Given the plans and projects cover redevelopment of an inner city area, no significant operational phase lighting effects are anticipated. Given the low activity levels of bats in the landscape and the commitments within the Northern Gateway Biodiversity Plan, it is likely there would be an overall increase in quality and/or quantity of bat foraging and commuting habitats during the operational phase. With good design in Application 2 and the wider SRF there should be no cumulative increase in fragmentation of bat habitats. As a result, it is likely there would be a positive effect on bats in the long term.	quantity of bird habitats during the operational phase. As a result, it is likely there would be a cumulatively positive effect on birds in the long term.

Additional Mitigation / Enhancement Measures

6.86 Mitigation or compensation is required for each ecological feature which experiences negative significant effects, in order to reduce or offset the specific impacts of the proposed development on that feature. This section sets out the ecological mitigation measures that would be delivered as part of the planning application. They are additional to the embedded mitigation measures and any mitigation required by other disciplines.

6.87 The mitigation hierarchy requires that adverse impacts are first avoided then where this is not possible, mitigated and as a last resort compensated (off-set). Mitigation measures are discussed with respect to construction and operation below.

Scenarios 1a and 2a: Impacts of the proposed development only

Assessment Scenario 1a: Mitigation relating to the proposed development only during demolition and construction

Semi-Natural Woodland

6.88 Construction activities for the advanced enabling works would result in the loss of all tree cover within the red line boundary. However semi-natural woodland lies immediately adjacent to the red line and this off site woodland should be protected during construction works. Tree protection measures would include the use of heras fencing along the site boundary to ensure no accidental encroachment and to avoid any resulting damage to offsite tree protection zones. The tree protection measures would be detailed within in an Arboricultural Method Statement (AMS).

6.89 A Construction Environmental Management Plan (CEMP) will be produced for the site which will include standard construction working practices. The CEMP will include an Emergency Spill Response Plan and Dust Management Plan. Implementation of the CEMP will ensure no accidental direct or indirect effects on the retained/adjacent woodland is encountered as a result of the proposed development.

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

Bat Foraging & Commuting

6.91 The use/need of construction lighting would be minimal. Any necessary lighting would be directed away from retained trees and woodland blocks to avoid the possibility of deterring bat activity. Temporary construction lighting methods would be bat sensitive and set out within a lighting strategy.

Breeding Birds

6.92 Vegetation clearance would be timed to be carried out in winter. Where this is not possible and works are needed to be carried out during the bird breeding season (March to August inclusive), all areas to be affected would be checked for evidence of nesting birds a maximum of 24hrs prior to the vegetation removal/tree felling works taking place. If any active bird nests are discovered these would be given a minimum standoff of 5m (this may increase depending on species/proposed works and location) where no potentially disturbing works would take place until the young have fledged and the nest vacated. A second nesting bird check would then be undertaken to ensure the tree/vegetation does not contain any further active nests prior to felling/removal works taking place.

Assessment Scenario 2a: Impacts of the proposed development only at completed development and operational stage

6.93 For this proposed development, there are no specific mitigation measures currently known to be implemented with regard to ecology and arboriculture during the completed and operational development stage.

Combined Assessment: Assessment Scenarios 1b, 1c, 2b and 2c considering impacts of the proposed development alongside the wider development project and SRF

6.94 Following the combined assessment, no additional mitigation is considered to be required for the proposed development (Application 1: HIF Advance Enabling Works).

Likely Residual Effects of the Development and their Significance

6.95 This section summarises the significance of the anticipated residual effects on ecology features, which are those that remain after all proposed mitigation measures are implemented during the construction and demolition phase (see Table 6.9).

Table 6.79: *Residual Effects Summary*

Description of Effect	Potential effect including significance	Mitigation	Residual Effect including significance (CIEEM)	Residual Effect including significance (Traditional)
Demolition and Construction				
Assessment Scenario 1a: Impacts of the proposed development only during demolition and construction				
Semi-Natural Woodland	Certain loss of 1.05ha of young semi-natural	No mitigation proposed under this phase of	Negative significant effect but only at the	Minor Adverse

(Regional Value)	woodland.	development.	Local level.	
	Possible direct impact on adjacent retained woodland.	Implementation of tree protection measures as outlined within AMS.	No significant effect.	Negligible
	Possible indirect impact on adjacent retained woodland.	Implementation CEMP.	No significant effect.	Negligible
	Likely spread of Himalayan balsam during clearance works across site and wider area.	Implementation of invasive species mitigation strategy.	No significant effect.	Neutral
Bat Foraging & Commuting *(Local Value)*	Loss of available bat foraging habitat.	No mitigation proposed under this phase of development.	Negative significant effect at the Local level	Minor Adverse
	Construction lighting impact on offsite retained commuting corridors and foraging habitat.	Implementation of lighting strategy which would include bat sensitive measures.	No significant effect.	Negligible
Breeding Birds *(Local Value)*	Loss of available bird nesting and foraging habitat.	No mitigation proposed under this phase of development.	Negative significant effect at the Local level	Minor Adverse
	Potential for killing or injuring birds/destroying active nests through vegetation clearance.	Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined within CEMP	No significant effect	Negligible
Assessment Scenario 1b: Impacts of the proposed development alongside Applications 2, 3 and 4 during demolition and construction				
Semi-Natural Woodland *(Regional Value)*	No effects on woodland habitat are anticipated to arise from Applications 3	Commitment to achieve 10% BNG for the combined applications, losses arising from	Negative significant effect but only at the Local level in the short term	Minor Adverse changing to minor beneficial in the medium to

	or 4. Applications 1 and 2 would have certain loss of woodland.	Applications 1 & 2 will be adequately mitigated or compensated.	changing to positive significant effect in the medium to long term.	long term.
Bat Foraging & Commuting *(Local Value)*	Loss of available bat foraging & commuting habitat as a result of Applications 1, 2 and 3. No loss of bat foraging or commuting habitat is anticipated as a result of Application 4.	Commitment to achieve 10% BNG for the combined applications, losses of bat foraging and commuting habitat arising from Applications 1, 2 & 3 will be adequately mitigated or compensated. The River Irk will be enhanced under Application 3 which will improve the quality of existing bat foraging and commuting habitat.	No significant effect	Negligible
	Construction lighting impact on offsite retained commuting corridors and foraging habitat.	Implementation of lighting strategy which would include bat sensitive measures.	No significant effect.	Negligible
Breeding Birds *(Local Value)*	Loss of available bird nesting habitat as a result of Applications 1, 2 and 3. No loss of nesting bird habitat is anticipated as a result of Application 4.	Commitment to achieve 10% BNG for the combined applications, losses of nesting bird habitat arising from Applications 1, 2 & 3 will be adequately mitigated or compensated habitat.	No significant effect.	Negligible
	Potential for killing or injuring birds/destroying active nests through vegetation clearance during Applications	Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined	No significant effect	Negligible

	1, 2, and 3. Potential for killing or injuring birds/destroying active nests through vegetation clearance during is not anticipated as a result of Application 4.	within CEMP		
Assessment Scenario 1c: Impacts of the proposed development, alongside Applications 2, 3 and 4 and the Wider SRF during demolition and construction				
Semi-Natural Woodland *(Regional Value)*	No effects on woodland habitat are anticipated to arise from Applications 3 or 4. Applications 1 and 2 would have certain loss of woodland. It is anticipated there will be woodland losses in the wider SRF.	Commitment to achieve 10% BNG, losses arising from Application 1 & 2 will be adequately mitigated or compensated. It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated.	Negative significant effect but only at the Local level in the short term changing to positive significant effect in the medium to long term.	Minor Adverse changing to minor beneficial in the medium to long term.
Bat Foraging & Commuting *(Local Value)*	Loss of available bat foraging habitat as a result of Applications 1, 2 and 3. No loss of bat foraging or commuting habitat is anticipated as a result of Application 4. It is anticipated there will be losses of bat commuting & foraging habitat in the wider SRF.	Commitment to achieve 10% BNG, losses arising from Application 1 & 2 will be adequately mitigated or compensated. It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated.	No significant effect	Negligible
	Construction lighting impact on offsite retained commuting	Implementation of lighting strategy which would	No significant effect.	Negligible

	corridors and foraging habitat.	include bat sensitive measures.		
Breeding Birds *(Local Value)*	Loss of available bird nesting and foraging habitat as a result of Applications 1, 2 and 3. No loss of nesting bird habitat is anticipated as a result of Application 4. It is anticipated there will be losses of nesting bird habitat in the wider SRF.	Commitment to achieve 10% BNG for the combined applications, losses of nesting bird habitat arising from Applications 1, 2 & 3 will be adequately mitigated or compensated habitat.	No significant effect.	Negligible
	Potential for killing or injuring birds/destroying active nests through vegetation clearance during Applications 1, 2, and 3. Potential for killing or injuring birds/destroying active nests through vegetation clearance during is not anticipated as a result of Application 4. It is anticipated there will be potential for killing or injuring birds/destroying active nests through vegetation clearance in the wider SRF.	Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined within CEMP	No significant effect	Negligible
Completed Development and Operation				
Assessment Scenario 2a: Impacts of the proposed development only once completed and operational				
There are no further residual effects at the completed/operational phase of the development.				

Assessment Scenario 2b: Impacts of the proposed development alongside Applications 2, 3 and 4 once completed and operational				
Semi-Natural Woodland *(Regional Value)*	Increase in public pressure entering St. Catherine's Wood.	Ongoing woodland management is anticipated to form mitigation associated with Application 2. A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora.	No significant effect	Negligible
Bat Foraging & Commuting *(Local Value)*	Operational lighting impact on offsite retained and newly planted commuting corridors and foraging habitat associated with Application 4.	Implementation of lighting strategy which would include bat sensitive measures.	No significant effect.	Negligible
Assessment Scenario 2c: Impacts of the proposed development alongside Applications 2, 3 and 4 and the wider SRF once completed and operational				
Semi-Natural Woodland *(Regional Value)*	Increase in public pressure entering woodland.	Ongoing woodland management is anticipated to form mitigation associated with Application 2.	No significant effect	Negligible
Bat Foraging & Commuting *(Local Value)*	Operational lighting impact on offsite retained and newly planted commuting corridors and foraging habitat associated with Application 4 and anticipated in the wider SRF.	Implementation of lighting strategy which would include bat sensitive measures.	No significant effect.	Negligible

.

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

Biodiversity Net Gain Assessment

Biodiversity Net Gain Assessment

6.97 Full details of the UKHAB survey and condition assessment is provided within the Biodiversity Net Gain Assessment at **Appendix 6.5**.

6.98 After consultation with Greater Manchester Ecology Unit (GMEU), a bespoke approach to the Biodiversity Net Gain (BNG) assessment was agreed, which will consider associated future applications (Application 2 and 4) for the wider site alongside this proposed development (Application 1). This approach will avoid a piecemeal approach to biodiversity impact and ensure a measurable gain can be achieved. The river units will be calculated separately under Application 3, when additional details are available, and is expected to involve significant ecological enhancement.

6.99 The UKHAB survey and condition assessment information has been inputted into the Defra 3.0 metric, covering the combined site area required for Application 1, 2 and 4. This metric serves as a tool to quantify the biodiversity value of the site in the form of a biodiversity unit (BU) score. There are no irreplaceable habitats present within this combined site area. A baseline score of 28.11 biodiversity units (bu) was derived from the biodiversity metric.

6.100 Habitat loss in respect of the site relating to Application 1 has been calculated as 3.52bu. Given that detailed masterplans for the later applications are still emerging at the time of assessment, a high-level landscape scheme has been produced for the combined site, which is considered to be a reasonable worst-case scenario. This high-level landscape scheme has been used to determine both the impact and the habitat creation and enhancement within the site. An onsite post intervention score of 27.72bu has been achieved, based on the reasonable worst-case position, for the combined site area (inclusive of Application 1, 2 and 4); Application 3 calculated not currently available).

6.101 In order to achieve 10% BNG compensation will be provided for on and off site (within the Northern Gateway SRF area or within 3 miles of the wider development site). This will ensure that the compensation habitat will be provided in close proximity to the site. Given the majority of habitat loss on site and the majority of deficit in the 'Trading summary' in the Metric is attributed to loss of woodland, compensation would seek to create or enhance areas of woodland within the SRF area.

6.102 Following consultation with MCC it was agreed that a carefully worded condition can be included, where in the event that the redevelopment of the HIF site does not take place within a certain period of time of the completion

of the enabling works, the land will be restored in line with a strategy submitted for approval in writing by MCC. The strategy will outline measures to facilitate the commitment to at least 10% net gain across the completed Red Bank Neighbourhood development, and the restoration of the site shall take place in accordance with timescale agreed in writing with MCC.

Conclusions

6.103 The proposed development site is located within Cheetham Hill, Manchester. The site is located in an urban setting and the wider landscape is mainly comprised of commercial/industrial development. The site is bounded to the north by Red Bank and includes an area known as 'Creamline Dairies'. To the south of the site is an area of woodland known as St Catherine's wood and beyond this is the River Irk.

6.104 This assessment (for Application 1) covers advanced enabling works to facilitate future development (Applications 2, 3 and 4). It includes the demolition of Creamline Dairies, tree and shrub clearance, construction of temporary haul road and site investigations.

6.105 The assessment identified only one regionally important ecological feature which was semi-natural woodland. A further two locally important ecological features were also identified, these were bat foraging/commuting and breeding birds.

6.106 The potential for disturbance effects and unintended habitat loss or damage resulting from clearance, demolition and construction activities were identified through the assessment. The majority of these can be avoided through mitigation measures including the production of a CEMP, invasive species mitigation strategy, lighting strategy and tree protection measures. No further effects during the completed/operational stage were identified.

6.107 Assessment of associated future Applications 2, 3 and 4 and the wider SRF is provided via a high level combined assessment. It is predicted that the significance effect from the cumulative losses of semi-natural woodland, bat foraging and commuting habitat and breeding bird habitat could increase depending on the timing and extent of habitat removal. Given the commitments within the Northern Gateway Biodiversity Plan, it is likely there would be an overall positive effect on woodland habitat, quality/quantity of bat foraging and commuting habitat and quantity/quality of breeding bird habitat in the long term.

6.108 Habitat loss has been minimised as far as is possible, but some loss is unavoidable. Negative significant residual impacts as a results of the proposed development include a small area of loss of relatively young semi-natural woodland and its associated impact on bat foraging/commuting and loss of breeding bird habitat. These effects cannot be mitigated for under proposals included in Application 1, due to the nature of the proposed enabling works. However, it is anticipated that planned future applications for the area (Applications 2, 3 and 4) will include sufficient landscaping measures, including habitat creation and enhancement, to result in no significant residual effect on all three of these ecological features. Additionally, the combined Biodiversity Net Gain

Assessment will ensure at least 10% Biodiversity Net Gain will be achieved across the Red Bank Neighbourhood development

.

Assessment of Cumulative Effects and their Significance

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

- Scenario 3a - Assessment of the cumulative impacts relating to the enabling works plus impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites.
- Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, the wider SRF, and the agreed cumulative sites.

6.110 The cumulative assessment seeks to determine whether any non-significant effects on ecology arising from this application could become significant, or whether the significance of any effects arising from this application would increase when considered alongside similar effects from other plans or proposals. With reference to the ecology baseline of this application site, the review of other plans and proposals includes the consideration of loss of habitat, reduction in foraging, sheltering or breeding habitat for species, fragmentation of habitats and disturbance effects. When determining the potential for effects to accumulate, it considers the geographical and as far as can be determined, temporal nature of any effects and associated mitigation proposals.

6.111 In line with the approach to cumulative assessment in EIA, the following section can only consider existing and available information relating to baseline conditions and mitigation proposals when identifying the potential for cumulative effects to arise. Wherever possible, definitive and fixed information relating to each permission, application or allocation, has been used to ensure that the assessment is as robust as is reasonably possible.

6.112 Table 6.10 presents consideration of whether a cumulative site identified in the search has been scoped in or out of the CIA. Table 6.11 presents a summary of cumulative effects in respect of Scenarios 3a, 3b and 3c.

Table 6.10: *Cumulative Sites – Other Development Sites*

Site Ref.	Application No.	Proposal	Approx. Distance and Direction	Status	Scoped In / Scoped Out	Justification
Other Development Sites (within 1km)						
1	129393/VO/2021	City Council Development for the erection of 168, three and four storey dwelling/houses (Use Class C3a) and two, five and six storey apartment buildings to form 76 residential apartments (Use Class C3a) with associated ground floor flexible commercial unit (162 sqm) (Use Class E); and the creation of a new public park; all with associated car and parking, refuse storage, landscaping, public realm and other associated works and infrastructure following demolition of 29 existing residential dwelling/houses, the Collyhurst Village Store and associated car parking	650m north east	Approved Jun 2021	Scoped Out	The assessment concluded that there will be no adverse effects on any designated sites within range of the site, including Rochdale Canal SAC SSSI and Rochdale Canal Stott's Lane– Ducie Street Basin SBI. Loss of low quality grassland and dense scrub, along with the loss of 0.61ha of higher quality semi-natural woodland would result from development of the site. Timescales of loss are likely to overlap and mitigation may not occur immediately, but this additional loss of woodland in the wider area would not be large enough to change the significance of effect for this feature. No invasive plant species were identified during the surveys. One building and seven trees will low bat potential will be lost as a result of the development. Loss of low-level breeding bird and bat foraging and commuting habitat. RAMS measures proposed for bats and hedgehog during felling/demolition and vegetation clearance. Biodiversity enhancement measures detailed including bat and bird boxes.

						BNG strategy to deliver 10% net gain in conjunction with Collyhurst South application. No residual significant effects on any receptors were identified in the assessment. Assuming that the mitigation measures are implemented, it is not anticipated that these proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
2	127971/FO/2020	Erection of a 6 storey building to form 90 residential apartments (Use Class C3a) following demolition of existing structures with associated access, car parking, amenity space, landscaping and other associated works	950m east	Approved May 2021	Scoped Out	The assessment concluded that there will be no adverse effects on any designated sites within range of the site. Low quality habitats impacted but compensated for with hard landscaping. No residual significant effects on any protected species identified. It is not anticipated that these proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
3	128248/FO/2020	Erection of 9 buildings ranging from 8 to 34 storeys in height to form 1202 residential apartments (Use Class C3a) and ground floor commercial uses (Use Class E) (192 sqm) together with associated car parking, new vehicular and pedestrian access, public realm, landscaping and other associated works following demolition of existing structures and buildings | Land Bound By Gould Street, Williamson Street, Bromley Street And Bilbrook Street Manchester M4 4DD	150m south	Approved June 2021	Scoped Out	The assessment concluded that there will be no adverse effects on any designated sites within range of the site, including Rochdale Canal Stott's Lane–Ducie Street Basin SBI. The site is predominantly hardstanding with occasional areas of introduced shrub and tall ruderal herbs. Loss of this low quality habitat was assessed as not significant. Two bat roosts were identified within brick archways; common pipistrelle hibernation and common pipistrelle day roost. Disturbance/destruction to these roosts will be licenced and appropriately mitigated. No residual significant effects on any

						receptors were identified in the assessment. Assuming the mitigation measures are implemented, it is not anticipated that these proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
4	116366/FO/2017	Erection of four residential buildings (22 storey building, 17 storey building, 40 storey building and part 12, part 9 storey building) to form 756 residential apartments (Use Class C3a) together with ground floor commercial uses (616 sqm) (Use Classes A1, A2, A3, A4, A5, D1 and B1) with associated car parking, landscaping, amenity areas, creation of new public realm following the closure of Aspin Lane, Mincing Street and Irk Street and other associated works following demolition of existing structures | Land Bounded By Dantzic Street & Aspin Lane, Land Bounded By Gould Street & Angel Meadows And Land Bounded By Old Mount Street, School Street, Naples Street & Ludgate Street Manchester	150m south	Approved Aug 2017 Under construction	Scoped Out	The ecological appraisal concluded that there will be no adverse effects on any designated sites within range of the site. The site is dominated by hardstanding with occasional amenity grassland and introduced shrub. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process. It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
5	118120/FO/2017	Erection of a part 15, part 9, part 7 storey building to form 155 residential apartments together with ground floor commercial uses (Use Classes A1, A3 and B1) (288 sqm) with associated car parking, access arrangements and other associated works following the demolition of existing buildings and structure and the closure of Hatter Street | Land Bounded By Thompson Street / Mason Street / Bendix Street And Rochdale Road Manchester	450m south	Approved May 2018 Under construction	Scoped Out	The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the site. The site is dominated by hardstanding with three buildings. All buildings to be demolished were found to offer negligible potential for roosting bats. No residual significant effects on any receptors were identified in the assessment. It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
6	127537/FO/2020	Erection of a 11 storey 229 bedroom hotel (Use Class C1) with ancillary ground floor bar/restaurant together associated public realm and other	400m south	Approved Oct 2016	Scoped Out	The ecological report concluded that there will be no adverse effects on any designated sites within range of the site. The site comprised an expanse of

		associated works | 25 Rochdale Road Manchester M4 4HT				hardstanding. No residual significant effects on any receptors were identified in the assessment. It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
7	124973/FO/2019	Erection of an 11 storey building and a 12 storey building with plant rooms above to form a mixed use development comprising 39,184 sq.m (NIA) of Class B1a office use and commercial units of 1,286 sqm (NIA) (Use Classes A1, A2, A3, A4, B1a and D1) along with associated lower ground level car parking, hard and soft landscaping and associated works, including the creation of a new pedestrian route between Angel Street and Miller Street. | Land Bounded By Co-op Headquarters Miller Street And Angel Street Manchester	350m south	Approved Feb 2016	Scoped Out	The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the site. The site is dominated by hardstanding with areas of unmanaged vegetation, ornamental planting, semi-improved neutral grassland and an allotment area. No residual significant effects on any receptors were identified in the assessment. It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
8	111777/FO/2016/C1	Erection of two residential buildings of a maximum 21 and 26 storeys to accommodate 520 apartments (178 x 1 bed, 286 x 2 bed and 56 x 3 bed apartments) (Use Class C3). Erection of one office building of maximum eight storeys comprising up to 11,647 sq. m (GIA) of office accommodation. Ground floor commercial space (Use Class A1, A2, A3 and B1), lower ground level car parking, access and servicing arrangements, alterations to Corporation Street, new public realm and other associated works. | New Victoria Land At Corporation Street Manchester M3 1NX	250m south east	Approved Sep 2016 Under construction	Scoped Out	The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the site. There are no areas of habitat of nature conservation interest or invasive plant species within the site. No bat roosting potential habitat was identified within the site. The surrounding vegetation was identified as offering low value for foraging and commuting bats. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process. Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
9	121375/FO/2018	Construction of a 22 storey building comprising 361	840m south	Approved Oct	Scoped	The ecological assessment concluded that there will be no adverse effects on any designated sites within

		residential apartments (122 x 1 bed 2 person, 119 x 2 bed 3 person, 94 x 2 bed 4 person, 21 x 3 bed 5 person and 5 x 3 bed 6 person (34% 1 bed, 59% 2 bed and 7% 3 bed) ground floor commercial floorspace (Use Classes A1 (Shop), A3 (Restaurant and Cafe), A4 (Drinking Establishment) and A5 (Hot Food Take-away) associated landscaping, including new public realm and pedestrian route, together with servicing, cycle parking, access and other associated works following demolition of buildings at 20-22 and 24-26 High Street and 5 market stalls to Church Street.		2020	Out	range of the site. There are no areas of habitat of nature conservation interest or invasive plant species within the site. Building within the site were assessed as offering low to negligible potential for roosting bats. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process. It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
10	18/71330/FUL	Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping	850m south west	Approved Oct 2018 Under construction	Scoped Out	No ecological assessment report was available on Salford's planning portal. From the ecological consultation response from GMEU it appears that the only potential impacts identified relate to the potential negative impact on the River Irwell and the potential spread of the invasive species Giant Hogweed and Japanese knotweed, in the absence of mitigation. Conditions dictate the need for appropriate method statements to be produced and implemented to avoid these impacts. Based on available information no residual significant effects on any receptors are therefore envisaged for this site. Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
11	20/76134/FUL	Erection of 16-storey building plus plant comprising a hotel (Use Class C1) with ancillary bar and restaurant uses, access, servicing, landscaping and other associated works	1000m south west	Approved Feb 2020	Scoped Out	The ecology letter report assessed the habitats within the site to be of low ecological value, dominated by hardstanding with ephemeral/short perennial species and self-seeded butterfly bush. The invasive plant species, giant hogweed, was found

						to be present along the western boundary. Due to the lack of features of ecological interest present within the site, the presence of all protected faunal species was ruled out. No residual significant effects on any receptors were identified in the assessment. It is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
12	17/70626/FUL	Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works.	840m south west	Approved Nov 2017 Under construction	Scoped Out	The ecology briefing note concluded that there will be no adverse effects on any designated sites within range of the site. The site consisted of predominantly hardstanding, small areas of young trees and scrub and therefore of low ecological value. No invasive plant species were identified. The site was found to offer some nesting habitat for black redstart however no suitable foraging habitat was found on site or nearby and therefore considered unlikely to be using the site. A brick vaulted tunnel complex was considered to have moderate bat roosting potential and following surveys a single non-breeding common pipistrelle bat roost was identified. Due to the low status of the roost mitigation in the form of the provision of bat boxes was proposed as adequate mitigation. No residual significant effects on any receptors were identified in the assessment. Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
13	19/74465/HYBEIA	Hybrid planning application for demolition of existing buildings on the site and comprehensive redevelopment to create between 1,407 and 1,521 dwellings, comprising of: (a) Phase 1 (submitted in full with no matters reserved) for development of a	960m south west	Validated Nov 2019	Scoped Out	The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the site. The site comprises existing development, hard-standing and colonising vegetation. No habitats within the site are priority

		50-storey residential building; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new public park; highways and public realm improvements and other associated works; and, (b) Phases 2 and 3 (submitted in outline with all matters reserved) for the development of two residential buildings up to 42 storeys in height; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new highways; a public square; public realm improvements and other associated works. (EIA development, accompanied by Environmental Statement) | Land Bound By Greengate, Collier Street, Queen And King Street And Gravel Lane M3 7BN				habitat and are therefore of low ecological value. No roosting bats were identified using the buildings within the site (Buildings 2 and 3) during the surveys. No protected species were detected. No residual significant effects on any receptors were identified in the assessment. Assuming the standard mitigation measures were implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
14	126944/FO/2020	Erection of a residential-led mixed use development comprising 3 no. towers (37, 26 and 18 storeys) and podium levels (6 storey) to form 634 residential apartments and townhouse accommodation (Use Class C3) together with commercial accommodation (1222 sqm) (Use Classes A1,A2,A3,A4,A5,B1, D1 and D2)); with associated residential amenity areas, refuse storage, plant (including substation), car parking, cycle storage, landscaping and new public realm including the re-instatement of Bromley Street and other associated works	140m south east	Approved Sep 2020 Under Construction	Scoped Out	The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the site. The site consists of bare ground with a peripheral band of vegetation with no ecological value. Himalayan balsam, a Schedule 9 invasive, was found to be present. The site offers no potential for roosting bats and foraging habitat is of low value. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process. Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
15	114860/FO/2016	Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other	145m south east	Approved October 2017	Scoped Out	The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the site. The site consists of hardstanding, four buildings and a linear strip of leylandii trees offering little ecological value. The site offers negligible potential for roosting bats and foraging

		associated works following demolition of existing buildings				habitat is of low value. No residual significant effects on any receptors were identified in the assessment. Ecology was scoped out of the EIA process. Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
16	131708/FO/2021	Erection of a part 11, part 13 storey building to form residential apartments (Use Class C3a) together with the erection of two blocks of 3 storey townhouses (Use Class C3a) to form 237 residential homes in total with associated commercial floor (Use Class E) (132 sqm), basement car parking, landscaping and public realm, and associated engineering and infrastructure works following demolition of existing buildings and structures	450m south	Validated September 2021	Scoped Out	The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the site. The site consists of hardstanding and four buildings offering little ecological value. The bat survey undertaken on the site identified the four onsite buildings as offering low bat roosting potential. Following emergence surveys none of these buildings were found to support a bat roost. The invasive plant species, wall cotoneaster was identified within the site. No residual significant effects on any receptors were identified in the assessment. Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
17	118831/FO/2018	Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works	635m south west	Approved June 2018	Scoped Out	The ecological appraisal concluded that there will be no adverse effects on any designated sites within range of the site, including the Rochdale Canal, Ashton Canal (West) and Stott's Lane and Ducie Street Basin SBI and the River Irwell SBI. Walls within the site were identified as offering low potential for roosting bats. Records of black redstart were obtained from the wider area, and the site offers suitable habitat. No residual significant effects on any receptors were identified in the assessment.

						Ecology was scoped out of the EIA process. Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
18	128997/FO/2020	Erection of a ground plus 9-storey building to form 118 no. residential apartments (Use Class C3), including amenity areas, ground floor food and beverage/ commercial units (Sui Generis/ Use Class E), public realm and landscaping, with supporting infrastructure and associated works following demolition of existing building	730m south	Approved September 2021	Scoped Out	The ecological appraisal concluded that there will be no adverse effects on any designated sites within range of the site, including the Rochdale Canal, Stott's Lane-Ducie Street Basin SBI. The site consists of bareground, with small areas of ephemeral/short perennial species. The buildings on site were assessed as offering negligible potential for roosting bats. No residual significant effects on any receptors were identified in the assessment. Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
19	124888/FO/2019	Erection of a 6-9 storey residential building (Use Class C3) comprising 80 no. dwellings including 9 no. townhouses and 71 no. apartments with residents lounge, refuse, plant, new substation, cycle storage, an internal landscaped courtyard and improvements to the adjacent footways	665m south	Approved January 2020 Under Construction	Scoped Out	The ecological briefing note confirms the site consists of hardstanding with a number of built structures. The buildings on site were assessed as offering negligible potential for roosting bats. No residual significant effects on any receptors were identified in the assessment. Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.
20	125678/FO/2019	Erection of 8-storey residential building (Use Class C3) comprising 73 residential units, with ground floor commercial use (Classes A1, A2, A3, B1 and D1 (excluding Places of Worship)) (205 sqm); alterations	640m south	Approved December 2020	Scoped Out	The ecological assessment concluded that there will be no adverse effects on any designated sites within range of the site. Habitats within the site were not significant in terms of conservation interest;

		to the retained perimeter wall and chimney including the introduction of a light box; disabled car parking, highways, landscaping and other associated works				dominated by hardstanding with small areas of unmanaged grassland, tall ruderal herbs and scrub present. No invasive plant species were found to be present on site. The chimney structure was found to support a day roost of small numbers of common pipistrelle bats, requiring a NE mitigation licence. Mitigation measures for impact on the roost are incorporated into the design. No residual significant effects on any receptors were identified in the assessment. Assuming the standard mitigation measures are implemented, it is not anticipated that proposals would result in a cumulative effect on ecology when considered alongside the proposed development.

Table 6-1 Cumulative Impact Assessment summary

Assessment scenario	Potential effects
3a – Assessment of the cumulative impacts relating to the enabling works plus impacts associated with the agreed cumulative sites	• No new or increased effects on the ecological features identified during the assessment of the proposed development are predicted to arise when considered cumulatively with projects identified in Table 6.10.
3b – Assessment of cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites	• No new or increased effects on the ecological features identified during the assessment of the proposed development are predicted to arise when considered cumulatively with Applications 2, 3, & 4 and projects identified in Table 6.10.
3c – Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3, and 4, the	• No new or increased effects on the ecological features identified during the assessment of the proposed development are predicted to arise when considered cumulatively with Applications 2, 3, & 4 and SRF and projects identified in Table 6.10.

wider SRF and the agreed cumulative sites	

Summary of Plans and Proposals Scoped Out

6.113 As anticipated given the inner city location of this application, the sites considered in this cumulative assessment describe their baseline conditions to be generally of low ecological value, dominated by buildings and hardstanding and some with amenity grassland or ephemeral vegetation. The majority did not provide suitable bat or bird roosting habitat and in the few instances where bat roosting was confirmed these were small roosts of common species and mitigation would be provided on site. Similarly, bird and bat foraging habitat was also limited.

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

7. Townscape and Visual

Introduction

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

7.2 A number of associated developments are proposed in relation to the Red Bank Neighbourhood project, including:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1').
- HIF Infrastructure Works (referred to hereafter as 'Application 2').
- HIF Flood Defence Works (referred to hereafter as 'Application 3').
- Red Bank Neighbourhood (referred to hereafter as 'Application 4').

7.3 This chapter assesses the townscape and visual effects of the HIF Advance Enabling Works (including construction of a temporary haul road) (hereafter referred to as the 'proposed development'). See Figures 1.1 and 5.1-5.3 for information relating to this proposed development.

7.4 The chapter describes the methods used to assess the likely significant effects, the baseline conditions currently existing at the site and surroundings, the potential direct and indirect effects of the development arising in terms of townscape and views, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects in relation to townscape and visual considerations.

7.5 As we all as presentation of the impacts of the proposed development, the chapter also presents a high-level assessment of the ecological and nature conservation effects of the proposed development in-combination with the wider development project (inclusive of Applications 2, 3 and 4), and also of the wider SRF for which it is a part. See Chapter 2 and supporting Figures 2.1 to 2.4b for information relating to the available information in respect of the wider development project.

7.6 It has been written by Planit-IE.

7.7 This chapter is supported by the following appendices:

- **Appendix 7.1** – Baseline and Assessment Table
- **Appendix 7.2** – Figures and Viewpoint Photography

Planning Policy Context

National Planning Policy

National Planning Policy Framework

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

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

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

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

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

7.111 Paragraph 130 of the NPPF also sets out a number of principles of good design.

7.112 Whilst the site is not located in a Conservation Area and does not contain listed buildings, heritage is an intrinsic part of landscape assessment and potential views from Conservation Areas and the context around listed buildings will be considered as part of the assessment. There is also an overarching desirability set out within the NPPF for new development to contribute positively to local character and distinctiveness.

National Planning Practice Guidance

7.13 The National Planning Practice Guidance (NPPG) (DCLG, 2014) (Ref. 15-3) provides a web-based resource in support of the NPPF.

7.14 NPPG: Design – Section 1: The Importance of Good Design, states that: "*As a core planning principle, planmakers and decision takers should always seek to secure high quality design*". Section 3 focuses on the qualities that define

well designed places and spaces, stating that: "*A well designed space has a distinctive character*". It lists the physical aspects that contribute to distinctiveness, including the local pattern of street blocks and blocks, building forms, details, materials, style and vernacular. It further adds that: *"Distinctiveness is not solely about the built environment*" – it also reflects an area's function, history, culture and its potential need for change.

Local Planning Policy

Manchester City Council Core Strategy (2012)

7.15 *Policy EN1 – Design Principles and Strategic Character Areas*

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

7.116 Policy EN9 - Green Infrastructure.

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

Local Development Frameworks

7.17 The Northern Gateway Strategic Regeneration Framework (SRF) (February 2019) was approved by MCC's Executive on 13th February 2019. Key principles relating to townscape and views relating to the Red Bank area are set out in the SRF. Key principles include; the creation of visual connections to the River, and positive building frontage along Red Bank and Honey Street.

Other Relevant Policy, Standards and Guidance

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

policies. It also encourages the integration of landscape into all relevant areas of policy, including cultural, economic and social policies.

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

Assessment Methodology and Significance Criteria

Overview

7.20 This assessment has been carried out with reference to the Guidelines for Landscape & Visual Impact Assessment[i] (referred to hereafter as "the Guidelines") by Planit-IE, a registered practice of the Landscape Institute with considerable experience in landscape and visual assessment. The Landscape Institute Guidance applies equally to rural landscapes and landscapes within the urban environment referred to as townscapes.

7.21 A three-stage assessment process has been adopted. Firstly, the nature of receptors (sensitivity) have been assessed, and secondly, the nature of effects (magnitude) likely to result from the proposed development have been assessment. From this, the overall significance of the identified effects on receptors have been assessed.

7.22 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 7.1** for transparency. The overall assessment of significance has regard to paragraph 5.56, page 92 (significance of townscape effects) and paragraph 6.44, page 116 (significance of visual effects) of the Guidelines.

7.23 To produce the most comprehensive, rounded and objective view of the townscape and visual impacts, any significant effects have been agreed following round-table review by the team of qualified assessors.

7.24 The assessment scenarios in respect of the EIA for the proposed development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
    - Scenario 1a - Assessment of the impacts relating to the proposed enabling works only
    - Scenario 1b - Assessment of the impacts relating to the enabling works, plus impacts associated with Application 2, 3, and 4.
    - Scenario 1c - Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF.

- Assessment Stage 2 - Completed Development and Operational Phase:
    - Scenario 2a - Assessment of the impacts relating to the enabling works only
    - Scenario 2b Assessment of the impacts relating to the proposed development, plus impacts associated with Application 2, 3, and 4.
    - Assessment 2c - Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF.

Identification of the Study Area

7.25 The study area for application 1 extends approximately 200m from the site edge for both the demolition and construction phase, and the completed development and operational stage. The application 1 site is visually and physically well enclosed. Taking into consideration the nature and parameters of the proposed development and its context, and based on professional judgement, it is considered that beyond this distance any effects on townscape character would diminish to non-significant levels. A wider study area has been considered for scenarios 1b, 1c, 2b and 2c of approximately 500m from the centre of Red Bank (Application 4) site boundary. This assessment is a 'high level' assessment of effects in respect of the built development proposals due to the lack of known information.

Desk Based Data

7.26 Desk-based studies have been carried out to inform the assessment and have included the collation of map and topographic baseline information, and relevant information relating to townscape.

Identification of Sensitive Receptors

7.27 Site character has been identified as a townscape receptor with the potential for significant effects as a result of the proposed development. An analysis of existing site character has been provided in **Figure 7.1** of **Appendix 7.2.**

7.28 A Principal Viewpoints plan has been produced and forms **Figure 7.2** in **Appendix 7.2**. The viewpoints were selected through a process of desktop survey and assessment. A total of 5 viewpoints have been selected, and are considered representative viewpoints from key visual receptors. Viewpoints were excluded where there is likely to be no significant impact. Due to the site topography and intervening tree cover and built form, mid and long distance views are proposed to be scoped out of the assessment. This is due to the nature of the proposals and generally small scale features, that would be completely screened from surrounding areas. Views have been selected close to the site edges where the proposed changes would be highly visible.

Site Survey

7.29 Desk-based site survey and assessment and site walkovers have been carried out. In addition, Planit-IE have considerable experience and knowledge of this part of the city.

Photography Methodology

7.30 Photographs for the selected viewpoints were taken by a professional photographer in October 2021. Visualisations were produced by Virtual Planit, a professional visualization studio with extensive experience in the production of photomontages. Both photographs and photomontages were produced in accordance with Guidance Note 06/19[ii]. The photography is contained within **Appendix 7.2.**

Reporting of the Environmental Effect and Significant Criteria

7.31 The assessment of likely significant environmental effects as a result of the proposed development has taken into account both the demolition and construction, and completed development and operational phases.

Determining of Sensitivity of Receptors

7.32 The sensitivity of affected receptors has been considered on a scale of high, medium, low or negligible.

Baseline Townscape Value

7.33 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 7.1 below. However, the value attached to undesignated townscapes also needs to be assessed and this is considered in Table 7.2.

Table 7.1*: Value of Designated Townscapes*

Value	Description
High	Sites, features or areas of national or international importance with settings of high quality such as World Heritage Site, Areas of Outstanding Natural Beauty, National Parks, Grade I and Grade II* Listed buildings or Registered Parks and Gardens.
Medium	Sites, features or areas of local or regional importance with intact character such as Grade II Listed Buildings, Conservation Areas, Scheduled Monuments, local nature sites, long distance recreational routes.
Low	Areas or features of local importance such as Tree Preservation Orders, PROW and locally listed buildings.

7.34 Whilst the assessment of value is partly based on the Planning Policy importance of the townscape, other criteria used to assess townscape value in more detail, including that of undesignated townscapes, are set out in Table 7.2 below. The criteria are taken from the Guidelines.

Table 7.2: *Criteria for Assessing the Value of Non-Designated Landscapes*

Attribute	Criteria
Functional	A building or place should be fit for purpose, designed and delivered in a way that delivers the intended function and achieves value for money in terms of lifetime costs.
Mix Uses	Mix of uses to ensure easy access to facilities and encourage a healthier environment, reducing the need to travel.
Well-Designed Public Space	Functional and attractive hard and soft landscape elements, well orientated and designed routes, inclusion of facilities such as seats and play equipment and public art.
Buildings designed to be adaptable	Flexibility to be able to respond to a range of future needs – how easily buildings change be adapted for change of use, places that are easy and practical to manage with good access, natural surveillance and hard-wearing materials that are easy to repair.
Distinctive character	Consideration of the local pattern of street blocks and plots; building forms; details and materials; style and vernacular.
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.

7.35 An overall assessment of value has been made for each townscape receptors (refer to **Appendix 7.1**), based on an overview of the assessments made using each of the above criteria, in terms of high, medium and low value.

Baseline Susceptibility of Townscape Receptors to Change

7.36 Susceptibility of townscape receptors to change has been assessed using the criteria identified in Table 7.3, with reference to the baseline conditions.

Table 7.3: *Townscape Receptor Susceptibility to Change*

Susceptibility	Criteria
High	Little ability to accommodate the proposed development without undue harm
Medium	Some ability to accommodate the proposed development without undue harm.
Low	Substantial ability to accommodate the proposed development without undue harm.

Overall Sensitivity of Townscape Receptors

7.37 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 7.1**.

Criteria for Determining Sensitivity of Visual Receptors

Type of View and Number of Viewers

7.38 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
- Few/Moderate/Many Viewers

Value of Views

7.39 The value attached to views has regard to a number of factors, including:

- recognition through planning designations or heritage assets.
- the popularity of the viewpoint, its appearance in guidebooks, literature or art, on tourist maps and the facilities provided for its enjoyment.

7.440 The assessment of the value of views is summarised in Table 7.4 below, in terms of High, Medium and Low value. These criteria are provided for guidance only and are not intended to be absolute.

***Table 7.4**: Value Attached to Views*

Value	Criteria
High	Views from townscapes/viewpoints of national importance, or highly popular visitor attractions where the view forms an important part of the experience, or with important cultural associations
Medium	Views from townscapes/viewpoints of regional/district importance or moderately popular visitor attractions where the view forms part of the experience, or with local cultural associations
Low	Views from townscapes/viewpoints with limited designations, not particularly popular as a viewpoint and with minimal or no cultural associations

Susceptibility of Visual Receptors to Change

7.41 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.
- 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.

7.442 The assessment of a visual receptor to change is specific to the proposed development. However, the Guidelines offer the generic guidance identified in Table 7.5 as a starting point for the assessment.

***Table 7.5**: Visual Receptor Susceptibility to Change*

Susceptibility	Type of Receptor

High	Users of public space, including users of public rights of way, whose attention is likely to be focussed on the townscape and on particular views; Visitors to heritage assets or other attractions where views of the surroundings are an important part of the experience; Communities where views contribute to the townscape setting enjoyed by residents; and Travellers on scenic routes
Medium	Travellers on road, rail or other transport routes, where the view is moderately important to the quality of the journey; and Users of public space, where the view is a part of the wider experience of the place
Low	People at their place of work, where the setting is not important to the quality of working life; Travellers on road, rail or other transport routes, where the view is fleeting and incidental to the journey; and People engaged in outdoor sport or recreation, or users of a public space, which does not involve appreciation of views.

7.43 The Guidelines 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

7.44 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 along with professional judgement, as detailed in **Appendix 7.1.**

Predicted Townscape and Visual Impact Criteria

7.45 The predicted townscape and visual impacts of the proposed development are set out in **Appendix 7.1.**

Size and Scale of Effects

7.46 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

7.47 The geographical extent of effects relates to:

- The area over which townscape effects are likely to be experienced, i.e. this could be limited to a local level, at a regional level, at a national level, or international level.
- The area over which the changes are likely to be visible, i.e. this could be limited to a local level, at a regional level, at a national level, or international level.

Duration/Reversibility

7.48 Effects may be experienced over a range of timescales. For this assessment, the following timescales are considered appropriate:

- Short-term: 1 year or below.
- Medium-term: Between 1 and 10 years in duration.
- Long-term: Greater than 10 years in duration.
- Permanent.

7.449 Effects may be temporary, permanent or reversible over time. For example, visual effects arising from construction activities may be limited solely to the construction period and therefore only temporary. The assessment therefore considers the practicality of effects being reversed.

Determining the Magnitude of Change

Magnitude of Townscape Effects

7.50 The magnitude of change has been considered as the change experienced from the baseline conditions at the sensitive receptor and has been considered on a scale of major, moderate, minor or imperceptible.

7.51 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.

7.52 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.
- Whether the effect is likely to change the key characteristics of the townscape, which are critical to its distinctive character.

7.553 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.

7.554 The criteria used to assess magnitude of townscape effects are described in Table 7.6.

***Table 7.6**: Townscape Effects – Magnitude*

Category	Criteria
Large adverse townscape effect	The proposals will result in a total change in the key characteristics of landscape character; will introduce elements totally uncharacteristic to the attributes of the receiving landscape; and/or will result in a substantial or total loss, alteration, or addition of key elements/features/characteristics.
Medium adverse townscape effect	The proposals will result in a partial change in the key characteristics of townscape character; will introduce elements partially uncharacteristic to the attributes of the receiving townscape; and/or will result in partial loss, alteration, or addition of key elements/features/characteristics.
Small adverse townscape effect	The proposals will result in a small change in the key characteristics of landscape character; will introduce elements that are not uncharacteristic to the attributes of the receiving townscape; and/or will result in a minor loss, alteration, or addition of elements/features/characteristics.
Negligible adverse townscape effect	The proposals will result in a just discernible change to townscape

	character/elements/features/characteristics.
Negligible townscape benefit	The proposals will result in a just discernible improvement to the townscape character/elements/features/characteristics.
Small townscape benefit	The proposals will achieve a degree of fit with the townscape character/elements/features/characteristics and go some way towards improving the condition or character of the townscape
Medium townscape benefit	The proposals will achieve a good fit with the townscape character/elements/features/characteristics, or would noticeably improve the condition or character of the townscape.
Large townscape benefit	The proposals will totally accord with the townscape character/elements/features/characteristics, or would restore, recreate or permanently benefit the condition or character of the townscape.

Magnitude of Visual Effects

7.55 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.

7.56 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.

7.57 The criteria identified in Table 7.7 are used to assess the magnitude of visual effects, based on the degree of change to the view or composition.

Table 7.7*: Visual Effects – Magnitude*

Category	Criteria
Large adverse or beneficial visual effect	The proposals will cause a dominant or complete change or contrast to the view, resulting from the loss or addition of substantial features in the view and will substantially alter the appreciation of the view.
Medium adverse or beneficial visual effect	The proposals will cause a clearly noticeable change or contrast to the view, which would have some effect on the composition, resulting from the loss or addition of features in the view and will noticeably alter the appreciation of the view
Small adverse or beneficial visual	The proposals will cause a perceptible change or contrast to the view,

effect	but which would not materially affect the composition or the appreciation of the view
Negligible adverse or beneficial visual effect	The proposals will cause a barely perceptible change or contrast to the view, which would not affect the composition or the appreciation of the view

Significance Criteria

7.58 In determining the significance of the impact, account is taken of the sensitivity of the visual receptor, the importance of the view and the predicted magnitude of the impact. The impact is described in terms of either being beneficial, adverse or neutral, where the impact is clearly identifiable, and negligible where the impact is not clearly identifiable. An assessment of either major or moderate is considered significant for the purposes of the EIA Regulations:

- Major - Where there would be a very noticeable and highly significant alteration to the existing view.
- Moderate - Where there would be a clearly noticeable and moderately significant alteration to the existing view.
- Minor - Where there would be a perceptible alteration to the existing view, but one of low significance.
- Neutral - Where there would be a noticeable change in the character or characteristics of the view, but where this change in not considered detrimental..
- Negligible - No discernible change in the existing view or townscape.

7.559 The scale shown in **Table 7.8** 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 7.8*: Assessment of Townscape or Visual Significance*

Sensitivity of Receptor	Magnitude of Effect: Large	Medium	Small	Negligible	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

7.60 For the purposes of this assessment, only effects deemed 'Moderately Significant' and 'Significant' are considered to be Significant in the meaning of EIA Regulations (2017).

Probability

7.61 The predicted impact is assessed against the criteria set out below in order to attribute a level of confidence to the assessment:

- Highly Likely- The predicted impact is either certain, or very likely to occur, based on reliable information or previous experience.
- Likely – The predicted impact and its level are best estimates, based on on-site and desktop study.
- Unlikely – The predicted impact and its level are best estimates, based on given knowledge and experience. More information may be needed to improve the level of confidence.

Consultation

7.62 Table 7.9 outlines the pre-application consultation currently undertaken with the relevant stakeholders for the proposed development.

Table 7.9: *Consultation*

Consultee	Date and Time	Comments	Actions
MCC Jennifer Atkinson Principal Planner	22/10/21 Initial email sent 22.1021 Response received	Viewpoints plan sent for comment	MCC agreed with selection and location of viewpoints..

Assumptions and Limitations

7.63 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- The assessment relies on available data, and best endeavours have been made to ensure that the data are accurate and up to date. It is assumed that OS mapping information, topographic and 3D data and Historic England heritage mapping information are all up to date.

- The GLVIA methodology (the Guidelines) provides a robust and transparent process for assessment of townscape and visual effects, and is used alongside visually verified photomontages which provide a high level of detail and technical accuracy. Significant effects will be determined through professional judgment, carried out by a team of assessors to provide scrutiny where this is relied upon.

Baseline Conditions

7.64 The majority of the site is a mixture of trees and scrub with an area of hard standing in its north-eastern corner. The site's southwest corner is also formed by an area of hard standing which abuts Red Bank. The majority of the site is a mixture of trees and scrub with an area of hard standing to the east. Creamline Dairies is located to the north west within the site, off Red Bank, and incorporates an industrial building with large footprint and substantial associated hard standing.

Landscape Character

National Landscape Character

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

Site Character

7.66 The majority of the site is dominated by semi-natural broad-leaved woodland. The woodland is predominantly self-seeded birch of approximately 20 years old. The woodland is not covered by any formal environmental designations. The character of the site reflects the wider landscape character as defined at the national level.

Townscape Character

Site Context

7.67 The River Irk to the south of the site is physically detached from the site but forms a key feature within the site context and has historically influenced the site character. The river, in conjunction with complex ground levels, forms a barrier to north-south connections between the site and the city centre fringes to the south. The railway line is located south of the river and forms an additional barrier to north-south movement. To the north, the industrial heritage of the river corridor remains evident, with large floorplate industrial/commercial buildings located along the site's northern edge. Buildings to the north of the site are predominantly low in height, at 1-2 storeys.

Site Character

7.68 Redundant areas of hard standing and areas of previous demolition indicate the historic industrial legacy and the site appears disused and redundant. This character is reinforced by the self-seeded woodland. Creamline Dairies is located within the site to the north west. It consists of a large industrial building with substantial hard standing with access off Red Bank. A retaining wall to the rear of the Dairy separates it from the remainder of the site, which is located at lower ground levels. Topography within the site is highly modified and disturbed due to historic land uses within the site and surrounding context. The site, along with adjacent areas along the river corridor, are largely devoid of built development and form a significant 'gap' in the urban grain. There is no formal public access to the site. A short public footpath route is located to the north off Collingham Street and connects to Collyhurst Road over the bridge via Barney's Steps. Refer to **Figure 7.1** of **Appendix 7.2** for the location of the footpath.

Landscape Value within the Site

7.69 The value of the landscape within the site is currently 'low', due to the redundant and disused character, lack of landscape or townscape features of value, disturbed nature of the topography and lack of public access or function.

Views Visibility and Visual Character

Visual Context of the Site

7.70 The site is visually well contained due to the combination of tree cover, ground levels and surrounding built form.

Visual Receptors and Views of the Site

7.71 A total of 5 viewpoints have been identified, located primarily to the south, east and west of the site. Refer to **Figure 7.2** of **Appendix 7.2** for the location of the footpath. There are no views of the site from the north. The key views are as follows:

- View 1: Elevated View from footway at corner of St Chads Street/ Stanley Street looking east towards site

- View 2: View from Listed Union Bridge/ Dantzic Street looking north towards site
- View 3: Elevated View from footway of Dalton Street looking north west towards site
- View 4: Elevated view from Sand Street Park pathway looking west over site
- View 5: Elevated view from Barney Steps bridge looking south west over site.

Sensitivity Receptors

7.72 The visual receptors have been assessed as 'low' in sensitivity for Viewpoints 1-4 as the views are from landscapes/viewpoints with limited designations, and/or which are not particularly popular as a viewpoint, or with minimal or no cultural associations, and visual receptors sensitivity to change is low.

7.73 Visual receptors at Viewpoint 5 from the Barney Steps bridge have been assessed as having a 'medium' susceptibility to change, and the viewpoint has an overall sensitivity of 'medium'. This is due to the location of the view along a public footpath and at a clear viewpoint where users of the route are likely to stop in order to appreciate the elevated vantage point.

Embedded Mitigation

7.74 This section sets out the measures that have been incorporated into the scheme design as the masterplan has evolved to avoid or minimise potential effects on townscape and views.

Demolition and Construction

7.75 For this proposed development there are no embedded mitigation measures that are specific to potential townscape and visual impacts during the demolition and construction phase of the development.

The Completed and Operational Development

7.76 For this proposed development there are no embedded mitigation measures that are specific to potential townscape and visual impacts during the completed development and operational stage.

Assessment of Likely Significant Effects

Scenarios 1a and 2a: Impacts of the proposed development only

Assessment Scenario 1a: Impacts of the proposed development only during demolition and construction

Site Character

7.77 Construction activities for the proposed development would result in the loss of a proportion of tree cover within the red line boundary, amounting to approximately 1.05 ha (see Chapter 6: Ecology for full detail). Areas of hard standing will be removed and the existing Creamline Dairies building will be demolished. Ground levels will also be manipulated to incorporate the new temporary haul road. The site character will change as a result of the demolition and construction works. The overall sensitivity of the site character has been assessed as 'low', and, due to the existing disturbed and disused character of the site, the magnitude of change has been assessed as 'small'. There is, therefore, predicted to be a small adverse short-term change at the local level. The effect is not considered to be significant.

Key Views

7.78 *View 1: Elevated View from footway at corner of St Chads Street/ Stanley Street looking east towards site.* There will be a visible change to this viewpoint with the demolition works to the Creamline Dairies, and the construction of the temporary haul road. There will be visible hoarding around the site and site compounds at the lower level of the view. The overall sensitivity of visual receptors has been assessed as 'low', and the magnitude of change is assessed as 'small'. There is, therefore, predicted to be a small, adverse short- term change at the local level. The effect is not significant.

7.79 *View 2: View from Listed Union Bridge/ Dantzic Street looking north towards site. There is potential for some of the tree removal works within the site to be visible from this viewpoint, however the nature of this change will be very small. The overall character of the view will be unchanged.* The overall sensitivity of visual receptors has been assessed as 'low', and the magnitude of change is assessed as 'small'. There is, therefore, predicted to be a small, adverse short-term change at the local level. The effect is not significant.

7.80 *View 3: Elevated View from footway of Dalton Street looking north west towards site. The construction and demolition works will be largely screened from this viewpoint by tree cover along Dalton Street. The overall composition of the view will be unchanged.* The overall sensitivity of visual receptors has been assessed as 'low', and the magnitude of change is assessed as 'negligible'. There is, therefore, predicted to be a negligible adverse short-medium term change at the local level. The effect is not significant.

7.81 *View 4: Elevated view from Sand Street Park pathway looking west over site. The demolition and construction works are predicted to be largely screened by existing woodland in the foreground of the view. There is predicted to be a minor change to the character of the view throughout the construction phase as a result of works to remove trees. T*he overall sensitivity of visual receptors has been assessed as 'low', and the magnitude of change is assessed as 'small'.

There is, therefore, predicted to be a small, adverse short-term change at the local level. The effect is not significant.

7.82 *View 5: Elevated view from Barney Steps bridge looking south west over site. The character of the view will change as a result of demolition and construction works due to proximity of the view to the site, and the elevation of the view on the steps which allows for prospect over the eastern end of the site. T*he overall sensitivity of visual receptors has been assessed as 'medium', and the magnitude of change is assessed as 'small'. There is, therefore, predicted to be a small, adverse short-term change at the local level. The effect is of minor significance.

Assessment Scenario 2a: Impacts of the proposed development only at completed development and operational stage

Site Character

7.83 The character of the site will be changed during the operational phase due to the nature of the works proposed which result in tree clearance, modified ground levels and installation of the new haul road. The changes will be 'small' in magnitude and 'neutral' in nature. Although the change in the character or characteristics of the view will be noticeable, the change is not considered to be detrimental. There is, therefore, predicted to be a small, neutral long-term term change at the local level. The effect is not considered to be significant.

Key Views

7.84 *View 1: Elevated View from footway at corner of St Chads Street/ Stanley Street looking east towards site. The character of the view will be changed. The existing view of Creamline Dairies will be replaced by views of the new access to the haul road.* There is, therefore, predicted to be a small, adverse long-term term change at the local level. The effect is not considered to be significant.

7.85 *View 2: View from Listed Union Bridge/ Dantzic Street looking north towards site*. There is potential for a minor change in the character of the view due to the removal of trees from the site. Views of the haul road will be screened by intervening trees outside the site boundary. There is, therefore, predicted to be a small, adverse long-term term change at the local level. The effect is not considered to be significant.

7.86 *View 3: Elevated View from footway of Dalton Street looking north west towards site.* Potential for a very minor change in the view due to the removal of trees from the site. Views of the haul road will be screened by intervening tree outside the site boundary. There is therefore predicted to be a n*egligible, adverse long-term change at the local level.* The effect is not considered to be significant.

7.87 *View 4: Elevated view from Sand Street Park pathway looking west over site.* Minor change to the character of the view due to a reduction in tree cover. Views of the haul road will be screened by intervening trees outside the site

boundary. There is therefore predicted to be a small, neutral long-term term change at the local level. The effect is not considered to be significant.

7.88 *View 5: Elevated view from Barney Steps bridge looking south west over site.* Minor change in the character of the view with partial views of the new haul road replacing the existing low quality hard standing. There are predicted to be more extensive views across the site due to the tree clearance. The change in the character of the view is not considered to be adverse due to the existing disused nature of the site and low quality hard standing. There is, therefore, predicted to be a *small long-term change that is neutral in nature at the local level.* The effect is not considered to be significant.

In-Combination Assessment: Assessment Scenarios 1b, 1c, 2b and 2c considering impacts of the proposed development alongside the wider development project and SRF

7.89 The ICA identifies whether any non-significant townscape and visual effects arising from this application could become significant, or whether the significance of any effects arising from this application would increase when considered alongside similar effects from the associated future development in Applications 2, 3 and 4, and with the wider SRF. The design of certain aspects of the works within these future applications, and the associated detailed assessments of the townscape and visual impact of these works, are ongoing. The ICA is therefore undertaken at a high-level and is qualitative, and is based on the information available at the time of writing (see Chapter 2: Approach for more information).

7.90 Potential effects that may arise from Applications 2, 3 and 4, and the wider SRF are summarised in **Table 7.10**. The results of the ICA are summarised in **Table 7.11.**

Table 7.10: *Associated Future Development – Indicative Descriptions and high-level assessment*

Site Ref.	Justification
Future Application 2 - HIF Infrastructure Works	Based on a high level reasonable worst case assessment of the likely future impacts on the Application 2 site, there are likely to be significant effects on site character and the 5 identified key viewpoints as a result of the HIF Infrastructure works.
Future Application 3 - HIF Flood Defence Works	Based on a high level reasonable worst case assessment of the likely future impacts on the Application 2 site, there are potentially significant in-combination effects on viewpoint 2 due to the location of the flood defence and alleviation measures in the foreground of the view.
Future Application 4 - Red Bank Neighbourhood	Based on a high level reasonable worst case assessment of the likely future impacts on the Application 2 site, there are likely to be significant effects on site character and the 5 identified key viewpoints in-combination effects with the Red Bank Neighbourhood.
Northern Gateway Strategic Regeneration Framework (SRF)	Based on a high level reasonable worst case assessment of the likely future impacts on the Application 2 site, there are likely to be significant effects on site character and the 5 identified key viewpoints as a result of the SRF works.

Table 7.11: *In-Combination Assessment*

Plan / Proposal	Townscape effects	Visual effects
Summary of Effects from this Application (Application 1, HIF Advance Enabling Works)	There are not predicted to be any significant effects on site character during the demolition and construction phase, or during the operational phase.	Viewpoint 1: *The character of the view will be changed. The existing view of Creamline Dairies will be replaced by views of the new access to the haul road. Small long-term change at the local level which is neutral in nature.* Viewpoint 2: *Potential for a minor change in the view due to the removal of trees from the site. Views of the haul road will be screened by intervening trees.* Viewpoint 3: *Potential for a very minor change in the view due to the removal of trees*

		from the site. Views of the haul road will be screened by intervening trees. Viewpoint 4: *Minor change to the character of the view due to a reduction in tree cover. Views of the haul road will be screened by intervening trees.* Viewpoint 5: There are predicted to be 'moderately significant' effects on viewpoint 5 during the construction phase, but are considered neutral in nature due to the existing poor condition of the site.
Summary of In-Combination Effects: Application 2 HIF Infrastructure Works	The proposed HIF infrastructure works are likely to have significant impacts on the townscape setting and existing site features with a large new public green space created in St Catherine's Wood, and extensive new areas of public realm created on a new street network. This will potentially lead to significant change in a number of landscape receptors: Landscape Character – likely positive change from poor quality city edge, to new urban residential neighbourhood, streets, spaces and park. Urban Grain – Likely positive change from introduction of a new legible network of streets, blocks and buildings replacing the existing disjointed site structure of waste ground, poor quality/ left over green space and surface car parks. Land Use – Likely positive change from new high quality residential led uses across the full site that will replace the existing patchwork of surface car park, waste ground and green space. Building Height – Likely significant positive change with the	Viewpoint 1: Potential for in-combination close range views associated with the construction of a new access roadway and junction which are unlikely to be significant due to the limited nature of the works. Viewpoint 2: Potential for in-combination close range views associated clearance of structures and vegetation along the river corridor – and redevelopment of St Catherine's Wood in the distance. These are likely to be significant due to the extent of change across the view. Viewpoint 3: Potential for in-combination mid range views associated with clearance of buildings and selected vegetation , although this is unlikely to be significant due to the limited extent of change that will be visible. Viewpoint 4: Potential for in-combination close range views associated clearance of structures and vegetation along the river corridor – and redevelopment of St Catherine's Wood in the centre of the view. These are likely to be significant due to the extent of change across the view and the change in its composition and character. Viewpoint 5: Potential for in-combination close range views associated clearance of structures and vegetation across the upper plateau and construction of new road infrastructure across the view. These are likely to be significant due to the extent of

	introduction of new taller buildings within the site that respond to the city edge location and surrounding city scape, that replaces the current 'void' created by the site. Movement & Linkages – Likely significant positive change from introduction of new pedestrian and cycle connections along the river, Victoria Station, new park areas and legible new street structure. Environmental Designations & Public Open space – No direct impact to designated assets. Likely significant positive change from enhancement of the River Corridor and new areas of public realm within the development parcels. Site Character – Likely significant positive change from wholesale redevelopment of the site – from left over urban edge to high quality new residential neighbourhood.	change across the view and the change in its composition and character.
Summary of In-Combination Effects: Application 3 Flood Defence and Alleviation Measures	The site proposed for the flood defence and alleviation works is located to the south of the site and is physically separated. There are therefore not predicted to be any in-combination landscape effects.	Viewpoint 2: Potential for in-combination close-range views of the food defence and alleviation measures during the construction phase which will be significant due to the proximity of the works to the viewpoint location. In-combination visual effects during the operational phase are not predicted to be significant once the construction works are completed.
Summary of In-Combination Effects: Application 4 Red Bank Built Neighbourhood	The proposed redevelopment of the Red Bank Area will result in widespread change to the landscape setting and existing site features and extensive new areas of public realm created on a new street network. This will potentially lead to significant change in a number of landscape receptors:	All views : Potential for in-combination close range views associated with new built form, public realm, river edge spaces, parks and roadways that make up the proposed Red Bank Residential neighbourhood. Due to the proximity of the views to the site, these effects are likely to be significant due to the scale of the new buildings and extent of change across the view which will create a clearly noticeable

	Landscape Character – likely positive change from poor quality city edge, to new urban residential neighbourhood, streets, spaces and park. Urban Grain – Likely positive change from introduction of a new legible network of streets, blocks and buildings replacing the existing disjointed site structure of waste ground, poor quality/ left over green space and surface car parks. Land Use – Likely positive change from new high quality residential led uses across the full site that will replace the existing patchwork of surface car park, waste ground and green space. Building Height – Likely significant positive change with the introduction of new taller buildings within the site that respond to the city edge location and surrounding city scape, that replaces the current 'void' created by the site. Movement & Linkages – Likely significant positive change from introduction of new pedestrian and cycle connections along the river, Victoria Station, new park areas and legible new street structure. Environmental Designations & Public Open space – No direct impact to designated assets. Likely significant positive change from enhancement of the River Corridor and new areas of public realm within the development parcels. Site Character – Likely significant positive change from wholesale redevelopment of the site – from left over urban	change in their composition and character.

	edge to high quality new residential neighbourhood.	
Summary of In-Combination Effects: Northern Gateway Strategic Regeneration Framework	The proposed redevelopment of the full SRF Area is likely to result in additional widespread change to the landscape setting and existing site features and extensive new areas of public realm created on a new street network. The nature of cumulative change to receptors will be consistent in nature to those identified for the Red Bank area, although the magnitude will increase to reflect the larger site area.	All views : Potential for in-combination close range views associated with new built form, public realm, river edge spaces, parks and roadways that make up the proposed Red Bank Residential neighbourhood. Due to the proximity of the views to the site, these effects are likely to be significant due to the scale of the new buildings and extent of change across the view which will create a clearly noticeable change in their composition and character.
Summary of In-Combination Effects from all plans / proposals combined.	Early enabling works are likely to cause short term temporary adverse landscape effects during construction in relation to site character, although this is not identified as being significant. As works progress and new built form, public realm and street networks are built out, change is likely to be experienced by a wider range of landscape receptors. Given the comprehensive nature and aspirations of the Northern Gateway SRF, and the extent of the wider site, these changes are likely to be significant. t is assumed that the nature of this change will be beneficial, as the proposals represent redevelopment of an existing poor quality environment, and the delivery of the aspirations of the Northern Gateway Strategic Regeneration Framework.	Early enabling works are likely to cause short term temporary adverse visual effects during construction across all the views, although none are identified as being significant. As works progress and new built form, public realm and street networks are built out, all of the views are likely to experience significant change. This is due to their position within the new development where the scale and magnitude of the proposals with the Red Bank are will be clearly visible, which will create a dominant and complete change in their composition and character. It is assumed that the nature of this change will be beneficial, as the proposals represent redevelopment of an existing poor quality environment, and the delivery of the aspirations of the Northern Gateway Strategic Regeneration Framework.

Additional Mitigation/Enhancement Measures

Scenarios 1a and 2a: Impacts of the proposed development only

Assessment Scenario 1a: Mitigation relating to the proposed development only during demolition and construction

7.91 A Construction Environmental Management Plan (CEMP) will be produced for the site which will include standard construction working practices. The CEMP will include an Emergency Spill Response Plan and Dust Management Plan. Implementation of the CEMP will ensure no accidental indirect effects on the retained/adjacent woodland is encountered as a result of the proposed development.

Assessment Scenario 1a: Mitigation relating to the proposed development only during demolition and construction

7.92 There are no additional mitigation or enhancement measures proposed for the enabling works during the operational phase relating to townscape or views.

In-Combination Assessment: Assessment Scenarios 1b, 1c, 2b and 2c considering impacts of the proposed development alongside the wider development project and SRF

7.93 Following the ICA, no additional mitigation is considered to be required for the proposed development (Application 1: HIF Advance Enabling Works).

Likely Residual Effects of the Development and Their Significance

7.94 As there are no additional mitigation or enhancement measures proposed for the enabling works relating to townscape or views, the residual effects are unchanged from the assessment of likely significant effects. The residual effects are summarised in Table 7.12.

***Table 7.12**: Residual Effects Summary*

Description of Effect	Potential effect including significance	Mitigation	Residual Effect including significance
Construction and Demolition			
Assessment Scenario 1a: Impacts of the proposed development only during demolition and construction			
Site character			

Change in site character due to the removal of all tree cover, removal of areas of hard standing and the demolition of Creamline Dairies.	Small adverse short-term change at the local level.	Best practice measures implemented via a CEMP.	Not significant
View 1: Elevated View from footway at corner of St Chads Street/ Stanley Street looking east towards site.			
Visible change with the demolition works to the Creamline Dairies, and the construction of the access haul road. There will be visible hoarding around the site and site compounds at the lower level of the view.	Small, adverse short-term change at the local level.	Best practice measures implemented via a CEMP..	Not significant
View 2: View from Listed Union Bridge/ Dantzic Street looking north towards site.			
Potential for some views of the tree removal works, however the nature of this change will be very small. The overall character of the view will be unchanged.	Small, adverse short-term change at the local level.	Best practice measures implemented via a CEMP.	Not significant
View 3: Elevated View from footway of Dalton Street looking north west towards site.			
The construction and demolition works will be largely screened from this viewpoint by tree cover along Dalton Street. The overall composition of the view will be unchanged.	Negligible adverse short-medium term change at the local level.	Best practice measures implemented via a CEMP.	Not significant
View 4: Elevated view from Sand Street Park pathway looking west over site.			
The demolition and construction works are predicted to be largely screened by existing woodland in the foreground of the view. There is predicted to be a minor change to the character of the view	Small, adverse short-term change at the local level.	Best practice measures implemented via a CEMP.	Not significant

throughout the construction phase as a result of works to remove trees.			
View 5: Elevated view from Barney Steps bridge looking south west over site.			
The character of the view will change as a result of demolition and construction works due to proximity of the view to the site, and the elevation of the view on the steps which allows for prospect over the eastern end of the site.	Small, adverse short-term change at the local level.	Best practice measures implemented via a CEMP.	Minor significance
Assessment Scenario 1b: Impacts of the proposed development alongside Applications 2, 3 and 4 during demolition and construction			
Change to townscape receptors including landscape character, urban grain, land use, building heights, movement and linkages, environmental designations and public opens space as a result of demolition and construction works. All views : Potential for change to in the character and composition of all views due to the close-range views of new demolition and construction works.	Moderate, adverse short-term change at the neighbourhood level.	Best practice measures implemented via a CEMP.	Moderately significant
Assessment Scenario 1c: Impacts of the proposed development alongside Applications 2, 3 and 4 and wider SRF during demolition and construction			
Change to townscape receptors including landscape character, urban grain, land use, building heights, movement and linkages, environmental designations and public opens space as a result of	Moderately, adverse short-term change at the neighbourhood level.	Best practice measures implemented via a CEMP.	Moderately significant

demolition and construction works. Change will signal positive regeneration of the area and the likely phased approach to development will restrict the overall magnitude of effect. All views : Potential for change to in the character and composition of all views due to the close-range views of new demolition and construction works. Change to views will signal positive regeneration of the area and the likely phased approach to development will restrict the overall magnitude of effect.			
Completed Development and Operation			
Assessment Scenario 2a: Impacts of the proposed development once completed and operational			
Site character			
The character of the view will be changed during the operational phase due to the nature of the works proposed which result in tree clearance, modified ground levels and installation of the new haul road.	Small, neutral long-term term change at the local level	No additional mitigation/enhancement proposed under this phase of development.	Not significant
View 1: Elevated View from footway at corner of St Chads Street/ Stanley Street looking east towards site.			
The character of the view will be changed. The existing view of Creamline Dairies will be replaced by views of the new access to the haul road.	Small long-term change at the local level which is adverse in nature.	No additional mitigation/enhancement proposed under this phase of development.	Not significant
View 2: View from Listed Union Bridge/ Dantzic Street looking north towards site.			

Potential for a minor change in the view due to the removal of trees from the site. Views of the haul road will be screened by intervening trees.	Small, adverse long-term change at the local level.	No additional mitigation/enhancement proposed under this phase of development.	Not significant
View 3: Elevated View from footway of Dalton Street looking north west towards site.			
Potential for a very minor change in the view due to the removal of trees from the site. Views of the haul road will be screened by intervening trees.	Negligible, adverse long-term change at the local level.	No additional mitigation/enhancement proposed under this phase of development.	Not significant
View 4: Elevated view from Sand Street Park pathway looking west over site.			
Minor change to the character of the view due to a reduction in tree cover. Views of the haul road will be screened by intervening trees.	Small long-term change that is neutral in nature at the local level.	No additional mitigation/enhancement proposed under this phase of development.	Not significant
View 5: Elevated view from Barney Steps bridge looking south west over site.			
Minor change in the character of the view with partial views of the new haul road replacing the existing low quality hard standing.	Small long-term change that is neutral in nature at the local level.	No additional mitigation/enhancement proposed under this phase of development.	Not significant
Assessment Scenario 2b: Impacts of the proposed development alongside Applications 2, 3 and 4 once completed and operational			
Change to townscape receptors including landscape character, urban grain, land use, building heights, movement and linkages, environmental designations and public opens space once completed and operational. All views : Potential for change to in the character and	Moderate, beneficial long-term change at the neighbourhood level.	No additional mitigation/enhancement proposed under this phase of development.	Moderately significant

composition of all views due to the close-range views once completed and operational			
Assessment Scenario 2c: Impacts of the proposed development alongside Applications 2, 3 and 4 and wider SRF once completed and operational			
Change to townscape receptors including landscape character, urban grain, land use, building heights, movement and linkages, environmental designations and public opens space once completed and operational. All views : Potential for change to in the character and composition of all views due to the close-range views once completed and operational.	Major, beneficial long-term change at the neighbourhood level.	No additional mitigation/enhancement proposed under this phase of development.	Significant

Conclusions

7.95 This assessment has considered the demolition and construction phase and the operational phase effects in relation to townscape and views of the proposed enabling works. There are not predicted to be any significant effects on site character during the demolition and construction phase, or during the operational phase. There are predicted to be effects of 'minor significance'. on viewpoint 5 during the construction phase. However, these effects are temporary in nature and have been assessed as 'neutral' due to the existing poor quality of the view. The change is not considered to be detrimental. There are not predicted to be any operational stage visual effects that are significant.

7.96 This assessment has also considered the high level impacts relating to townscape and views as a result of the wider development project. The assessment has predicted that there are likely to be temporary, moderately significant adverse effects for *Assessment Scenario 1b and Scenario 1c during demolition and construction for both townscape and views due to the extent of the works proposed which are likely to impact on identified townscape receptors, and the close-range of the identified key views to the works.* Change to views will signal positive regeneration of the area and the likely phased approach to development will restrict the overall magnitude of effect.

7.97 The assessment has predicted that there are likely to be permanent, moderately significant beneficial effects for *Assessment Scenario 2b once completed and operational for both townscape and views due to the extent of the works proposed, which are likely to impact on all identified townscape receptors, and the close-range of the works to the identified key views.* The assessment has predicted that there are likely to be permanent, significant beneficial effects for *Assessment Scenario 2c once completed and operational, which are considered to be 'major' in magnitude for both townscape and views due to the transformative nature of the change on identified townscape receptors, and the close-range of the works to the identified key views.*

Cumulative Impact Assessment

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

- Scenario 3a - Assessment of the cumulative impacts relating to the enabling works plus impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites.
- Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, the wider SRF, and the agreed cumulative sites.

7.997 The cumulative assessment seeks to determine whether any non-significant effects on townscape and views arising from this application could become significant, or whether the significance of any effects arising from this application would increase when considered alongside similar effects from other plans or proposals.

7.998 In line with the approach to cumulative assessment in EIA, the following section can only consider existing and available information relating to baseline conditions and mitigation proposals when identifying the potential for cumulative effects to arise. Wherever possible, definitive and fixed information relating to each permission, application or allocation, has been used to ensure that the assessment is as robust as is reasonably possible. See Table 7.13 for detail as to the sites considered in respect of cumulative effects.

7.999 Table 7.14 presents the cumulative effects in respect of Scenarios 3a, 3b and 3c.

Assessment Scenario 3a: Assessment of the cumulative impacts relating to the enabling works plus impacts associated with the agreed cumulative sites

Demolition and Construction

7.100 There are not predicted to be any cumulative townscape or visual impacts relating to the enabling works plus impacts associated with the agreed cumulative sites during the demolition or construction phases. The cumulative sites sit outside the study area defined for application 1. There are also no views from which the demolition and construction works within the site could be viewed in conjunction with any of the cumulative sites.

Completed and Operational Development

7.101 There are not predicted to be any cumulative townscape or visual impacts relating to the enabling works plus impacts associated with the agreed cumulative sites during for the completed scheme and operational phase. The cumulative sites sit outside the study area defined for application 1. There are also no views from which the completed and operational development could viewed in conjunction with any of the cumulative sites.

Assessment Scenario 3b: Assessment of cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites

Demolition and Construction

7.1000 There are not predicted to be cumulative visual impacts relating to Scenario 3b as there are no views from which the enabling works will be visible in conjunction with Applications 2, 3 and 4 in conjunction with any of the agreed cumulative sites. There is potential for cumulative townscape effects with the following cumulative sites; 116366/FO/207, 128248/FO/2020, and 131708/FO/2021, due to the proximity of the cumulative sites to Application 4: Red Bank. There is potential to increase the adverse effects on townscape receptors due to the cumulative effects during demolition and construction, assuming 'worst-case scenario' that the demolition and construction phases will occur concurrently. The effect is predicted to be significant.

Completed and Operational Development

7.1001 There are not predicted to be cumulative visual impacts relating to Scenario 3b as there are no views from which the enabling works will be visible in conjunction with Applications 2, 3 and 4 in conjunction with any of the agreed cumulative sites. There is potential for cumulative townscape effects with the following cumulative sites: 116366/FO/207, 128248/FO/2020, and 131708/FO/2021, due to the proximity of the cumulative sites to Application 4: Red Bank. There is potential to increase the beneficial change to townscape receptors due to the transformative nature of the change to the Red Bank area. The effect is predicted to be significant.

Assessment Scenario 3c: Assessment of cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, the wider SRF and the agreed cumulative sites

Demolition and Construction

7.1002 There are not predicted to be cumulative visual impacts relating to Scenario 3c as there are no views from which the enabling works will be visible in conjunction with Applications 2, 3 and 4 and *the SRF in conjunction with any* of the agreed cumulative sites. There is potential for cumulative townscape effects with the following cumulative sites: 127971/FO/2020, 129393/VO/2021, 116366/FO/207, 128248/FO/2020, and 131708/FO/2021, due to the proximity of the cumulative sites to the wider SRF. However, due to the scale of the redevelopment proposed as part of the SRF, there are not predicted to be any additional significant effects during the demolition and construction phase.

Completed and Operational Development

7.102 There are not predicted to be cumulative visual impacts relating to Scenario 3c as there are no views from which the enabling works will be visible in conjunction with Applications 2, 3 and 4 and *the SRF in conjunction with any* of the agreed cumulative sites. There is potential for cumulative townscape effects with the following cumulative sites: 127971/FO/2020, 129393/VO/2021, 116366/FO/207, 128248/FO/2020, and 131708/FO/2021, due to the proximity of the cumulative sites to the wider SRF. However, due to the scale of the redevelopment proposed as

part of the SRF, there are not predicted to be any additional significant effects during for the completed development and operational phase.

***Table 7.13**: Cumulative Sites*

Site Ref.	Application No.	Proposal	Approx. Distance and Direction	Status	Scoped In / Scoped Out	Justification
1	*129393/VO/2021*	*City Council Development for the erection of 168, three and four storey dwelling houses (Use Class C3a) and two, five and six storey apartment buildings to form 76 residential apartments (Use Class C3a) with associated ground floor flexible commercial unit (162 sqm) (Use Class E); and the creation of a new public park; all with associated car and parking, refuse storage, landscaping, public realm and other associated works and infrastructure following demolition of 29 existing residential dwelling houses, the Collyhurst Village Store and associated car parking*	*650m north east*	*Approved Jun 2021*	*Scoped in*	*There is potential for cumulative townscape effects in addition to those predicted for Application 4 and the wider SRF.*
2	*127971/FO/2020*	*Erection of a 6 storey building to form 90 residential apartments (Use Class C3a) following demolition of existing structures with associated access, car parking, amenity space, landscaping and other associated works*	*950m east*	*Approved May 2021*	*Scoped in*	*There is potential for cumulative townscape effects in addition to those predicted for Application 4 and the wider SRF.*
3	*128248/FO/2020*	*Erection of 9 buildings ranging from 8 to 34 storeys in height to form 1202 residential apartments (Use Class C3a) and ground floor commercial uses (Use Class E) (192 sqm) together with associated car parking, new vehicular and pedestrian access, public realm, landscaping and other associated works following demolition of existing structures and buildings | Land Bound By Gould Street, Williamson Street, Bromley Street And Bilbrook Street Manchester M4 4DD*	*150m south*	*Approved June 2021*	*Scoped in*	*There is potential for cumulative townscape effects in addition to those predicted for Application 4 and the wider SRF.*
4	*116366/FO/2017*	*Erection of four residential buildings (22 storey building, 17 storey building, 40 storey building and part 12, part 9 storey building) to form 756 residential apartments (Use Class C3a) together with ground floor*	*150m south*	*Approved Aug 2017*	*Scoped in*	*There is potential for cumulative townscape effects in addition to*

		commercial uses (616 sqm) (Use Classes A1, A2, A3, A4, A5, D1 and B1) with associated car parking, landscaping, amenity areas, creation of new public realm following the closure of Aspin Lane, Mincing Street and Irk Street and other associated works following demolition of existing structures | Land Bounded By Dantzic Street & Aspin Lane, Land Bounded By Gould Street & Angel Meadows And Land Bounded By Old Mount Street, School Street, Naples Street & Ludgate Street Manchester		*Under construction*		*those predicted for Application 4 and the wider SRF.*
5	*118120/FO/2017*	*Erection of a part 15, part 9, part 7 storey building to form 155 residential apartments together with ground floor commercial uses (Use Classes A1, A3 and B1) (288 sqm) with associated car parking, access arrangements and other associated works following the demolition of existing buildings and structure and the closure of Hatter Street | Land Bounded By Thompson Street / Mason Street / Bendix Street And Rochdale Road Manchester*	*450m south*	*Approved May 2018* *Under construction*	*Scoped out*	*There are not predicted to be any cumulative townscape or visual effects.*
6	*127537/FO/2020*	*Erection of a 11 storey 229 bedroom hotel (Use Class C1) with ancillary ground floor bar/restaurant together associated public realm and other associated works | 25 Rochdale Road Manchester M4 4HT*	*400m south*	*Approved Oct 2016*	*Scoped out*	*There are not predicted to be any cumulative townscape or visual effects.*
7	*124973/FO/2019*	*Erection of an 11 storey building and a 12 storey building with plant rooms above to form a mixed use development comprising 39,184 sq.m (NIA) of Class B1a office use and commercial units of 1,286 sqm (NIA) (Use Classes A1, A2, A3, A4, B1a and D1) along with associated lower ground level car parking, hard and soft landscaping and associated works, including the creation of a new pedestrian route between Angel Street and Miller Street. | Land Bounded By Co-op Headquarters Miller Street And Angel Street Manchester*	*350m south*	*Approved Feb 2016*	*Scoped out*	*There are not predicted to be any cumulative townscape or visual effects.*
8	*111777/FO/2016/C1*	*Erection of two residential buildings of a maximum 21 and 26 storeys to accommodate 520 apartments (178 x 1 bed, 286 x 2 bed and 56 x 3 bed apartments) (Use Class C3). Erection of one office building of maximum eight storeys comprising up to 11,647 sq. m (GIA) of office accommodation. Ground floor commercial space (Use Class A1, A2, A3*	*250m south east*	*Approved Sep 2016* *Under construction*	*Scoped out*	*There are not predicted to be any cumulative townscape or visual effects.*

		and B1), lower ground level car parking, access and servicing arrangements, alterations to Corporation Street, new public realm and other associated works. | New Victoria Land At Corporation Street Manchester M3 1NX				
9	*121375/FO/2018*	*Construction of a 22 storey building comprising 361 residential apartments (122 x 1 bed 2 person, 119 x 2 bed 3 person, 94 x 2 bed 4 person, 21 x 3 bed 5 person and 5 x 3 bed 6 person (34% 1 bed, 59% 2 bed and 7% 3 bed) ground floor commercial floorspace (Use Classes A1 (Shop), A3 (Restaurant and Cafe), A4 (Drinking Establishment) and A5 (Hot Food Take-away) associated landscaping, including new public realm and pedestrian route, together with servicing, cycle parking, access and other associated works following demolition of buildings at 20-22 and 24-26 High Street and 5 market stalls to Church Street.*	*840m south*	*Approved Oct 2020*	*Scoped out*	*There are not predicted to be any cumulative n townscape or visual effects.*
10	*18/71330/FUL*	*Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping*	*850m south west*	*Approved Oct 2018* *Under construction*	*Scoped out*	*There are not predicted to be any cumulative townscape or visual effects.*
11	*20/76134/FUL*	*Erection of 16-storey building plus plant comprising a hotel (Use Class C1) with ancillary bar and restaurant uses, access, servicing, landscaping and other associated works*	*1000m south west*	*Approved Feb 2020*	*Scoped out*	*There are not predicted to be any cumulative townscape or visual effects.*
12	*17/70626/FUL*	*Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works.*	*840m south west*	*Approved Nov 2017* *Under construction*	*Scoped out*	*There are not predicted to be any cumulative townscape or visual effects.*
13	*19/74465/HYBEIA*	*Hybrid planning application for demolition of existing buildings on the site and comprehensive redevelopment to create between 1,407 and 1,521 dwellings, comprising of: (a) Phase 1 (submitted in full with no matters*	*960m south west*	*Validated Nov 2019*	*Scoped out*	*There are not predicted to be any cumulative townscape or visual*

		reserved) for development of a 50-storey residential building; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new public park; highways and public realm improvements and other associated works; and, (b) Phases 2 and 3 (submitted in outline with all matters reserved) for the development of two residential buildings up to 42 storeys in height; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new highways; a public square; public realm improvements and other associated works. (EIA development, accompanied by Environmental Statement) | Land Bound By Greengate, Collier Street, Queen And King Street And Gravel Lane M3 7BN				*effects.*
14	*126944/FO/2020*	*Erection of a residential-led mixed use development comprising 3 no. towers (37, 26 and 18 storeys) and podium levels (6 storey) to form 634 residential apartments and townhouse accommodation (Use Class C3) together with commercial accommodation (1222 sqm) (Use Classes A1,A2,A3,A4,A5,B1, D1 and D2)); with associated residential amenity areas, refuse storage, plant (including substation), car parking, cycle storage, landscaping and new public realm including the re-instatement of Bromley Street and other associated works*	*140m south east*	*Approved Sep 2020* *Under Construction*	*Scoped out*	*There are not predicted to be any cumulative effects with Application 1-3. The proposal is located with the Red Bank area and will therefore be assessed as part of the Application 4 and the wider SRF.*
15	*114860/FO/2016*	*Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings*	*145m south east*	*Approved October 2017*	Scoped out	*There are not predicted to be any cumulative effects with Application 1-3. The proposal is located with the Red Bank area and will therefore be assessed as part of the Application 4 and the wider SRF.*
16	*131708/FO/2021*	*Erection of a part 11, part 13 storey building to form residential apartments (Use Class C3a) together with the erection of two blocks of 3 storey townhouses (Use Class C3a) to form 237 residential homes in total with associated commercial floor (Use Class E) (132 sqm), basement car parking, landscaping and public realm, and associated engineering and infrastructure works following demolition of existing buildings and*	*450m south*	*Validated September 2021*	*Scoped in*	*There is potential for cumulative townscape effects in addition to those predicted for Application 4 and the*

		structures				*wider SRF.*
17	*118831/FO/2018*	*Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works*	*635m south west*	*Approved June 2018*	*Scoped out*	*There are not predicted to be any cumulative townscape or visual effects.*
18	*128997/FO/2020*	*Erection of a ground plus 9-storey building to form 118 no. residential apartments (Use Class C3), including amenity areas, ground floor food and beverage/ commercial units (Sui Generis/ Use Class E), public realm and landscaping, with supporting infrastructure and associated works following demolition of existing building*	*730m south*	*Approved September 2021*	*Scoped out*	*There are not predicted to be any cumulative townscape or visual effects.*
19	*124888/FO/2019*	*Erection of a 6-9 storey residential building (Use Class C3) comprising 80 no. dwellings including 9 no. townhouses and 71 no. apartments with residents lounge, refuse, plant, new substation, cycle storage, an internal landscaped courtyard and improvements to the adjacent footways*	*665m south*	*Approved January 2020* *Under Construction*	*Scoped out*	*There are not predicted to be any cumulative townscape or visual effects.*
20	*125678/FO/2019*	*Erection of 8-storey residential building (Use Class C3) comprising 73 residential units, with ground floor commercial use (Classes A1, A2, A3, B1 and D1 (excluding Places of Worship)) (205 sqm); alterations to the retained perimeter wall and chimney including the introduction of a light box; disabled car parking, highways, landscaping and other associated works*	*640m south*	*Approved December 2020*	*Scoped out*	*There are not predicted to be any cumulative townscape or visual effects.*

Table 7-14 Cumulative Impact Assessment summary

Assessment scenario	Potential effects
3a – Assessment of the cumulative impacts relating to the enabling works plus impacts associated	• There are not predicted to be any cumulative townscape or visual impacts relating to the enabling works plus impacts associated with the agreed cumulative sites during the demolition or construction phases.

with the agreed cumulative sites	
3b – Assessment of cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites	• There are not predicted to be any cumulative visual effects relating to the enabling works, applications 2-4, and the agreed cumulative sites. • There is potential for cumulative adverse townscape effects in the demolition and construction phase due to cumulative sites 116366/FO/207, 128248/FO/2020, and 131708/FO/2021, due to the proximity of the cumulative sites to Application 4: Red Bank. The effect is predicted to be significant assuming 'worst-case' scenario that the demolition and construction phases will occur concurrently. • There is potential for cumulative beneficial townscape effects for the completed development and operational phase due to cumulative sites 116366/FO/207, 128248/FO/2020, and 131708/FO/202. There is potential to increase the beneficial change to townscape receptors due to the transformative nature of the change to the Red Bank area. The effect is predicted to be significant.
3c – Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3, and 4, the wider SRF and the agreed cumulative sites	• There are not predicted to be any cumulative visual effects relating to the enabling works, applications 2-4, the wider SRF and the agreed cumulative sites. • There is potential for cumulative townscape effects with the following cumulative sites: 127971/FO/2020, 129393/VO/2021, 116366/FO/207, 128248/FO/2020, and 131708/FO/2021, due to the proximity of the cumulative sites to the wider SRF. However, due to the scale of the redevelopment proposed as part of the SRF, there are not predicted to be any additional significant effects during the demolition and construction phase. • There is potential for cumulative townscape effects with the following cumulative sites: 127971/FO/2020, 129393/VO/2021, 116366/FO/207, 128248/FO/2020, and 131708/FO/2021, due to the proximity of the cumulative sites to the wider SRF. However, due to the scale of the redevelopment proposed as part of the SRF, there are not predicted to be any additional significant effects during for the completed development and operational phase.

References

[i] Guidelines for Landscape and Visual Impact Assessment, Third Edition. Landscape Institute, Institute of Environmental Management and Assessment.

[ii] Visual Representation of Development Proposals. Landscape Institute Technical Guidance Note 06/09. 17th September 2019.

8. Drainage and Flood Risk

Introduction

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

8.2 A number of associated developments are proposed in relation to the Red Bank Neighbourhood project, including:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1').
- HIF Infrastructure Works (referred to hereafter as 'Application 2').
- HIF Flood Defence Works (referred to hereafter as 'Application 3').
- Red Bank Neighbourhood (referred to hereafter as 'Application 4').

8.3 This chapter assesses the drainage and flood risk effects of the proposed development on HIF Advance Enabling Works (including construction of a temporary haul road) (hereafter referred to as the 'proposed development'). See Figures 1.1 and 5.1-5.3 for information relating to this proposed development.

8.4 The chapter describes the methods used to assess the likely significant effects, the baseline conditions currently existing at the site and surroundings, the potential direct and indirect effects of the development arising from the demolition of Creamline dairies and construction of a temporary haul road the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual drainage and flood risk effects.

8.5 The chapter also presents a high-level assessment of the drainage and flood risk effects of the proposed development in-combination with the wider development project (inclusive of Applications 2, 3 and 4), and also of the wider SRF for which it is a part. See Chapter 2 and supporting Figures 2.1 to 2.4b for information relating to the available information in respect of the wider development project.

8.6 This chapter has been written by Arup.

Planning Policy Context

8.7 The following key legislation is relevant to this assessment:

- Environmental Permitting (England and Wales) (Amendment) (EU Exit) Regulations 2019.
- Environment (Amendment etc.) (EU Exit) Regulations 2019.
- Environmental Protection Act 1990.
- Environment Act 1995.
- Environmental Permitting (England and Wales) Regulations 2016.
- Water Resources Act 1991.
- Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD).
- Land Drainage Act 1991.
- Water Act 2014.
- Water Resources (Abstraction and Impounding) Regulations 2006.
- Water Abstraction and Impounding (Exemptions) Regulations 2017.
- Flood Risk Regulations 2009.
- Water Supply (Water Quality) Regulations 2018.
- Flood and Water Management Act 2010.
- Environmental Damage (Prevention and Remediation) (England) Regulations 2015.

National Planning Policy

National Planning Policy Framework

8.8 The National Planning Policy Framework (NPPF) requires that a sequential, risk-based approach is taken to direct development to areas of lowest risk of flooding from any source. Where this is not possible, the exception test should be applied to demonstrate that the development will be safe for its lifetime without increasing flood risk elsewhere, whilst also providing wider sustainability benefits to the community. The NPPF requires Local Plans to seek opportunities for new development to reduce flood risk where possible.

8.9 Local authorities must ensure that new development does not increase flood risk elsewhere when determining planning applications. Major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate.

8.10 The NPPF outlines the requirement for planning policies and decisions to prevent development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of water pollution. Development should, where possible, improve water quality and take into account the information presented in river basin management plans.

Local Planning Policy

8.11 Manchester's Local Development Framework Policy reflects the sequential approach outlined in the NPPF in Policy EN 14 Flood Risk, and indicates that all sources of flood risk identified in the Manchester-Salford-Trafford Strategic Flood Risk Assessment (SFRA) should be taken into account. Surface water runoff from new developments should be minimised through use of SuDS and green infrastructure. Within Critical Drainage Areas (CDAs), developers are required to provide evidence to justify the surface water runoff rates.

8.12 EN 8 Adaptation to Climate Change indicates that developers should aim to minimise flood risk by appropriate siting, drainage, and treatment of surface areas. Policy EN 9 encourages developers to enhance the quality, quantity and performance of green infrastructure and highlights the multiple functions of existing green infrastructure corridors including along the River Irk.

8.13 Policy EN 17 Water Quality requires that adverse impacts on water quality arising from new development are avoided and that opportunities should be sought to improve water quality wherever possible, including through the use of SuDS, to avoid increasing pollution of watercourses.

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

8.14 The SRF is a material consideration in the determination of all planning applications relevant to the study area. Whilst it does not form part of the Development Plan, it has been prepared to be consistent with the policies of the Council's adopted Development Plan.

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

Manchester City, Salford City and Trafford Councils Level 2 Hybrid Strategic Flood Risk Assessment (SFRA)

8.16 The Level 2 SFRA, published in 2011, describes flood risk across Manchester, Salford and Trafford from all sources to help support the application of the Sequential Test. The document provides an understanding of actual risk (taking into account the presence of flood defences) and identifies residual risk. The SFRA notes that there is potential for development to reduce risk within the Irk Valley through reductions in surface water runoff and mitigation of flood risk.

Local Flood Risk Management Strategy (LFRMS)

8.17 The LFRMS aims to ensure that local flood risk is properly managed to reduce the likelihood, severity and consequences of flooding from Ordinary watercourses, groundwater and surface water runoff.

8.18 It is recognised within the LFRMS that minimising surface water runoff rates from new developments is one of the most effective ways of reducing local flood risk through the planning process. Within CDAs, developers are asked to minimise surface water runoff rates by achieving a minimum of attenuating to greenfield runoff rate on

greenfield sites up to a 1 in 100-year storm event including consideration of climate change, or a 50% runoff rate reduction for brownfield sites (with an aim to reduce to greenfield runoff rates up to a 1 in 100-year storm event including consideration of climate change).

Other Relevant Policy, Standards and Guidance

8.19 The assessment will follow the principles, where relevant, set out within LA 104 Environmental assessment and monitoring[i] (LA 104) and LA 113 Road drainage and the water environment[ii] (LA 113). This guidance provides the methodology and criteria for identifying likely impacts of a proposed road project on the water environment and predicting their magnitude and significance of the resulting effects. There is no standard guidance for the methodology of water EIA, therefore in the absence of any sector guidance, the DMRB methodology outlined within LA 113 is recognised as a robust approach. Some of the methodology is specific to road-related impacts on the water environment and therefore sections of it (e.g., HEWRAT) are not applicable to this development.

8.20 The assessment draws on other guidance including:

- GOV.UK guidance: Planning Practice Guidance on flood risk[iii].
- GOV. UK guidance: Pollution prevention for businesses[iv].
- Planning Inspectorate Advice Note 18 (Water Framework Directive).
- The Environment Agency's Pollution Prevention Guidelines (PPGs), which have now been withdrawn, and the replacement Guidance for Pollution Prevention (GPPs). Although these are no longer current regulatory guidance in England, they continue to provide environmental good practice guidance.
- Construction Industry Research and Information Association (CIRIA) guidance including:
    - Control of Water Pollution from Construction sites – Guide to Good Practice (SP156).
    - Control of Water Pollution from Construction sites – Guidance for Consultants and Contractors (C532).
    - The SuDS Manual (C753).
    - Guidance on the construction of SuDS (C768).
    - Environmental good practice on-site (C692).

Assessment Methodology and Significance Criteria

Overview

8.21 As described in paragraph 8.1915, the assessment will follow the principles set out within LA 113. This methodology is specifically designed for assessing the impacts of road or bridge construction on the water environment and therefore sections of it (e.g., HEWRAT) are not applicable to the proposed development. Despite this, the DMRB methodology is widely used for all types of schemes and benefits from being recognised by regulators.

8.22 LA 113 provides a standard methodology for the assessment of each topic area and has four key steps:

- Step 1 – Identification of water features within the study area and an assessment of the importance (hereafter referred to as the sensitivity) of each of these receptors, using the criteria set out in **Table 8-1** below.
- Step 2 – Identification of potential impacts to the water features identified in Step 1, from construction and/or operation. Under the WFD, an impact is defined as causing a deterioration in the status of a water body or preventing a water body from reaching 'Good' status in the future.
- Step 3 – Assessment of the potential magnitude of any construction or operation impacts on the receptor, based on the criteria in DMRB LA 113: Table 3.71, summarised in **Table 8-2** below.
- Step 4 – Assessment of the overall significance of any effects to receptors due to impacts, using the significance matrix provided in **Table 8-3**.

Scope of Assessment

8.23 The assessment will cover the following key aspects of the surface water environment:

- Impacts on the quality of surface water due to sediment-laden or contaminated run-off or accidental spillages of hazardous substances.
- Impacts on the hydromorphology of affected watercourses.
- Impacts on the existing local drainage pattern and flood regime.

8.24 Associated effects on ecology are considered within Chapter 6: Ecology and Trees. No water-dependent habitats have been identified with the site boundary (Chapter 6). Groundwater baseline conditions and impacts on groundwater quality are considered in Chapter 9: Ground Conditions.

Study area

8.25 The study area has been selected based on a source – pathway – receptor approach. For effects on surface waters, the study area will include those receptors which have potential hydrological connectivity to the proposed development. For the purposes of this chapter, these are receptors that have potential hydrological connectivity to the enabling works site boundary (Application 1). The same receptors will be considered for the future applications (Applications 2, 3 and 4), although the study area for the wider development project will encompasses a longer reach of the River Irk due to the larger site boundary under consideration.

Establishing baseline conditions

8.26 The baseline describes the existing condition of surface water features and flood risk. Baseline conditions of identified surface water receptors, including flood risk, have been established through a combination of review of desk-based data sources and mapping, walkover survey and review of the FRA (**Appendix 8.1**).

Data Sources

8.27 The following information sources have been used within the assessment:

- North West River Basin Management Plan 2015[v].
- North West Flood Risk Management Plan 2015-21[vi].
- Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA[vii].
- Local Flood Risk Management Strategy[viii].
- Water Framework Directive (WFD) data, classifications and mitigation measures from the EA's Catchment Data Explorer website[ix].
- Ordnance Survey (OS) Open Data[x].
- Historic OS maps[xi].
- National River Flow Archive gauge data[xii].
- GOV.UK: Flood map for planning[xiii].
- Enabling Works Flood Risk Assessment (FRA) VNIF-ARP-ZZ-YYY-RP-CD-0001)[xiv].

Significance Criteria

8.28 The baseline assessment describes the existing condition of surface water receptors and flood risk within the study area. Their sensitivity to change has been considered, and the attributes and indicators of quality defined in LA 113 have been used to inform the value assigned to each receptor (**Table 8-1**).

Table 8-1 Criteria for estimating the sensitivity of receptors (adapted from DMRB LA 113: Table 3.70)

Sensitivity / value	Quality	Description
Very high	Attribute has a high quality and rarity on regional or national scale.	Surface water: Watercourses having a WFD classification shown in a RBMP and typically having $Q_{95} \geq 1.0$ m^3/s. Site protected / designated under EC or UK legislation (Special Area of Conservation, Special Protection Area, SSSI, Ramsar site, salmonid water). Species protected by EC legislation. Flood risk: Essential infrastructure or highly vulnerable development.

High	Attribute has a high quality and rarity on a local scale.	Surface water: Watercourses having a WFD classification shown in a RBMP and typically having Q_{95} < 1.0 m^3/s. Species protected by EC or UK legislation. Flood risk: More vulnerable development.
Medium	Attribute has a medium quality and rarity on a local scale.	Surface water: Watercourses not having a WFD classification shown in a RBMP and typically having Q_{95} > 0.001 m^3/s. Flood risk: Less vulnerable development.
Low	Attribute has a low quality and rarity on a local scale.	Surface water: Watercourses not having a WFD classification shown in a RBMP and typically having Q_{95} ≤ 0.001 m^3/s. Flood risk: Water compatible development.

8.29 Following the baseline study, a qualitative assessment of potential impacts on the surface water environment during both the construction and operational phases was undertaken. The magnitude of effects has been assigned according to **Table 8-2** and the significance of effect determined using the matrix in Table 8-3. Where two possible categories are given in **Table 8-3**, professional judgement has been used to determine the most appropriate category taking into account the sensitivity of the receptor, magnitude of effect, scale at which the effect will be felt and the duration of effect.

8.30 This assessment considers a Major or Moderate significance of effect to be significant. Minor and negligible significance of effect is considered not significant. Where significant effects are predicted, mitigation measures have been proposed and the residual significance of effects predicted.

Table 8-2 Criteria for assessing impact magnitude (adapted from DMRB LA 113: Table 3.71)

Magnitude of impact	Typical criteria descriptors
Major adverse	Results in loss of attribute and / or quality and integrity of the attribute.
Moderate adverse	Results in effect on integrity of attribute, or loss of part of attribute.
Minor adverse	Results in some measurable change in attributes, quality or vulnerability.
Negligible	Results in effect on attribute but of insufficient magnitude to affect the use or integrity.
Minor beneficial	Results in some beneficial effect on attribute or a reduced risk of negative effect occurring.
Moderate beneficial	Results in moderate improvement of attribute quality.
Major beneficial	Results in major improvement of attribute quality.

Table 8-3 Significance of effects matrix with significant effects in bold (adapted from DMRB LA 104 Table 3.8.1)

Value of receptor	Magnitude of impact			
	Negligible	Minor	Moderate	Major
Low	Negligible	Negligible	Minor	Minor / **Moderate**
Medium	Negligible	Minor	**Moderate**	**Major**
High	Negligible	Minor / **Moderate**	**Moderate / Major**	**Major**
Very high	No Impact	**Moderate / Major**	**Major**	**Major**

8.31 As described in Chapter 2, In-Combination Assessment is proposed. The assessment scenarios in respect of the EIA for the proposed development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
  - Scenario 1a - Assessment of the impacts relating to the proposed enabling works only.
  - Scenario 1b - Assessment of the impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4.
  - Scenario 1c - Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF.
- Assessment Stage 2 - Completed Development and Operational Phase:
  - Scenario 2a - Assessment of the impacts relating to the enabling works only.
  - Scenario 2b Assessment of the impacts relating to the proposed development, plus impacts associated with Application 2, 3 and 4.
  - Assessment 2c - Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF.

Assumptions/Limitations

8.32 This assessment is based on available baseline data and design information for the proposed development. Preparation of design details and technical assessments (FRA and WFD Compliance Assessments) for Applications 2, 3 and 4 are ongoing, and the ICA has been carried out using the information available at the time of writing. As such, assessment of scenarios 1b, 1c, 2b and 2c are high level only.

8.33 A hydraulic model is being developed to understand existing flood risk from the River Irk. This flood model will then be used to predict changes in flood levels and river flows arising from any proposals that will alter the channel bed, banks or floodplain. The proposed development for this application (Application 1) does not include any works within the river corridor and flood modelling is therefore not required. Details regarding the modelling

approach and results (for example, peak river flow, levels and flood extents) will be provided within subsequent applications where alterations within the river corridor are proposed (Applications 2 and 3).

8.34 Information regarding the drainage ditch to the north-east of the site is limited. Based on observations from project ecologists and a review of the historic maps (no watercourse shown in this location), it is likely that this is a remanent feature of the railway works and not a watercourse. The assessment assumes that hydrological connectivity with the River Irk is unlikely but possible and, therefore, a conservative approach to mitigation has been applied.

8.35 The impacts of climate change on flood risk are not considered in detail for the proposed development (Application 1) due the temporary and short-term nature of the proposals. The Red Bank Neighbourhood project as a whole could be impacted by climate change with regards to increased surface water and fluvial flood risk arising from large magnitude and / or higher intensity rainfall events. These impacts will be assessed in detail within the future submissions for Applications 2, 3 and 4 where government guidance will be followed regarding the use of climate change allowances in flood risk assessments, and the design proposals will include embedded mitigation to provide resilience to climate change.

Consultation

8.36 Consultation undertaken to date for both the enabling works and wider site infrastructure works is summarised in **Table 8-4**.

Table 8-4 Consultation

Consultee	Date and Time	Comments	Actions
Jonathon Cartledge United Utilities (Wastewater and surface water)	03/08/21	High-level principles for SuDS adoption.	Chat required with UU Modelling Engineers once one has been located.
Andrew Leyssens United Utilities (Wastewater and surface water)	05/08/21	High-level principles for SuDS adoption.	Further guidance required from UU Engineers with regards to diversion options.
Jonathon Cartledge United Utilities (Wastewater and surface water)	25/08/21	High-level principles for SuDS adoption.	Further guidance required from UU Engineers with regards to diversion options.
Oliver Timmins MMC Flood Risk and Drainage Team	07/10/21	Engagement meeting with UU, LLFA, MCC and EA. Outcomes was to get the initial engagement with these stakeholders.	To follow up from engagement meeting on an individual stakeholder basis.

Oliver Timmins MCC Flood Risk and Drainage Team (LLFA)	21/10/21	Detailed discussion with LLFA with regards to agreeing a discharge rate for the site.	Follow up with an email and invite to EA further engagement meeting.

Baseline Conditions

8.37 This section sets out existing conditions and identifies potential receptors, describing their sensitivity according to the methodology.

Surface Water and Hydrology

8.38 The proposed development site is located within the River Irk catchment and sits on a plateau above the river corridor. Historically, the area was used as railway sidings, with current land use comprising of post-industrial greenfield land, areas of hardstanding and the Creamline Dairies. The River Irk is situated approximately 60-100m to the south of the site boundary and flows in a south-westerly direction towards the confluence with the River Irwell approximately 900m downstream. The River Irk is designated as a Heavily Modified Water Body (HMWB) in the River Basin Management Plan (RBMP) according to WFD legislation due to physical modifications and the resulting change in watercourse character. The gauging station data (station 69043) at Collyhurst Weir adjacent to the site indicates that the River Irk has a catchment area of 72.3 km^2 and a Q_{95} (flow which is exceeded 95% of the time) of 0.914m^3/s.

8.39 The River Irk, located adjacent to the proposed development (Application 1), is a uniform modified urban reach which is more channelised than upstream reaches. The left and right banks are both artificial and the natural bed substrate was largely obscured by man-made debris.

8.40 A small drain is marked on the OS Mastermap data to the north-east of the enabling works site boundary (Application 1).[xv] Observations during the ecological surveys indicate that this is a low point in the topography related to the former land use (railway sidings) where water now pools. Review of OS historic mapping shows no watercourse at this location. Based on this evidence it is unlikely that this area of ponded water is in hydrological connectivity with the River Irk. However, for the purposes of this assessment and to take a conservative approach, this drain has been included as a potential surface water receptor.

Water Framework Directive Classification

8.41 The study area is situated in the North West River Basin District[xvi]. The site is within the Roch Irk Medlock Operational Catchment, and the affected water body is the Irk (Wince to Irwell) (GB112069061131). This is a Heavily Modified Waterbody (HMWB) with an Overall Status of Moderate, with a failing Chemical Status and a Moderate Ecological Potential. The reasons for the failure to reach Good status include sewage discharge,

pollution from industry, contaminated land and urbanisation. The target overall status for the waterbody is Moderate by 2027.[xvii]

8.42 The Irk (Wince to Irwell) water body is located within a Nitrate Vulnerable Zone (NVZ) as designated under the Nitrates Directive. The footprint of the proposed development sites entirely within this protected area.

8.43 **Table 8-5** provides a summary of the WFD surface water bodies within the study area.

Table 8-5 Summary of WFD surface water bodies in the study area.

WFD Waterbody	Irk (Wince to Irwell)
ID	GB112069061131
Type of Waterbody	River
Management Catchment	North West
Area (km²)	30.975
Heavily Modified Waterbody (HMWB/Artificial Waterbody (AWB)?	Yes
Overall Status	Moderate
Objective	Good by 2015
Chemical Status	Fail
Ecological Status (river), Quantitative Status (groundwater)	Moderate
Driver of failure to achieve Good status	Sewage discharge, pollution from industry, contaminated land, and urbanisation
Reason for not achieving Good status	Invertebrates, phosphate, ammonia,

Flood Risk

8.44 The Manchester, Salford and Trafford SFRA identifies the River Irk as the primary source of flood risk, with surface water as a secondary source of flood risk. The SFRA doesn't identify the site as an area at risk of groundwater flooding. The groundwater level is anticipated to be below most proposed works.

8.45 An FRA has been produced for the proposed development and is included in **Appendix 8.1**. The baseline flood risks are outlined in the following section.

Surface water flood risk

8.46 The EA surface water flooding maps show that there are localised areas of low, medium, and high risk for surface water flooding. The surface flooding follows the alignment of the plateau with the depth of the flooding being less than 300mm for most of the site.

8.47 There are no known existing sewers within the site boundary for Application 1, so surface water flooding is assumed to occur due to localised low points. Although the majority of the area within the Application 1 boundary is brownfield, an initial geotechnical investigation found that infiltration varies due to large areas of made ground beneath the site. This could also contribute to surface water flooding. The site sits within the Conurbation Core Critical Drainage Area (CDA) as identified in the Manchester, Salford and Trafford SFRA. This means the area would be sensitive to an increase in surface water runoff as a result of the new development and is associated with historic flooding in the area. This could be due to the capacity of the existing sewer network or other watercourses including culverts.

Fluvial flood risk

8.48 The proposed development (Application 1) sits entirely in Flood Zone 1 as defined by the Environment Agency Flood Map for Planning. This is classified to be at 'Low Risk' of fluvial flooding. This comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).

Ecological Designations

8.49 There are no areas designated on account of their ecological value within the site. There is one internationally designated site for nature conservation within 10km of the development boundary: Rochdale Canal Special Area of Conservation (SAC), which is 4.3km north east of the site. There is one nationally designated site within 5km of the site: Rochdale Canal Site of Special Scientific Interest (SSSI), which is 4.3km north east of the site. There are no statutory locally designated sites within 2km of the proposed development site, although four non-statutory locally designated sites lie within 2km (described in Chapter 6: Ecology and Trees). There is no hydrological connectivity between these Sites of Biological Importance (SBI) and the proposed development, with the SBIs located in a different catchment or upstream of the proposed development. The SBIs have therefore been scoped out of further assessment.

Sensitivity of Receptors

8.50 The baseline assessment has identified two surface water receptors. The sensitivity assigned to these receptors, based on the baseline data, is shown in **Table 8-6**.

Table 8-6 Description of the sensitivity of the surface water receptors

Receptors	Sensitivity and rationale
River Irk	*High* – WFD classified and Q_{95} <1.0m^3/s. Any development within Flood zone 3 of this watercourse may fall within the 'more vulnerable' category.

Drain	*Low* – Minor local water feature possibly related to former land use as railway sidings. Likely that this feature is ephemeral and assumed hydrological connectivity with the River Irk is unlikely.

Embedded Mitigation

8.51 Within the Enabling Works proposal, there is no embedded mitigation that is relevant to the surface water environment.

Assessment of Likely Significant Effects

Scenarios 1a and 2a: Impacts of the proposed development only

Assessment Scenario 1a: Impacts of the proposed development only during demolition and construction

8.52 The following paragraphs present the assessment of potential effects to the surface water environment resulting from the activities undertaken during the demolition and construction phase of the enabling works. Potential effects on the ground conditions, including potential mobilisation of ground contaminants and impacts on groundwater are considered in Chapter 9.

Surface water quality

8.53 During the demolition and construction phase there is a risk of accidental pollution which could impact upon the water quality of the identified surface water features. Potential sources of pollution include spillage or leakage of oils and fuels from construction machinery, site vehicles or from any on-site storage. Stockpiles of material from the demolition of the Creamline Dairies or runoff from dust suppression are further potential sources of contaminants.

8.54 There is the potential for increases in sediment-laden runoff to the surface water features from vegetation clearance and the presence of exposed soils or soil stockpiles during the construction of the temporary haulage road. If not properly managed, polluted runoff could enter surface waters and affect water quality and aquatic life adjacent to and downstream of the site.

8.55 The enabling works are located 60-100m from the River Irk and there is scope for some attenuation of runoff by vegetation and topographic features between the works and the watercourse. Water quality impacts on the drain are not considered likely to result in a measurable change in the attributes or quality of this water feature itself, however, a conservative approach has been taken that connectivity with the River Irk cannot be ruled out. Water quality impacts on both receptors are therefore assessed as being of moderate adverse magnitude and short to

medium-term in nature at a local level. The significance of effect on water quality would be **moderate adverse** for the River Irk and **minor adverse** for the drain in the absence of further mitigation.

Hydromorphology

8.56 The enabling works are located 60-100m from the River Irk and there are no proposals within this application (Application 1) for works within the river corridor or that could directly impact upon the hydromorphology of the River Irk. The drain is a minor water feature and there are no proposals that would directly impact upon this feature. The significance of effects on hydromorphology for both receptors is therefore **negligible**.

Local drainage and flood risk

8.57 The demolition and construction works have the potential to alter local drainage patterns and flood risk through changing surface water flow pathways, for example through changing ground levels and the construction of the temporary haulage road. The impact of these changes would mostly likely be on surface water flood risk to local receptors (for example, buildings and roads) rather than directly on the River Irk or the drain. As such, the significance of effects on flood risk for both receptors is therefore **negligible**. Mitigation measures are proposed to address the surface water flood risk.

Assessment Scenario 2a: Impacts of the proposed development only at completed development and operational stage

8.58 The following paragraphs present the assessment of potential effects to the surface water environment resulting from the completed and operational development. For the purposes of this assessment, the operational development comprises the use of the temporary haulage road.

Surface water quality

8.59 During the operational phase the main source of potential pollution to the surface water features is an accidental oil or fuel spillage from construction machinery or site vehicles. Water quality impacts on both receptors are assessed as being of moderate adverse magnitude and short to medium-term in nature at a local level. The significance of effect on water quality would be **moderate adverse** for the River Irk and **minor adverse** for the drain in the absence of further mitigation.

Hydromorphology

As for assessment scenario 1a, there are no proposals within the river corridor and no direct impacts predicted on the hydromorphology of the River Irk or the drain. The significance of effects on hydromorphology for both receptors is therefore **negligible**.

Local drainage and flood risk

There is the potential for the presence of the temporary haulage road to alter surface water runoff flow pathways and increase runoff volumes if the impermeable area of the site increases. The initial site investigation as detailed in the ground condition's desk study[xviii] (**Appendix 9.1 of the ES**) indicates existing areas of impermeable made ground are present within the site and it is considered that the magnitude of effect on the River Irk is minor adverse, resulting in a **minor adverse** significance of effects for the duration of the operational phase (medium term). Mitigation measures to manage surface water flood risk are proposed in 'Additional Mitigation and Enhancement Measures' section later in this chapter.

In-Combination Assessment: Assessment Scenarios 1b, 1c, 2b and 2c considering impacts of the proposed development alongside the wider development project and SRF

8.60 The ICA identifies whether any non-significant drainage and flood risk effects arising from this Application 1 could become significant, or whether the significance of any effects arising from Application 1 would increase when considered alongside similar effects from the associated future development in Applications 2, 3 and 4, and with the wider SRF. The design of certain aspects of the works within these future applications, and the associated detailed assessments of the impact of these works on flood risk, hydromorphology and WFD, are ongoing. The ICA is therefore undertaken at a high-level, is qualitative, and is based on the information available at the time of writing (see Chapter 2: Approach for more information).

8.61 The ICA focusses on the receptors identified for the enabling works i.e. the River Irk and the drain, and surface water flood risk. Potential effects that may arise from Applications 2, 3 and 4, and the wider SRF are summarised in Error! Reference source not found.. The results of the ICA are summarised in Error! Reference source not found..

Table 8-7: Associated Future Development – Indicative Descriptions and High-Level Assessment

Application	Potential effects
Demolition and Construction	
Future Application 2 - HIF Infrastructure Works	Surface water quality: • Potential adverse impact on water quality of the River Irk and / or drain arising from increase in sediment discharges from the construction site (exposed soil, stockpiles, road construction). Construction works will be closer to the River Irk than for the enabling works and may be within the river corridor. • Potential adverse impact on water quality of the River Irk and / or drain arising from contaminant discharges from the construction site (oil or fuel spills or leaks). Hydromorphology: • Impacts during construction on river form and function of the River Irk will be dependent on construction methodology and options taken forward for any works required to channel banks or bed (in relation to retaining structures, works in the riparian zone). Potential impacts during construction could be adverse and are likely to be short-term and local in extent. Local drainage and flood risk: • Potential (adverse) change in surface water flow pathways and associated surface water flood risk (change in topography from earthworks, road construction and stockpiling). • Potential change in fluvial flood risk during the construction period will be dependent on the final design of the works within the river corridor and of the construction approach.
Future Application 3 - HIF Flood Defence Works	Site boundary for Application 3 is located on the next reach of the River Irk downstream of the one considered within the enabling works assessment. Surface water quality: • Potential adverse impact on water quality of the River Irk arising from increase in sediment discharges from construction works within the river corridor. • Potential adverse impact on water quality of the River Irk arising from contaminant discharges from construction works within the river

	corridor (oil or fuel spills or leaks). Hydromorphology: • Impacts during construction on river form and function of the River Irk will be dependent on construction methodology and the final design of the flood mitigation and defence works / new bridge. Impacts during construction could be adverse and are likely to be short-term and local in extent. Local drainage and flood risk: • Potential change in fluvial flood risk during the construction period will be dependent on the final design and of the construction approach.
Future Application 4 - Red Bank Neighbourhood	Surface water quality: • Potential adverse impact on water quality of the River Irk and / or drain arising from increase in sediment discharges from the construction site (exposed soil, stockpiles). • Potential adverse impact on water quality of the River Irk and / or drain arising from contaminant discharges from the construction site (oil or fuel spills or leaks). Hydromorphology: • No direct impacts anticipated as the plots are located outside of the river corridor. Local drainage and flood risk: • Potential change in surface water flow pathways and associated surface water flood risk due to construction activities e.g., stockpiling.
Northern Gateway Strategic Regeneration Framework (SRF)	The Northern Gateway SRF area includes land to the north-east of the enabling works site boundary which is located within the River Irk catchment. There is the potential for works within the river corridor of the Irk. Surface water quality: • Potential adverse impact on water quality of the River Irk arising from increase in sediment or contaminant discharges during construction. Hydromorphology: • Potential for adverse, neutral or beneficial impacts depending on the design of any works proposed within the river corridor and construction approach. Local drainage and flood risk: • Potential change in surface water flow pathways and associated surface water flood risk due to construction activities.
Completed Development and Operational Stage	

Future Application 2 - HIF Infrastructure Works	Surface water quality: • Potential adverse impact on water quality of the River Irk and / or drain arising from oil or fuel spills or leaks from vehicles using the internal access roads. • The site drainage strategy offers opportunities for beneficial impacts on water quality of the River Irk (use of SuDS, separate foul and surface water system). Hydromorphology: • Longer-term, permanent impacts on river form and function of the River Irk will be dependent on the final design of any works required to channel banks or bed (in relation to retaining structures, works in the riparian zone and bridge design). Hydromorphological impacts for the completed development could be adverse. However, given the current condition of the river morphology, it is considered more likely that the impacts will be either neutral (for example if retaining structures are similar to those already in place) or beneficial (for example if there are opportunities to improve the morphological condition of the channel, such as through a more naturalised bank). • A WFD compliance assessment will be undertaken for the scheme which will identify any requirement for additional or off-site mitigation (if needed to offset impacts on hydromorphology). Local drainage and flood risk: • Potential change in surface water flow pathways and associated surface water flood risk (change in topography, presence of roads). Based on information available at the time of writing, the site-wide drainage strategy will aim to reduce runoff rates from the site. • Potential change in fluvial flood risk from works within the river corridor will be dependent on the final design of retaining structures, works in the floodplain and bridge. The works should be designed to ensure that there is no off-site increase in flood risk, giving a neutral impact.
Future Application 3 - HIF Flood Defence Works	Surface water quality: • No impacts anticipated. Hydromorphology: • Longer term, permanent impacts on river form and function of the River Irk will be dependent on the final design of the flood mitigation and defence works, and could be adverse, neutral or beneficial. • A WFD compliance assessment will be undertaken for the scheme which will identify any requirement for additional or off-site mitigation (if needed to offset impacts on hydromorphology). Local drainage and flood risk: • The flood mitigation and defence works aim to reduce the area of flood zone 3 (and fluvial flood risk). • The works should be designed to ensure that there is no off-site increase in flood risk, giving a neutral impact.

Future Application 4 - Red Bank Neighbourhood	Surface water quality: • The site drainage strategy offers potential opportunities for beneficial impacts on water quality of the River Irk (use of SuDS, separate foul and surface water system). Hydromorphology: • No direct impacts anticipated as the plots are located outside of the river corridor. Local drainage and flood risk: • Potential change in surface water flow pathways and associated surface water flood risk (presence of buildings). Based on information available at the time of writing, the site-wide drainage strategy will aim to reduce runoff rates from the site.
Northern Gateway Strategic Regeneration Framework (SRF)	Surface water quality: • Opportunities for beneficial impacts on water quality of the River Irk (use of SuDS, separate foul and surface water systems for the developments). Hydromorphology: • Potential for adverse, neutral or beneficial impacts depending on the design of any works proposed within the river corridor. Local drainage and flood risk: • Anticipated that developments would follow the LFRMS and aim to reduce runoff rates, reducing surface water flood risk (beneficial impact). • Impact on fluvial flood risk dependent on design of any works within the river corridor.

Table 8-8: In-Combination Assessment

Assessment scenario	Potential effects
Demolition and Construction	
1b - Enabling works plus Application 2, 3 and 4	Surface water quality: • Collectively there is a higher likelihood of adverse impacts on water quality of the River Irk when considering all four applications due to the larger construction area and works within the river corridor associated with applications 2, 3 and 4. • Mitigation outlined in respect of the proposed development (Application 1 Enabling Works) is also applicable to the future applications in relation to best practice approaches to pollution prevention and management of surface water on construction sites. Additional mitigation may be required for the future applications in relation to works within the river corridor or channel itself (to be determined within the

	assessments for the future applications). However, no additional mitigation is considered necessary for the enabling works as a result of the ICA due to the position of the site outside of the river corridor. • Based on the information currently available, it is considered that effects on water quality of the River Irk will remain non-significant when considering all four applications in combination, assuming that pollution prevention and construction surface water management mitigation is applied. Hydromorphology: • There is the potential for adverse effects on the hydromorphology of the River Irk during construction for applications 2 and 3 due to works within the river corridor. Additional mitigation will be required for these future applications to ensure that effects are not significant; the specifics of the mitigation will be dependent on the final design and construction method. • Direct hydromorphological effects from the enabling works will be negligible as all works are outside of the river corridor. As such, no further mitigation is required for the enabling works following the ICA. Local drainage and flood risk: • Collectively there is the potential for a larger impact on surface water flood risk when considering all four applications together due to the larger construction area and greater change to the existing topography. Mitigation outlined in this application is also applicable to the future applications in relation to best practice approaches to management of surface water on construction sites. Assuming that this mitigation is applied, it is considered that effects on surface water flood risk during construction will remain non-significant when considering all four applications in combination and no additional mitigation is required for the enabling works following the ICA.
1c – Enabling works plus Application 2, 3, 4 and the wider SRF	Considering a worst-case scenario (that development across the wider SRF could include works within the River Irk corridor), there could be in-combination impacts in terms of water quality, hydromorphology, and local drainage and flood risk. The assessment for scenario 1b is also relevant to 1c, and no further mitigation for the enabling works is required following consideration of this ICA.
Completed Development and Operation stage	
2b – Enabling works plus Application 2, 3 and 4	Surface water quality: • Collectively there is a higher likelihood of beneficial impacts on water quality of the River Irk when considering all four applications together, as the outline design principles of the site-wide drainage system include use of SuDS and installation of a separate foul and surface water system (existing drainage is combined sewer). • No additional mitigation is therefore considered necessary for the enabling works due to the position of the site outside of the river corridor. Hydromorphology: • Longer term, permanent hydromorphological impacts for the completed development could be adverse, however, given the current condition of the river, it is considered more likely that they will be either neutral or beneficial depending upon the final design of the proposed works within the river corridor.

	• A WFD compliance assessment will be undertaken for the scheme which will identify any requirement for additional or off-site mitigation (if needed to offset impacts on hydromorphology). • Direct hydromorphological effects from the enabling works will be negligible as all works are outside of the river corridor. As such, no further mitigation is required for the enabling works following the ICA. Local drainage and flood risk: • There is the potential for beneficial effects on surface water flood risk when considering all four applications together (reduced runoff rates associated with site-wide drainage strategy). As such, no further mitigation is required for the enabling works following the ICA.
2c – Enabling works plus Application 2, 3, 4 and the wider SRF	Considering a worst-case scenario (that development across the wider SRF could include works within the River Irk corridor), there could be in-combination impacts in terms of water quality, hydromorphology and local drainage and flood risk. The assessment for scenario 2b is also relevant to 2c, and no further mitigation for the enabling works is required following consideration of this ICA.

Additional Mitigation / Enhancement Measures

8.62 This section describes the proposed measures to mitigate potential significant environmental effects on the surface water environment.

Scenarios 1a and 2a: Impacts of the proposed development only

Assessment Scenario 1a: Mitigation relating to the proposed development only during demolition and construction

Surface water quality

8.63 The Contractor will adhere to the following mitigation measures:

- Storage of potentially polluting materials, plant and equipment will be more than ten metres from any water body, including drains.
- Fuel stores will be located away from surface water resources and drainage and will be contained within suitably sized bunds with sealed bases.
- Refuelling will always be undertaken remote from drainage and surface water features and using automatic shut-off fuel delivery systems.
- Pumps, generators and small plant will have drip trays to collect any fuel or oil spills.
- Where wheel washes are installed adjacent to site accesses or egresses, these will be self-contained, will recycle wash water as much as possible and will not directly discharge to the environment.
- Bunds or other measures will be used at Creamline Dairies to ensure that runoff from dust suppression activities is collected, managed and disposed of appropriately and not discharged directly to either the River Irk or the drain.
- Where practicable and appropriate, areas of exposed soil will be kept to a minimum.
- Provision of a suitable construction drainage system including cut-off valves, ditches or drains and sustainable drainage systems, or equivalent, with suitably sized treatment facilities such as settlement or detention basins.
- An adequate maintenance plan should be developed to ensure that construction activities or debris do not block the existing or proposed drainage.
- Standard practice set out in the Environment Agency's PPGs (withdrawn) and Guidance for Pollution Prevention (GPPs) and the CIRIA guidance listed in paragraph 8.20 should be followed.

- Spill kits will be available in the event of a fuel spillage and personnel will be trained in their use.

8.64 Pollution incident response plans (PIRP) as part of the site's environmental management system (EMS)[xix] will be developed, implemented, and kept up to date by the Contractor that cover any incidents that might lead to release of pollutants to the surface water environment.

8.65 The Contractor will comply with guidance for the preparation of the PIRP, and at a minimum should include:

- Emergency contact details.
- A product inventory, including a product safety data sheet (SDS).
- A site layout plan.
- A plan of the drainage arrangements on the site.
- Details of the location of emergency response equipment.
- Your emergency procedure.
- How you report incidents.

8.66 The Contractor will also comply with BS 6031 Code of Practice for Earthworks, regarding the general control of site drainage including, for example, all washings, dewatering, abstractions and surface water run-off, unless otherwise agreed by the Applicant, and, where appropriate, the relevant regulator.

8.67 The Contractor will make provisions to ensure that oil drums and containers or other potential contaminants stored on the Site are controlled in accordance with the Control of Substances Hazardous to Health (COSHH) Regulations 2002.

Surface water flood risk management

8.68 The following measures are proposed in the FRA to manage surface water flood risk:

- The temporary haul road should be designed to follow existing flow paths where possible to reduce the risk of flooding to neighbouring buildings and infrastructure.
- Levels should be designed to fall away from existing or proposed buildings and thresholds.
- A suitable surface water drainage strategy should be employed for the temporary haulage road. Permeable paving options and sustainable drainage systems (SuDS) should be explored.
- If infiltration of runoff is not feasible, a connection should be made to drain the road to existing combined sewers within Roger Street. If draining to the existing sewer system, the design should ensure that there is sufficient capacity to convey the predicted flows. Any surface water drainage design should ensure that flood

risk to surrounding areas is not worsened and that appropriate permissions are sought from the relevant authorities.

Assessment Scenario 2a: Mitigation relating to the proposed development only at completed development and operational stage

8.69 The temporary haul road will be used during the main infrastructure works at the site (the subject of Application 2). During the use of the haul road, emergency response plans will remain in place and spill kits made available. The surface water drainage system installed for the haul road will be regularly inspected to ensure it continues to operate as intended.

In-Combination Assessment: Assessment Scenarios 1b, 1c, 2b and 2c considering impacts of the proposed development alongside the wider development project and SRF

8.70 Following the ICA, no additional mitigation is considered to be required for the proposed development (Application 1: HIF Advance Enabling Works).

8.71 Applications 2, 3 and 4 will follow the mitigation described above for Application 1 with regards to pollution prevention and surface water management during construction. The future applications will include embedded mitigation to minimise impacts of the wider development on the water environment and flood risk. The design of the proposals for the wider development and the associated embedded mitigation is on-going, however, at the time of writing it is anticipated that this will be based on the following principles:

- Works within the river corridor (for example, new river crossings, alterations to the banks or flood mitigation measures) should be designed to ensure that off-site fluvial flood risk is not increased.
- The site wide drainage strategy should aim to reduce surface water runoff rates from the site, in accordance with the LFRMS.
- The site wider drainage strategy will include a separate foul and surface water system.
- Options to improve the current morphological condition of the channel banks will be investigated (it should be noted that this may not be possible).
- A WFD compliance assessment will be undertaken which will identify if any additional or off-site mitigation is required to off-set impacts on the hydromorphology of the River Irk.

Likely Residual Effects of the Development and their Significance

8.72 This section summarises the significance of the anticipated residual effects on drainage and surface water, which are those that remain after all proposed mitigation measures are implemented during the construction and demolitions phase.

8.73 The overall impact of the proposal in terms of surface water environment issues during the construction, demolition and completed development is highlighted in **Table 8.7**. For assessment scenarios 1a and 2a the residual effects summary draws on the assessment of likely effects and proposed mitigation. For assessment scenarios 1b, 1c, 2b and 2c the residual effects summary draws on the ICA presented in **Table 8-7** and **Table 8-8**, and the principles upon which the embedded mitigation for the futures applications will be based. The residual effects summary for assessment scenarios 1b, 1c, 2b and 2c is based on the information available at the time of writing and assumes a worst-case.

Table 8-9 Residual Effects Summary

Description of Effect	Potential effect including significance	Mitigation	Residual Effect including significance
Construction and Demolition			
Assessment Scenario 1a – proposed development only			
Water quality impacts from sediment and contaminant runoff: River Irk	**Moderate adverse**	• Following standard construction best practice relating to pollution prevention. • Adequate construction drainage system to ensure runoff is treated prior to discharge from the site. • Emergency response procedures.	**Minor adverse (not significant)**
Water quality impacts from sediment and contaminant runoff: Drain	**Minor adverse**		**Negligible (not significant)**
Hydromorphology impacts: River Irk	**Negligible**	None required.	**Negligible (not significant)**
Hydromorphology impacts: Drain	**Negligible**		**Negligible (not significant)**
Changing local drainage patterns due to construction activities: River Irk	**Minor adverse**	• Design of haulage road and suitable surface water drainage system. • Construction site drainage system.	**Negligible (not significant)**
Changing local drainage patterns due to construction activities: Drain	**Negligible**		**Negligible (not significant)**
Assessment Scenario 1b – proposed development alongside Applications 2, 3 and 4			

Impacts on the River Irk	**Moderate adverse**	• Following standard construction best practice relating to pollution prevention. • Identifying additional mitigation for pollution prevention and potential impacts on hydromorphology where required for works within the river corridor. • Adequate construction drainage system to ensure runoff is treated and attenuated prior to discharge from the site. • Emergency response procedures.	**Minor adverse (not significant)**
Impacts on the drain	**Minor adverse**		**Negligible (not significant)**
Assessment Scenario 1c – proposed development alongside Applications 2, 3 and 4 and wider SRF			
Impacts on the River Irk	**Moderate adverse**	• Following standard construction best practice relating to pollution prevention. • Identifying additional mitigation for pollution prevention and potential impacts on hydromorphology where required for works within the river corridor. • Adequate construction drainage system to ensure runoff is treated and attenuated prior to discharge from the site. Emergency response procedures.	**Minor adverse (not significant)**
Impacts on the drain	**Minor adverse**		**Negligible (not significant)**
Completed Development			
Assessment Scenario 2a – proposed development only			
Water quality impacts from accidental spills: River Irk	**Moderate adverse**	• Emergency response procedures.	**Minor adverse (not significant)**
Water quality impacts from accidental spills: Drain	**Minor adverse**		**Negligible (not significant)**

Hydromorphology impacts: River Irk	**Negligible**	None required.	**Negligible (not significant)**
Hydromorphology impacts: Drain	**Negligible**		**Negligible (not significant)**
Changing local drainage patterns due to drainage of haul road: River Irk	**Minor adverse**	• Design of haulage road and suitable surface water drainage system. • Maintenance of drainage system.	**Negligible (not significant)**
Changing local drainage patterns due to drainage of haul road: Drain	**Negligible**		**Negligible (not significant)**
Assessment Scenario 2b – proposed development alongside Applications 2, 3 and 4			
Impacts on the River Irk	**Moderate adverse**	• Design of works within river corridor to ensure off-site fluvial flood risk is not increased. • Site wide drainage strategy includes separate systems for foul and surface water and should reduce runoff rates from the site. • Works within the river corridor will aim to have a neutral or beneficial impact on channel morphology (if found to be possible), or off-site mitigation will be used to off-set impacts.	**Minor adverse (not significant)**
Impacts on the drain	**Minor adverse**		**Negligible (not significant)**
Assessment Scenario 2c – proposed development alongside Applications 2, 3 and 4 and wider SRF			
Impacts on the River Irk	**Moderate adverse**	• Design of works within river corridor to ensure off-site fluvial flood risk is not increased. • Site wide drainage strategy includes separate systems for foul and surface water and should reduce runoff rates from the site. • Works within the river corridor will aim to have a neutral or beneficial impact on channel morphology (if found to be possible), or off-site mitigation	**Minor adverse (not significant)**
Impacts on the drain	**Minor adverse**		**Negligible (not significant)**

		will be used to off-set impacts.	

Conclusions

8.74 Provided that best practice guidance, as outlined in this chapter, for pollution prevention and surface water management is followed during the construction and operational phases, there will be no significant effects on the surface water environment and flood risk predicted for the proposed development (Application 1).

8.75 The ICA of likely effects for the proposed development alongside the wider development project (Applications 2, 3 and 4) and the wider SRF has been undertaken using the information available at the time of writing. Preparation of design details, including for embedded mitigation, and technical assessments (FRA and WFD Compliance Assessments) are on-going. Using the available information and considering a worst-case outcome, there are no significant likely effects predicted for the surface water environment and flood risk for the wider development project. There is the opportunity for beneficial effects during the operational phase of the wider development, for example through the site wide drainage strategy reducing runoff rates, however, this will be confirmed through the subsequent submissions.

Assessment of Cumulative Effects and their Significance

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

- Scenario 3a - Assessment of the cumulative impacts relating to the enabling works plus impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites.
- Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, the wider SRF, and the agreed cumulative sites.

8.77 The cumulative assessment seeks to determine whether any non-significant effects on drainage and surface water arising from this application could become significant, or whether the significance of any effects arising from this application would increase when considered alongside similar effects from other plans or proposals.

8.78 Table 8-10 provides a list of the developments which have been included in the CIA. The sites scoped into the CIA are those which are located within the River Irk catchment and therefore have the potential to impact this watercourse or flood risk within the catchment. Both construction and operational phases have been considered.

8.79 The CIA is summarised in Table 8-11. In conclusion, it is assumed that the planning requirements imposed on the future applications and cumulative sites will mean that concurrent construction activities will adhere to the same

design and environmental standards as the enabling works in relation to pollution prevention and best practice management of surface water. LFRMS requirements for a reduction in runoff rates from new development should result in a reduction in surface water flood risk. It is therefore envisaged that the cumulative impacts for Scenarios 3a, 3b and 3c are not significant and would not pose a significant effect on the overall water environment.

Table 8-10 Cumulative Sites

Site Ref.	Application No.	Proposal	Approx. Distance and Direction	Status	Scoped In / Scoped Out	Justification
1	129393/VO/2021	City Council Development for the erection of 168, three and four storey dwellinghouses (Use Class C3a) and two, five and six storey apartment buildings to form 76 residential apartments (Use Class C3a) with associated ground floor flexible commercial unit (162 sqm) (Use Class E); and the creation of a new public park; all with associated car and parking, refuse storage, landscaping, public realm and other associated works and infrastructure following demolition of 29 existing residential dwellinghouses, the Collyhurst Village Store and associated car parking	650m north east	Approved Jun 2021	Scoped In	Within River Irk catchment, but not in close proximity to this watercourse.
2	127971/FO/2020	Erection of a 6 storey building to form 90 residential apartments (Use Class C3a) following demolition of existing structures with associated access, car parking, amenity space, landscaping and other associated works	950m east	Approved May 2021	Scoped In	Within River Irk catchment, but not in close proximity to this watercourse.
3	128248/FO/2020	Erection of 9 buildings ranging from 8 to 34 storeys in height to form 1202 residential apartments (Use Class C3a) and ground floor commercial uses (Use Class E) (192 sqm) together with associated car parking, new vehicular and pedestrian access, public realm, landscaping and other associated works following demolition of existing structures and buildings | Land Bound By Gould Street, Williamson Street, Bromley Street And Bilbrook Street Manchester M4 4DD	150m south	Approved June 2021	Scoped In	Within River Irk catchment, but not in close proximity to this watercourse.
4	116366/FO/2017	Erection of four residential buildings (22 storey building, 17 storey building, 40 storey building and part 12, part 9 storey building) to form 756 residential apartments (Use Class C3a) together with	150m south	Approved Aug 2017	Scoped In	Within River Irk catchment, but not in close proximity to this

		ground floor commercial uses (616 sqm) (Use Classes A1, A2, A3, A4, A5, D1 and B1) with associated car parking, landscaping, amenity areas, creation of new public realm following the closure of Aspin Lane, Mincing Street and Irk Street and other associated works following demolition of existing structures | Land Bounded By Dantzic Street & Aspin Lane, Land Bounded By Gould Street & Angel Meadows And Land Bounded By Old Mount Street, School Street, Naples Street & Ludgate Street Manchester		Under construction		watercourse.
5	118120/FO/2017	Erection of a part 15, part 9, part 7 storey building to form 155 residential apartments together with ground floor commercial uses (Use Classes A1, A3 and B1) (288 sqm) with associated car parking, access arrangements and other associated works following the demolition of existing buildings and structure and the closure of Hatter Street | Land Bounded By Thompson Street / Mason Street / Bendix Street And Rochdale Road Manchester	450m south	Approved May 2018 Under construction	Scoped In	Within River Irk catchment, but not in close proximity to this watercourse.
6	127537/FO/2020	Erection of a 11 storey 229 bedroom hotel (Use Class C1) with ancillary ground floor bar/restaurant together associated public realm and other associated works | 25 Rochdale Road Manchester M4 4HT	400m south	Approved Oct 2016	Scoped In	Within River Irk catchment, but not in close proximity to this watercourse.
7	124973/FO/2019	Erection of an 11 storey building and a 12 storey building with plant rooms above to form a mixed use development comprising 39,184 sq.m (NIA) of Class B1a office use and commercial units of 1,286 sqm (NIA) (Use Classes A1, A2, A3, A4, B1a and D1) along with associated lower ground level car parking, hard and soft landscaping and associated works, including the creation of a new pedestrian route between Angel Street and Miller Street. | Land Bounded By Co-op Headquarters Miller Street And Angel Street Manchester	350m south	Approved Feb 2016	Scoped In	Within River Irk catchment, but not in close proximity to this watercourse.
8	111777/FO/2016/C1	Erection of two residential buildings of a maximum 21 and 26 storeys to accommodate 520 apartments (178 x 1 bed, 286 x 2 bed and 56 x 3 bed apartments) (Use Class C3). Erection of one office building of maximum eight storeys comprising up to 11,647 sq. m (GIA) of office	250m south east	Approved Sep 2016 Under	Scoped In	Within River Irk catchment. River Irk is culverted through the development site.

		accommodation. Ground floor commercial space (Use Class A1, A2, A3 and B1), lower ground level car parking, access and servicing arrangements, alterations to Corporation Street, new public realm and other associated works. | New Victoria Land At Corporation Street Manchester M3 1NX		construction		
9	121375/FO/2018	Construction of a 22 storey building comprising 361 residential apartments (122 x 1 bed 2 person, 119 x 2 bed 3 person, 94 x 2 bed 4 person, 21 x 3 bed 5 person and 5 x 3 bed 6 person (34% 1 bed, 59% 2 bed and 7% 3 bed) ground floor commercial floorspace (Use Classes A1 (Shop), A3 (Restaurant and Cafe), A4 (Drinking Establishment) and A5 (Hot Food Take-away) associated landscaping, including new public realm and pedestrian route, together with servicing, cycle parking, access and other associated works following demolition of buildings at 20-22 and 24-26 High Street and 5 market stalls to Church Street.	840m south	Approved Oct 2020	Scoped Out	Not located in River Irk catchment.
10	18/71330/FUL	Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping	850m south west	Approved Oct 2018 Under construction	Scoped Out	Not located in River Irk catchment.
11	20/76134/FUL	Erection of 16-storey building plus plant comprising a hotel (Use Class C1) with ancillary bar and restaurant uses, access, servicing, landscaping and other associated works	1000m south west	Approved Feb 2020	Scoped Out	Not located in River Irk catchment.
12	17/70626/FUL	Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works.	840m south west	Approved Nov 2017 Under construction	Scoped Out	Not located in River Irk catchment.

13	19/74465/HYBEIA	Hybrid planning application for demolition of existing buildings on the site and comprehensive redevelopment to create between 1,407 and 1,521 dwellings, comprising of: (a) Phase 1 (submitted in full with no matters reserved) for development of a 50-storey residential building; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new public park; highways and public realm improvements and other associated works; and, (b) Phases 2 and 3 (submitted in outline with all matters reserved) for the development of two residential buildings up to 42 storeys in height; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new highways; a public square; public realm improvements and other associated works. (EIA development, accompanied by Environmental Statement) | Land Bound By Greengate, Collier Street, Queen And King Street And Gravel Lane M3 7BN	960m south west	Validated Nov 2019	Scoped Out	Not located in River Irk catchment.
14	126944/FO/2020	Erection of a residential-led mixed use development comprising 3 no. towers (37, 26 and 18 storeys) and podium levels (6 storey) to form 634 residential apartments and townhouse accommodation (Use Class C3) together with commercial accommodation (1222 sqm) (Use Classes A1,A2,A3,A4,A5,B1, D1 and D2)); with associated residential amenity areas, refuse storage, plant (including substation), car parking, cycle storage, landscaping and new public realm including the re-instatement of Bromley Street and other associated works	140m south east	Approved Sep 2020 Under Construction	Scoped In	Within River Irk catchment. Site is bounded to the west by Dantzic Street which is adjacent to the River Irk.
15	114860/FO/2016	Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings	145m south east	Approved October 2017	Scoped In	Within River Irk catchment. Site is approximately 30m from the River Irk at the closet point.
16	131708/FO/2021	Erection of a part 11, part 13 storey building to form residential apartments (Use Class C3a) together with the erection of two blocks of 3 storey townhouses (Use Class C3a) to form 237 residential homes in total with associated commercial floor (Use Class E) (132 sqm), basement car parking, landscaping and public realm, and	450m south	Validated September 2021	Scoped In	Within River Irk catchment.

		associated engineering and infrastructure works following demolition of existing buildings and structures				
17	118831/FO/2018	Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works	635m south west	Approved June 2018	Scoped Out	Not located in River Irk catchment.
18	128997/FO/2020	Erection of a ground plus 9-storey building to form 118 no. residential apartments (Use Class C3), including amenity areas, ground floor food and beverage/ commercial units (Sui Generis/ Use Class E), public realm and landscaping, with supporting infrastructure and associated works following demolition of existing building	730m south	Approved September 2021	Scoped In	Within River Irk catchment.
19	124888/FO/2019	Erection of a 6-9 storey residential building (Use Class C3) comprising 80 no. dwellings including 9 no. townhouses and 71 no. apartments with residents lounge, refuse, plant, new substation, cycle storage, an internal landscaped courtyard and improvements to the adjacent footways	665m south	Approved January 2020 Under Construction	Scoped In	Within River Irk catchment.
20	125678/FO/2019	Erection of 8-storey residential building (Use Class C3) comprising 73 residential units, with ground floor commercial use (Classes A1, A2, A3, B1 and D1 (excluding Places of Worship)) (205 sqm); alterations to the retained perimeter wall and chimney including the introduction of a light box; disabled car parking, highways, landscaping and other associated works	640m south	Approved December 2020	Scoped In	Within River Irk catchment.

Table 8-11 Cumulative Impact Assessment summary

Assessment scenario	Potential effects
3a – Assessment of the cumulative impacts relating to the enabling works plus impacts associated with the agreed cumulative sites	• Concurrent construction of cumulative sites plus the enabling works may result in increased magnitude of effect in relation to impacts on surface water quality (sediment runoff, contaminant discharges) and change in local drainage patterns. It is assumed that the construction activities of the cumulative developments will adhere to the same environmental standards and best practice mitigation for pollution prevention and surface water management as those proposed for the enabling works, and therefore the effects will remain not significant. • There are no proposals for works to the River Irk itself within the cumulative site applications, and therefore effects on hydromorphology remain negligible and not significant. • Cumulatively there is the potential for an increased magnitude of effect in relation to surface water flood risk. The area is highly urbanised and much of the land within the cumulative site boundaries is brownfield (and can be expected to include impermeable areas). The LFRMS states that developers should aim to reduce runoff rates from brownfield sites by 50%. Cumulative effects on surface water flood risk should therefore be beneficial, assuming that these reduction rates are being secured through the planning process.
3b – Assessment of cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites	• The assessments outlined in **Error! Reference source not found.** for scenarios 1b and 2b are relevant, and the assessment summary for scenario 3a. • In conclusion, assuming that the construction activities of the future applications and cumulative sites adhere to the same environmental standards and best practice mitigation for pollution prevention and surface water management as those proposed for the enabling works, effects on water quality will be not significant. Cumulative effects on flood risk should be beneficial or, as a worst case, neutral and not significant.
3c – Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3, and 4, the wider SRF and the agreed cumulative sites	• The assessments outlined in **Error! Reference source not found.** for scenarios 1c and 2c are relevant, and the assessment summary for scenario 3a. • In conclusion, assuming that the construction activities of the future applications and cumulative sites adhere to the same environmental standards and best practice mitigation for pollution prevention and surface water management as those proposed for the enabling works, effects on water quality will be not significant. Cumulative effects on flood risk should be beneficial or, as a worst case, neutral and not significant.

References

i Highways England, Transport for Scotland, Welsh Government, and Department for Infrastructure (2020) *LA 104 – Environmental assessment and monitoring*.

ii Highways England, Transport for Scotland, Welsh Government, and Department for Infrastructure (2020) *LA 113 – Road drainage and the water environment*.

iii Department for Levelling Up, Housing and Communities, and Ministry of Housing, Communities & Local Government (2021) *Guidance: Flood Risk and Coastal* Change. Available at: https://www.gov.uk/guidance/flood-risk-and-coastal-change. Accessed on: 05/11/2021.

iv Department for Environment, Food & Rural Affairs (Defra) and Environment Agency (2019) *Guidance: Pollution Prevention for Businesses.* Available at: https://www.gov.uk/guidance/pollution-prevention-for-businesses. Accessed on: 05/11/2021.

v Defra and Environment Agency (2021) *River Basin Management Plans: 2015: North West River Basin Management Plan 2015*. Available at: https://www.gov.uk/government/collections/river-basin-management-plans-2015. Accessed on: 05/11/2021.

vi Environment Agency (2021) *Flood Risk Management Plans (FRMPs): 2015 to 2021: North West Flood Risk Management Plans 2015-21*. Available at: https://www.gov.uk/government/collections/flood-risk-management-plans-frmps-2015-to-2021. Accessed on: 05/11/2021.

vii JBA (2011) *Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA*.

viii Manchester City Council (2014) *Local Flood Risk Management Strategy.*

ix Environment Agency (2021) *Catchment Data Explorer.* Available at: http://environment.data.gov.uk/catchment-planning/ Accessed on: 01/11/2021.

x Ordnance Survey (2021) *Open Data maps*. Available at: https://www.bing.com/mapspreview Accessed on: 01/11/2021.

xi National library of Scotland (2021) *Historic OS maps*. Available at https://maps.nls.uk/os/townplans-england/ Accessed on: 01/11/2021.

xii National River Flow Archive (2021) *69043 – Irk at Collyhurst Weir*. Available at: https://nrfa.ceh.ac.uk/data/station/info/69043 Accessed on: 01/11/2021.

xiii Environment Agency (2021) *Flood map for planning*. Available at https://flood-map-for-planning.service.gov.uk/confirm-location?easting=384009&northing=399034&placeOrPostcode=manchester%20victoria Accessed on: 01/11/2021.

xiv Arup (2021) *Victoria North Infrastructure and Enabling Works: Enabling Works Flood Risk Assessment.*

xv Arup (2021) *Indicative Haul Road Alignment*.

xvi Defra and Environment Agency (2015) *North West River Basin Management Plan 2015*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718335/North_West_RBD_Part_1_river_basin_management_plan.pdf Accessed on: 01/11/2021.

xvii Arup (2021) *Victoria North Preliminary WFD Compliance Assessment*.

xviii Arup (2019) *Northern Gateway Ground Conditions Desk Study*. Ref. MNG-ARP-SW-RP-CG-102'.

xix Defra and Environment Agency (2016) Prevent groundwater pollution from solvents. Available at: https://www.gov.uk/guidance/prevent-groundwater-pollution-from-solvents#prepare-for-emergencies-create-a-pollution-incident-response-plan Accessed on: 10/11/2021.

9. Ground Conditions

Introduction

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

9.2 A number of associated developments are proposed in relation to the Red Bank Neighbourhood project, including:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1').
- HIF Infrastructure Works (referred to hereafter as 'Application 2').
- HIF Flood Defence Works (referred to hereafter as 'Application 3').
- Red Bank Neighbourhood (referred to hereafter as 'Application 4').

9.3 This chapter assesses the effects in relation to ground conditions of the HIF Advance Enabling Works (including construction of a temporary haul road) (hereafter referred to as the 'proposed development'). See Figures 1.1 and 5.1-5.3 for information relating to this proposed development.

9.4 The chapter describes the methods used to assess the likely significant effects, the baseline conditions currently existing at the site and surroundings, the potential direct and indirect effects of the development arising from demolition within part of the site, exposure to potentially contaminated material, the potential for groundwater and surface water contamination during construction and the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual ground conditions effects.

9.5 As we all as presentation of the impacts of the proposed development, the chapter also presents a high-level assessment of ground conditions in relation to the proposed development in-combination with the wider development project (inclusive of Applications 2, 3 and 4), and also of the wider SRF for which it is a part. See Chapter 2 and supporting Figures 2.1 to 2.4b for information relating to the available information in respect of the wider development project.

9.6 It has been written by Arup.

9.7 The following has been provided in the appendices to this report as part of the assessment:

- **Appendix 9.1:** Arup 2019. Northern Gateway Ground Conditions Desk Study, Ref. MNG-ARP-SW-RP-CG-102.

Planning Policy Context

National Legislation

9.8 Part 2A of the Environmental Protection Act 1990[1] (as amended) (EPA 1990) establishes the legal framework for dealing with land contamination in England and is the primary UK legislation specifically relating to land contamination. It provides a means of dealing with unacceptable risks posed by land contamination to human health and the environment.

9.9 Contaminated land is defined in the legislation as land which is in such condition by reason of substances in, on or under land on which:

- Significant harm is being caused, or there is a significant possibility of such harm being caused; or
- Significant pollution of controlled water is being or is likely to be caused.

9.10 The potential for harm is based on the presence of three factors:

- Source: substances that are potential contaminants;
- Pathways; and
- Receptors.

9.11 For the land to be determined as 'contaminated' in a regulatory sense, and thereby require remediation (or a change to a less sensitive use), all three elements (source-pathway-receptor) of a significant pollutant linkage must be present.

9.12 Government objectives with respect to land contamination policy and the Part 2A regime are set out in the Department for Environment, Food and Rural Affairs (Defra_ Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance 2012[2] as:

- To identify and remove unacceptable risks to human health and the environment.
- To seek to ensure that contaminated land is made suitable for its current use.
- To ensure that the burden faced by individuals, companies and society as a whole are proportionate, manageable, and compatible with the principles of sustainable development.

National Planning Policy

[1] Environmental Protection Act Part IIA (1990) Accessed via: Environmental Protection Act 1990 (legislation.gov.uk)Date Accessed: October 2021
[2] Contaminated Land Exposure Assessment (CLEA) model. Accessed via: https://www.gov.uk/government/publications/contaminated-land-exposure-assessment-clea-tool

National Planning Policy Framework

9.13 Chapter 15 of the NPPF (2021)[3] sets out the policy framework for contributing to and enhancing the natural local environment by protecting and enhancing valued landscapes, geological conservation interests and soils. It states that the planning system should guide towards preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability. The planning system further outlines the remediation and mitigation of despoiled, degraded, derelict, contaminated and unstable land. Where appropriate, each of the aforementioned measures should be considered at all stages of the planning process.

9.14 Chapter 15 of the NPPF outlines that in order to meet development needs, the aim should be to minimise pollution and other adverse effects on the local environment. The guidance further states that plans should allocate land with the least environmental or amenity value.

Local Planning Policy

9.15 Manchester Core Strategy plan 2012-2027[4] sets out to protect and enhance the natural and built environment of the City and ensure the sustainable use of natural resources to help adapt to climate change while supporting biodiversity and wildlife. The two main areas of focus include;

- Place Making and Sustainable Design in accordance with PPS1.
- Green Infrastructure, a multi-functional open spaces and corridors together with the links between them provide multiple benefits for residents, workers, investors and visitors to the City.

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

9.16 The SRF will be a material consideration in the determination of all planning applications relevant to the study area. Whilst it does not form part of the Development Plan, it has been prepared to be consistent with the policies of the Council's adopted Development Plan. The site falls within the 'Northern Gateway' 'Lower Irk Valley' boundary and will form part of the 'Red Bank' neighbourhood. The site is earmarked for residential led development.

Other Relevant Policy, Standards and Guidance

9.17 Other guidance documents that have been referenced in the preparation of the assessment are:

- Environment Agency, Land Contamination: risk management (LCRM)[5].
- Environment Agency (2009) Updated technical background to the CLEA model. Science Report SC050021[6].

[3] National Planning Policy Framework (2021) Accessed via: 15. Conserving and enhancing the natural environment - National Planning Policy Framework - Guidance - GOV.UK (www.gov.uk). Date accessed: October 2021.
[4] Manchester City Council Core Strategy Plan 2012-2027 (2012). Accessed via: Core Strategy 2012-2027 | Core Strategy 2012-2027 | Manchester City Council Date Accessed: October 2021
[5] Land Contamination risk management (2020). Accessed via: Land contamination risk management (LCRM) - GOV.UK (www.gov.uk). Date accessed: October 2021
[6] Environmental Agency (2009) annual Report. Accessed via Environment Agency annual report and accounts 2009 to 2010 - GOV.UK (www.gov.uk). Date accessed: October 2021

- Environment Agency (2006) Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination [7].
- HSE (2012) The Control of Asbestos Regulations[8].
- CIRIA (2014) Asbestos in soil and made ground: a guide to understanding and managing risks. Publication C733[9].
- British Standards Institute (2019) BS8485:2015+A1:2019: Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (+A1:2019)[10].
- Building Research Establishment (2003) Report 456: Control of dust from construction and demolition activities[11].
- Environment Agency (2002) National Groundwater and Contaminated Land Centre: Piling into contaminated Sites[12].
- Environment Agency (2001) Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention. NC/99/73[13].
- Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD)[14].

Assessment Methodology and Significance Criteria

Overview

9.18 The assessment has been undertaken with due consideration of the relevant general EIA guidance. The assessment method includes the following steps:

- Confirmation of information gathered from the relevant statutory bodies and the local planning authorities.
- Review of historical plans.
- Review of published geological maps and memoirs.
- Review of ground investigation data from 2019.
- Review of preliminary ground investigation data from 2021.

[7] Environmental Agency (2006) Remedial Targets. Accessed via: Land contamination: remedial targets methodology (RTM) - GOV.UK (www.gov.uk). Date accessed: October 2021
[8] HSE (2012) Control Asbestos in Soil. Accessed via Control of Asbestos Regulations 2012 (hse.gov.uk). Date accessed: October 2021
[9] CIRA (2014) Asbestos in Soil Accessed via: Item Detail (ciria.org). Date accessed: October 2021
[10] British Standards Institute (2019). Accessed via: The British Standards Institution Annual report and financial statements 2019 (bsigroup.com). Date accessed: October 2021
[11] Building Research Establishment (2003) Report 456: Control of dust from construction and demolition activities. Accessed via: Document 12 - BRE - Control of Dust from Construction & Demolition Activities.pdf (rbkc.gov.uk). Date accessed: October 2021
[12] Environment Agency (2002), Piling into Contaminated Sites, ISBN: 1 85705 803 8
[13] Environment Agency (2001), Piling and penetrative ground improvement methods on land affected by contamination: guidance on pollution prevention

[14] The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (2017) Accessed via: The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (legislation.gov.uk) Date accessed: November 2021

- Review of preliminary contaminated land assessments.

Study Area

9.19 The assessment scenarios in respect of the EIA for the proposed development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
    - Scenario 1a - Assessment of the impacts relating to the proposed Enabling Works only.
    - Scenario 1b - Assessment of the impacts relating to the Enabling Works, plus impacts associated with Applications 2, 3 and 4).
    - Scenario 1c - Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF.
- Assessment Stage 2 - Completed Development and Operational Phase:
    - Scenario 2a - Assessment of the impacts relating to the Enabling Works only.
    - Scenario 2b – Assessment of the impacts relating to the proposed development, plus impacts associated with Applications 2, 3 and 4.
    - Scenario 2c – Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF.

9.20 It should be noted that the design of the wider development project and of the wider SRF are yet to be completed and therefore, the consideration of in-combination effects should be regarded as preliminary and based on available information at the time of writing.

Baseline Survey Methods

Desk Based Assessment

9.21 Prior to undertaking the assessment for ground conditions, the baseline information for the site is obtained. Baseline conditions pertaining to the ground conditions (including geology, soils, land use, contaminated land and hydrogeological issues) have been compiled from a review of readily available published information previously undertaken as part of the Arup Desk Study (provided in **Appendix 9.1**). The available results of the site investigation and assessments are presented in this chapter. This information, and with data from a number of previous investigations undertaken by others has formed the basis of the assessment in this ES.

Historical Uses

9.22 The history of the site has been summarised below based on historical mapping, aerial photography and satellite imagery. The following information has been reviewed:

- Published Ordnance Survey (OS) mapping dating from 1848 to 1992 obtained from Groundsure [15].
- Aerial photographs sourced from Historic England [16].
- Satellite imagery from Google Earth.

Geology and Hydrogeology

9.23 The geology of the site has been determined with reference to BGS mapping and borehole logs as well as the historical and preliminary ground investigation. The information has been reviewed using the following sources:

- British Geological Survey (BGS) GeoIndex online viewer;
- Groundsure GeoInsight report which included 1:10,000 and 1:50,000 geological maps;
- BGS bedrock and superficial geology map sheet at 1:10,000 SJ89NW;
- Historical ground investigation data and reports from the planning portal; and,
- AEG's 2019 ground investigation data based on information provided within the Desk study (**Appendix 9.1**).
- Preliminary AEG 2021 ground investigation data and preliminary assessments.

Controlled Waters

9.24 Groundwater and surface water represent potential receptors for pollutants emanating from the proposed development either during construction or operation. The baseline information and the assessment of the impact on groundwater and surface water uses desk-based information supplemented by relevant information from intrusive investigations.

9.25 Aquifers that are a source of public water supply, or that connect directly to surface water bodies are particularly sensitive to pollution incidents. The magnitude of potential impacts on groundwater and surface water resources that may be affected by the development is based on the criteria shown in **Table 9.1.**

Contaminated Land

9.26 A contaminated land qualitative risk assessment has been undertaken by Arup in accordance with the Environment Agency (EA) LCRM guidance[17] based on the data that is currently available. The assessment uses a risk-based approach following the source-pathway-receptor methodology promoted by the EA, which considers the nature of potentially contaminated areas in relation to the proximity of any sensitive receptors such as health of site users, residential developments or controlled waters.

[15] Arup (2017) Groundsure Map Insight report, Report Reference: Northern Gateway
[16] Historic England Accessed via https://historicengland.org.uk/listing/the-list/map-search?clearresults=True/ Date accessed: October 2021
[17] Land Contamination Risk management (LCRM) Accessed via: Land contamination risk management (LCRM) - GOV.UK (www.gov.uk) Date accessed: October 2021

9.27 The current environmental assessment considers the greatest potential risk of causing adverse environmental impact. The magnitude for potential impact is based on the criteria presented in **Table 9.1.**

Characterisation of Effect

9.28 The environmental impacts have been predicted with reference to definitive standards and legislation where available. Where it has not been possible to quantify impacts, qualitative assessment has been carried out based on available knowledge and professional judgement. Where uncertainty exists, this has been noted.

9.29 The potential significance of predicted impacts on ground conditions has been determined by reference to criteria for each receptor. Broadly, the significance of the impact is determined with reference to the magnitude of the potential impact, the sensitivity value of the receiving environment or receptor and the likelihood of the impact occurring and its duration. In order to provide a consistent approach to expressing the outcomes of each of the assessments, the following terminology has been used to assist in determining the degree of significance.

9.30 Magnitude refers to the size or amount of an impact. It is a function of other aspects such as the extent of an impact being the area over which the impact occurs, the duration (i.e., the time for which the impact is expected to last prior to recovery or replacement of the resource or feature), the likelihood (i.e., the chance that the impact will occur) and reversibility. An irreversible (permanent) impact is one from which recovery is not possible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it.

9.31 The value or sensitivity of a receptor is a function of a variety of factors e.g., biodiversity value, social/community value and economic value. The value or potential value of a resource or feature can be determined within a defined geographical context.

Significance Criteria

9.32 There is no statutory definition of what constitutes a significant effect, and guidance is intended to support the overall impact assessment process. However, it is widely recognised that significance reflects the relationship between the magnitude of an impact and the value of the affected resources or receptor. As such, the significance of an impact is determined using the value of the environmental receptor and its sensitivity to change, together with the determined magnitude of the impact.

9.33 Statutory designations and any potential breaches of environmental law take precedence in determining significance, because the protection afforded to a particular receptor or resource has already been established as a matter of law. However, any assessment of specific impacts that may occur is based on professional judgement, utilising site-specific information on ground conditions / quality.

Table 0.1 Assessment of magnitude

Magnitude	Definition	Receptor (Example of Impact)
High	Severe or substantial alteration to a key receptor such that the post-development character/composition attributes will be fundamentally changed.	Human Health: Introduction/removal of contamination resulting in acute change in risk to human health based on the potential effects on the critical human health receptor Controlled Waters: Introduction/removal of a pollutant to a Principal Aquifer within a source protection zone (SPZ) or potable water supply characterised by a breach of drinking water standards (DWS) Geology & Soils: An internationally or nationally designated site such as a site of special scientific interest (SSSI) or a significant area of high quality or rare soil type that will be significantly damaged or destroyed by the proposed development.
Medium	Loss of alteration to one or more key receptors of the baseline conditions such that post development character/ compositions/ attributes of the baseline will be materially changed	Human Health: Introduction of contamination resulting in chronic damage to health Controlled Waters: Pollution of a Principal Aquifer outside a SPZ characterised by a breach of DWS Geology & Soils: A locally designated or proposed site of geological interest, such as a regionally important geological site (RIG), an area of high-quality soil type Loss of good agricultural land (1, 2, 3A) that will be significantly damaged.
Low	A small shift away from baseline conditions. Change arising from the loss/ alteration will be discernible/ detectable, but not material. The underlying character/ composition/ attributes of the baseline condition will be similar to the pre-development circumstances/ situation	Human health: Introduction of contamination resulting in minimal short-term effects to health Controlled waters: Low levels of pollution to a Principal Aquifer outside a SPZ, or pollution of a Secondary A/B Aquifer Geology & Soils: Slight damage to a designated site of geological interest or damage to soils or good agricultural land (Grade 1,2,3a). Any other prominent but undesignated geological feature that will be damaged.
Very Low	Very little change from baseline conditions. Change barely distinguishable, approximating to a “no change” situation	Human health: No appreciable impact on health Controlled waters: No appreciable impact on pollution or water quality Geology & Soils: Slight damage to other sites of geological interest, soils or poor agricultural land (Grade 3b, 4, 5). That is in the vicinity of the site but will not be affected by the development.

Table 0.2 Assessment of receptor value

Value	Description	Examples
High	Feature possessing key characteristics which contribute significantly to the distinctiveness, rarity and character of the site Feature possessing very significant biodiversity, social/community value and/or economic value at the national level. Feature is extremely rare.	Human health: Residential, schools and playing fields. Controlled waters: Catchment or surface water bodies of high quality (as defined in Water Framework Directive) and/or Principal aquifers with high to minor vulnerability. Likely to be groundwater protection zone SPZ1 (inner or outer source protection zone) with short travel times to sources or sensitive watercourses.
Medium	Feature possessing key characteristics which contribute significantly to the distinctiveness, and character of the site. Feature possessing significant biodiversity, social/community value and / or economic value at the regional level. Feature is uncommon.	Human health: Retail and business parks (public and workplaces), allotments and market gardens. Controlled waters: Catchment or surface water bodies of moderate quality, and/or Secondary A aquifers with moderate to low vulnerability. Likely to be SPZ2 and 3 for potable water supplies
Low	Feature possessing characteristics that are locally significant. Feature not designated or only designated at a regional / local level. Feature possesses moderate biodiversity, social/community value and / or economic value at the local level. Feature is relatively common.	Human health: Public open space, commercial developments, construction workers with acute exposure. Controlled waters: Surface water bodies of low quality. Secondary B and undifferentiated aquifers with low vulnerability. Likely to be SPZ3 (Total catchment source protection zone). ` Unproductive strata with no apparent abstraction use, including aquifers affected by saline intrusion. Property: Infrastructure susceptible to potential gas accumulation, attack by aggressive contaminants or permeation.
Very Low	Feature characteristics do not make a significant contribution to the character or distinctiveness locally. Feature not designated. Feature possesses low biodiversity, social/community value and / or economic value. Feature is common.	Human health: Industrial development (assuming routine health and safety practices are implemented). Controlled waters: Secondary B aquifer, undifferentiated aquifers, surface water bodies of poor quality.

Table 0.3 Impact Matrix

Magnitude	Value and Sensitivity of Receptor			
	Very Low	Low	Medium	High
Very Low	Negligible	Negligible	Minor	Minor
Low	Negligible	Minor	Minor	**Moderate**
Medium	Minor	Minor	**Moderate**	**Major**
High	Minor	**Moderate**	**Major**	**Major**

9.34 As shown in the matrix in **Table 9.3**, the levels of significance range from Major through to Negligible. The allocation of an impact significance provides clarification of the nature, scale, and type of a determined impact. The generic description for the various significance ratings is given in **Table 9.4**.

Table 0.4 General significance description.

Significance	Significance Ratings
Major	Very large or large change in environmental or socio-economic conditions. Effects, both adverse and beneficial, which are important considerations at a national to regional level because they contribute to achieving national / regional objectives, or, likely to result in exceedance of statutory objectives and/or breaches of legislation.
Moderate	Intermediate change in environmental or socio-economic conditions. Effects that are likely to be important considerations at a district to local level because they contribute to achieving local objectives or may result in exceedance of local statutory objectives and/or breaches of legislation.
Minor	Small change in environmental or socio-economic conditions. These effects may be raised as local issues but are unlikely to be of importance in the decision-making process.
Negligible	No discernible change in environmental or socio-economic conditions. An effect that is likely to have a negligible or neutral influence, irrespective of other effects.

9.35 Although **Tables 9.1 to 9.4** generally consider adverse effects that have a negative influence on receptors, it is important to note that potential impacts from the development may also be beneficial and can have a positive influence on receptors or provide opportunities for improvement. Consequently, final residual significance ratings may include:

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

9.36 Impact significance provides an indication as to whether mitigation may be required and whether, following the use of mitigation measures, identified impacts may be avoided, reduced or offset. Any impact that is moderate or above is considered a significant impact, as depicted by **bold** text in **Table 9.3**. Nevertheless, for best practice purposes, mitigation measures may be required following identification of minor to moderate or greater impacts.

Assumptions/Limitations

9.37 The majority of the information included in this assessment is derived from desk-based studies, historic and recent available ground investigation data, preliminary assessments, and third-party reports, often from historic sources. As such, uncertainty exists where assumptions have been made and the reliability of conclusions drawn from third party reports is based on the accuracy of the information provided. While care has been taken in assessing the information some changes to site conditions are likely to have taken place during the intervening periods.

Consultation

9.38 To date, meetings have been held with the following statutory consultees to introduce the proposed Victoria North development and to provide the relevant consultees with a summary of ground conditions at the site as they are currently understood. These consultees have been provided with the 2019 Arup desk study report for the site and we are currently awaiting their comments, as detailed in **Table 9.5.**

Table 0.5 Consultation

Consultee	Date and Time	Comments	Actions
Manchester City Council Contaminated Land Team	22nd July 2021 (13:30 – 14:30 hrs)	The meeting was intended to brief MCC on work undertaken to date to understand ground conditions across the proposed Victoria North development and to outline proposed further assessment works.	Subsequently, the 2019 Arup Desk Study was provided to MCC for review. Initial MCC comments on the 2019 Desk Study have been provided. These and other comments are to be revisited during a proposed meeting of 17 November 2021
Manchester City Council Contaminated Land Team	30 September 2021 (15:00 to 16:00hrs)	This meeting was held with MCC and the EA and was intended to brief both regulators – particularly the EA – on work undertaken to	See above for MCC actions

		date across the proposed Victoria North development and to outline proposed further assessment works.	
Environment Agency			Subsequently, the 2019 Arup Desk Study was provided to the EA for review. EA comments on the 2019 Desk Study are awaited. A further meeting has been arranged for 17 November 2021

Baseline Conditions

9.39 This section describes the baseline conditions at the site, the wider Victoria North development and the surrounding area as appropriate. Current site conditions, features and issues are identified and their potential to interact with the development process is assessed.

9.40 The findings of the 2019 and 2021 AEG ground investigations and the available assessments undertaken by Arup form the basis of this assessment. The findings of the following desk study also inform the overall assessment:

- **Appendix 9.1**: Arup 2019. Northern Gateway Ground Conditions Desk Study, Ref. MNG-ARP-SW-RP-CG-102.

Historical Site Uses

9.41 The Arup 2019 desk study describes the development of the Victoria North development, drawing on historical mapping, aerial photography, and satellite imagery. Review of the data has identified an industrial history dating back at least to the 1840's. Between the 1840s and late 1800s, modifications were made to the channel of the River Irk, minor channels (mill races etc.) were infilled and the area to the north and west of the River Irk saw large scale earthworks and raising of ground levels to form the Red Bank Plateau. Further information is included within **Appendix 9.1**. The discussion presented in the 2019 desk study considered the development on the basis of the following principal areas (see Figure 2 from the Desk Study).

Red Bank North (including St Catherine's Wood)

9.42 The 1848 ground level appeared to be continuous with the River Irk, and no steep banks were indicated. The Collyhurst Dye Works were located partially within the north of this zone. No rail infrastructure is evident in 1848. The 1891 map identifies large-scale re-development including significantly raised ground levels (to form the Red Bank Plateau), resulting in steep banks running along the southeast of the present site along with the installation of rail sidings, a viaduct, and buildings across the site. Since 1891, development within Red Bank North has included a small gasworks which included two gasometers shown on the 1906 mapping, and the infilling of reservoirs in the west of the site. From 1992 onwards, most of the rail sidings had been removed and by 2000, all rail infrastructure had been removed. The land is now largely vacant and overgrown.

Red Bank Central

9.43 From 1848 to 2013, Red Bank Central has had a wide variety of industrial uses including: plate works, dye works, chemical works, a metal foundry, glass works, timber works and scrap yards. There is indication of residential properties in the north of this area prior to the 1938 map. The land is now predominantly used for car parking.

Red Bank South

9.44 The zone was already fully developed with unlabelled development on the earliest 1848 map. Since 1892, Red Bank South has been the location of industries including: an oil works, tannery, print/dye works, joinery works,

engineering works, iron works and garage. A subway is marked on historical mapping in the 1930s, which appeared to pass under the railway viaduct, but no evidence of this feature is now visible. This area is now occupied by a commercial property and some small businesses occupy the railway arches under Red Bank Viaduct.

Red Bank East (otherwise known as Travis Island)

9.45 The area of the site was developed with unlabelled development, possibly residential, on the earliest 1848 map. In 1891, two large gasometers (associated with the nearby Rochdale Road Gas Works) were developed in the west of this zone. These gasometers are indicated on the 1964 map but were no longer shown on 1972 mapping, and the land left vacant until around 2000, at which point it became a traveller's site. Residential property and a rope walk occupied the land in the east of this zone until the 1933 mapping, after which a large garage was constructed. Although Travis Island is not within the red line boundary for the proposed development, it has been included within this chapter as it may impact the potential effects associated with contamination.

Creamline Dairies

9.46 In addition to the four areas described above, the proposed development encompasses land that includes a site formerly operated as Creamline Dairies. The 2019 desk study did not include this area. On the earliest map dated 1848, this area of the site appears to have been largely undeveloped. By 1892 the site had been developed with several unlabelled properties likely to be residential housing with gardens. The railway development on Red Bank Plateau is present immediately south east of the site. By 1908 a synagogue and adjacent hall are shown in the north east of this area. Ebenezer Place is shown at a north-west south-east orientation in the centre of this area, surrounded by residential properties with gardens. This area remains largely unchanged until 1938 where the residential properties and adjacent street are no longer shown, having been replaced with an irregular shaped structure labelled as Irkdale House. The 1985 map shows this area to be largely cleared, with Irkdale House no longer present. By 1992 the site is shown in its current form as a dairy, with a building in the north west and hardstanding covering the rest of the area.

Ground Conditions

9.47 A review of publicly available BGS geological map and borehole records indicate the site is underlain by the following:

- Superficial deposits: The 1:10,000 scale geological map indicates that glacial till underlies the site in the area south-east of the River Irk and along the north-western site boundary. Although not indicated, it is assumed that alluvial deposits are found in association with the River Irk.
- Bedrock: The bedrock varies from east to west across the site. The Chester Pebble Beds Formation underlies the west of the site; The Manchester Marls Formation underlies the centre of the site; and the Collyhurst Sandstone Formation underlies the north-eastern corner of the site. All three units are shown on mapping to be gently dipping (5 degrees) SSW.

9.48 A fault, trending NNW-SSE, cuts across the centre of the site, within the Manchester Marl Formation. The BGS map indicates that this is a normal fault, downthrown to the west, with limited displacement.

Geo-Environmental Investigation

9.49 The 2019 ground investigation was designed to provide information on ground conditions within the Victoria North development boundary to inform a high-level cost plan for the proposed Northern Gateway development. The investigation included thirty-seven intrusive locations. No rotary coring was conducted therefore penetration into rockhead was limited **(Figure 9.1).** The scope of fieldwork comprised of:

- Ten cable-percussion boreholes.
- Twenty-one mechanically excavated trial pits.
- Six window sample boreholes.
- The installation of seven groundwater monitoring wells.

9.50 The 2021 ground investigation was designed to establish baseline geo-environmental and geotechnical conditions within each housing development plot and wider areas, and to provide greater understanding of some of the abnormal ground conditions within the Victoria North development (**Figure 9.1).** The 2021 field work consisted of:

- Sinking of seventeen boreholes using cable percussion methods.
- Further advancement of six of these boreholes into bedrock using rotary coring methods.
- Sinking of eighteen window sample boreholes.
- Mechanical excavation of twenty-three mechanically excavated trial pits.
- Six horizontal concrete cores into the Red Bank retaining wall.

In addition to establishing further information on ground conditions and the potential for contamination within areas of former industry, in particular near former gasometers and dye works, the 2021 ground investigation was designed to collect data on:

- The depth to rockhead.
- The infill within the former River Irk.
- Structural condition of the Red Bank retaining wall.
- Material behind the current River Irk retaining walls.

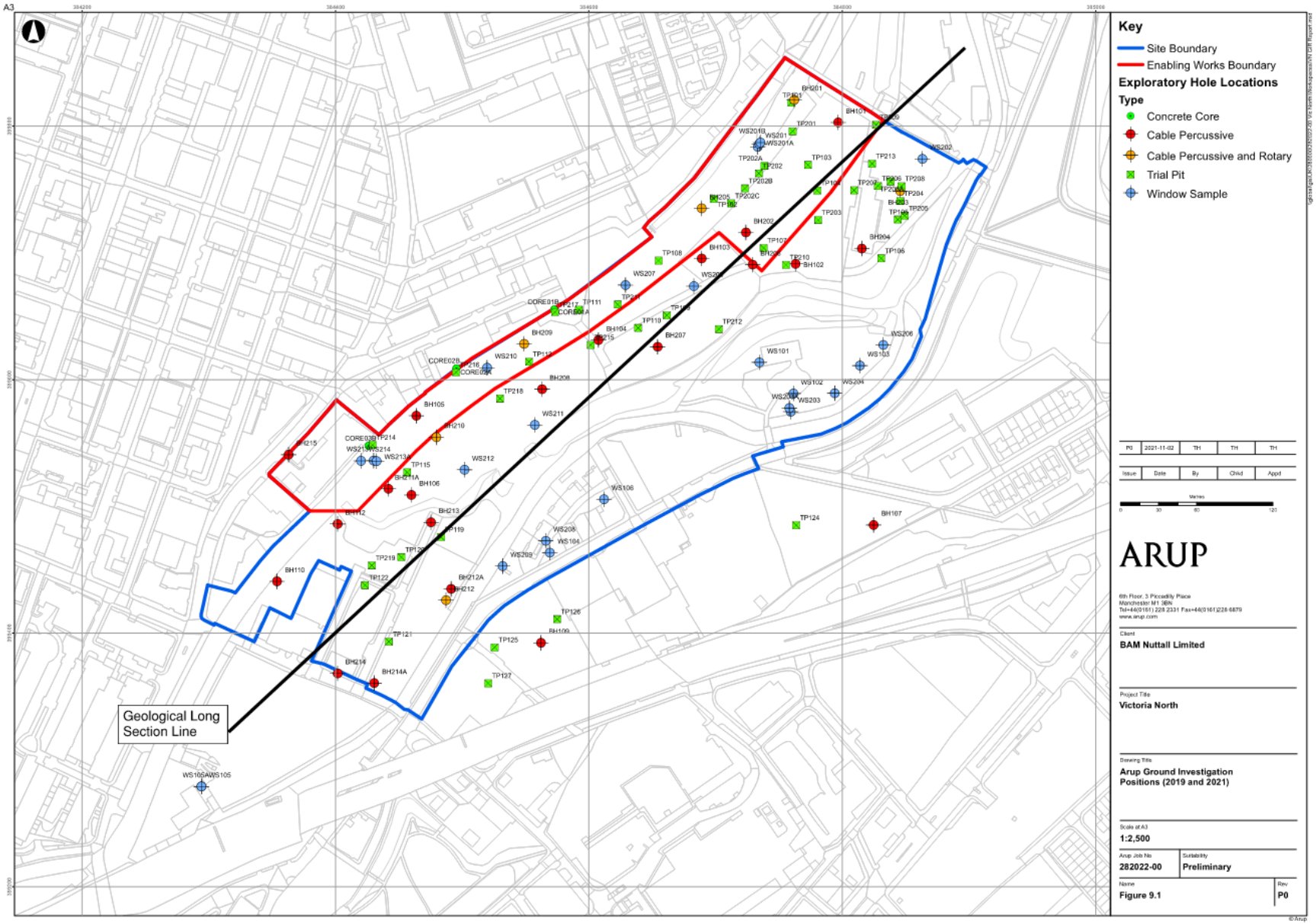
Unexploded Ordnance (UXO)

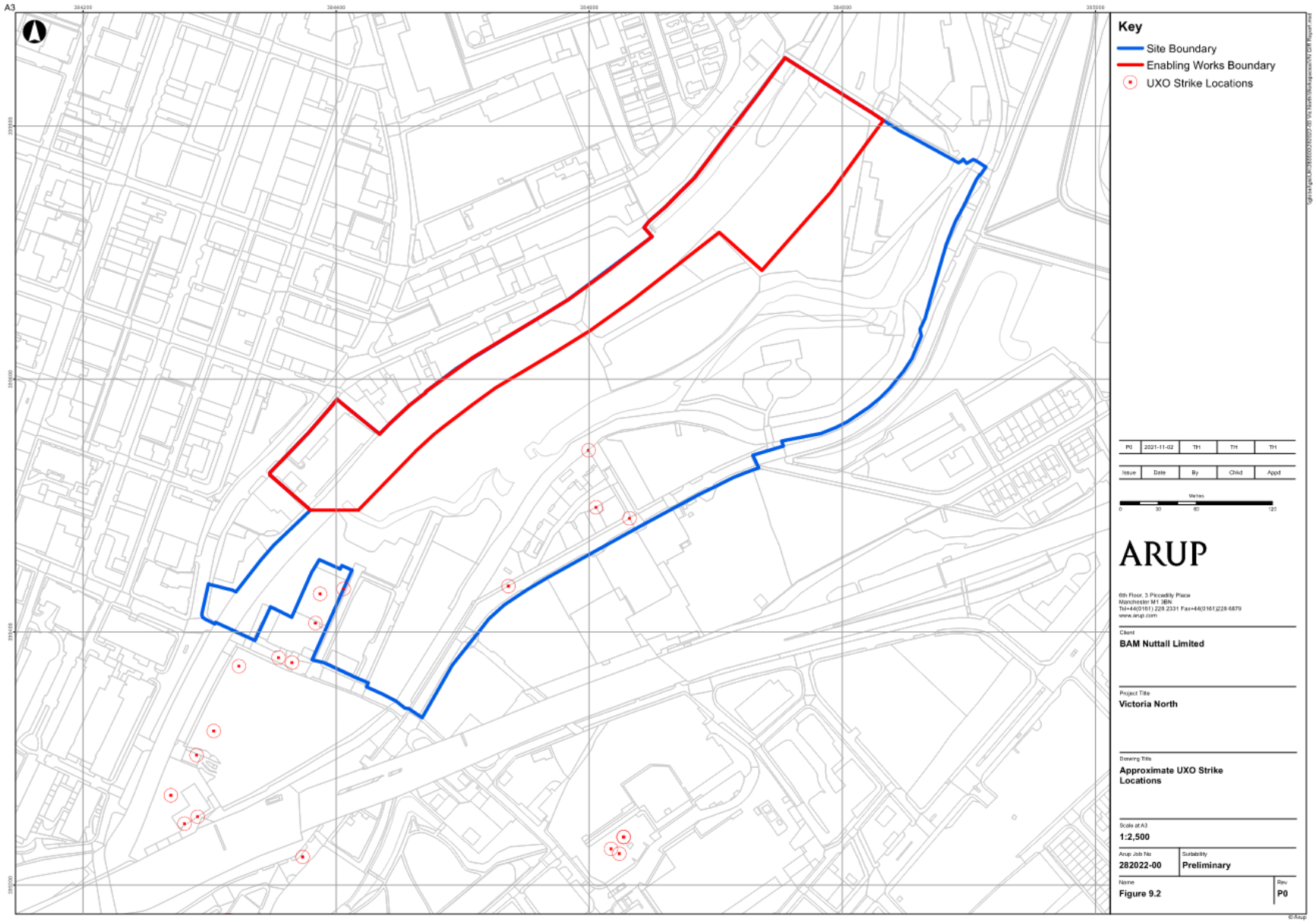
9.51 A preliminary UXO risk assessment report was obtained for the Victoria North development. The report indicates that as Manchester was a bombing target during WWII the entire city of Manchester, including the site, potentially has a medium UXO risk.

9.52 A similar medium UXO risk was identified from the online UXO risk map provided by Zetica[18] **(Figure 9.2).** The Zetica risk map also identified two Luftwaffe bombing targets, the large historical gasometers in Red Bank East, and the land in Red Bank Central. A map of recorded bomb damage in Manchester shows seven recorded bomb strikes within the development boundary, five of which are concentrated on the gasometers formerly present in Red Bank East, off Dantzic Street. Given the heavy industrial usage of the development pre-war and the proximity to Victoria Station the areas are very likely to have been targeted and there is the potential for further unrecorded strikes having taken place.

9.53 A detailed, site-specific risk assessment was carried out by Zetica in line with CIRIA C681[19] for the entire Northern Gateway area which identified the site to be at low risk of UXO.

[18] Zetica (2021) UXO Risk Maps Accessed via https://zeticauxo.com/downloads-and-resources/risk-maps/ Date accessed: October 2021
[19] Ciria (2021) Ciria C681 a guide to unexploded ordnance for UK construction industry (safelaneglobal.com) Date accessed: November 2021


A3
Key
Site Boundary
Enabling Works Boundary
Exploratory Hole Locations
Type
Concrete Core
Cable Percussive
Cable Percussive and Rotary
Trial Pit
Window Sample
Geological Long Section Line
ARUP
BAM Nuttall Limited
Victoria North
Arup Ground Investigation Positions (2019 and 2021)
1:2,500
282022-00
Preliminary
Figure 9.1
P0


A3
Key
Site Boundary
Enabling Works Boundary
UXO Strike Locations
ARUP
Client
BAM Nuttall Limited
Project Title
Victoria North
Drawing Title
Approximate UXO Strike Locations
Scale at A3
1:2,500
Arup Job No
282022-00
Suitability
Preliminary
Name
Figure 9.2
Rev
P0

Stratigraphy

9.54 A Geological long section through the site from the southwest to northeast is shown in **Figure 9.3.** The alignment of the geological long section is shown on **Figure 9.1.**

9.55 Ground Investigation data from 2019 and 2021 has been used to identify the stratigraphy of the development by area, as presented in **Tables 9.6, 9.7 and 9.8**. Please note, the names used for these site areas differ from those used previously in the 2019 Desk Study and reflect current development proposals.

Table 0.6 Summary of Stratigraphy encountered in Red Bank Plateau (Including Creamline Dairies).

Stratum	Top of Stratum mbgl (mOD)	Thickness range (m)	Description
Made ground	GL (39.89-43.55)	0.8-15.7	Made ground is variable at shallow depths up to 1m however generally comprises sandy gravel with low cobble content. With gravel of concrete, brick, tarmac, plastic, glass, clinker, sandstone, ceramic, rubber. The deeper made ground as depth >1m is also highly variable but has a more cohesive component and is generally described as sandy slightly gravelly clay. With a low cobble content with gravels of clinker, slag, tarmac, brick, mudstone, sandstone, limestone. The cohesive soils are generally soft to firm becoming stiff at depth.
Glacial till	0.8-15.7 (25.94-42.38)	0.3-9.5	Soft to firm and stiff at depth slightly sandy gravelly clay. Medium dense to very dense gravelly bands of brown slightly clayey sandy gravel and gravelly sand with low/moderate cobble.
Alluvium	0.8-10 (42.38-31.39)	0.3-4.7	Medium/dense slightly gravelly sand. Cohesive bands of soft-firm sandy gravelly clay.
Chester Pebble Beds	8.8-13.6 (26.85-31.87)	Unproven	Weak red brown slightly clayey coarse grained weathered sandstone.
Manchester Marls	4-15.7 (25.94-38.8)	Unproven	Weak thinly laminated clayey mudstone.
Collyhurst Sandstone	7 (36.38)	Unproven	BH101 only extremely weak-very weak fine to coarse grained sandstones with lenses of red marl.

Table 0.7 Summary of the stratigraphy encountered at Redbank Viaduct.

Stratum	Top of Stratum mbgl (mOD)	Thickness range (m)	Description
Made ground	GL (29.45-32.25)	1.8-6.4	Concrete with rebar. Red-brown and grey sandy gravel with gravels of brick, concrete, sandstone. In some areas, made ground encountered as clayey material described as soft firm sandy gravelly clay.
Glacial till	3 (27)	1.1	Granular medium dense slightly clayey gravelly sand with gravels of mudstone limestone and sandstone.
Alluvium	4 (25.45)	Unproven	Only WS105A. Loose dark brown clayey gravelly sand with gravels of sandstone limestone and quartzite.
Chester Pebble Beds	1.8-6.4 (24.68-30.15)	Unproven	Extremely weak to weak weathered to un-weathered red brown fine grained sandstone.
Manchester Marls	Not encountered		
Collyhurst Sandstone	Not encountered		

Table 9.8 Summary of stratigraphy encountered at St. Catherine's Wood

Stratum	Top of Stratum mbgl (mOD)	Thickness range (m)	Description
Made ground	GL (31.94-43.38)	3-7.5	Concrete with rebar <1m sandy clay, gravelly sand and sandy gravelly topsoil. >1m loose medium dense clayey sandy gravel and soft to stiff sandy gravelly clay.
Glacial till	7.5 (34.39-35.78)	10.5	Soft-firm brown sandy very gravelly clay with gravels of sandstone mudstone and limestone. Medium dense granular bands of brown clayey sandy gravel and gravelly sand.

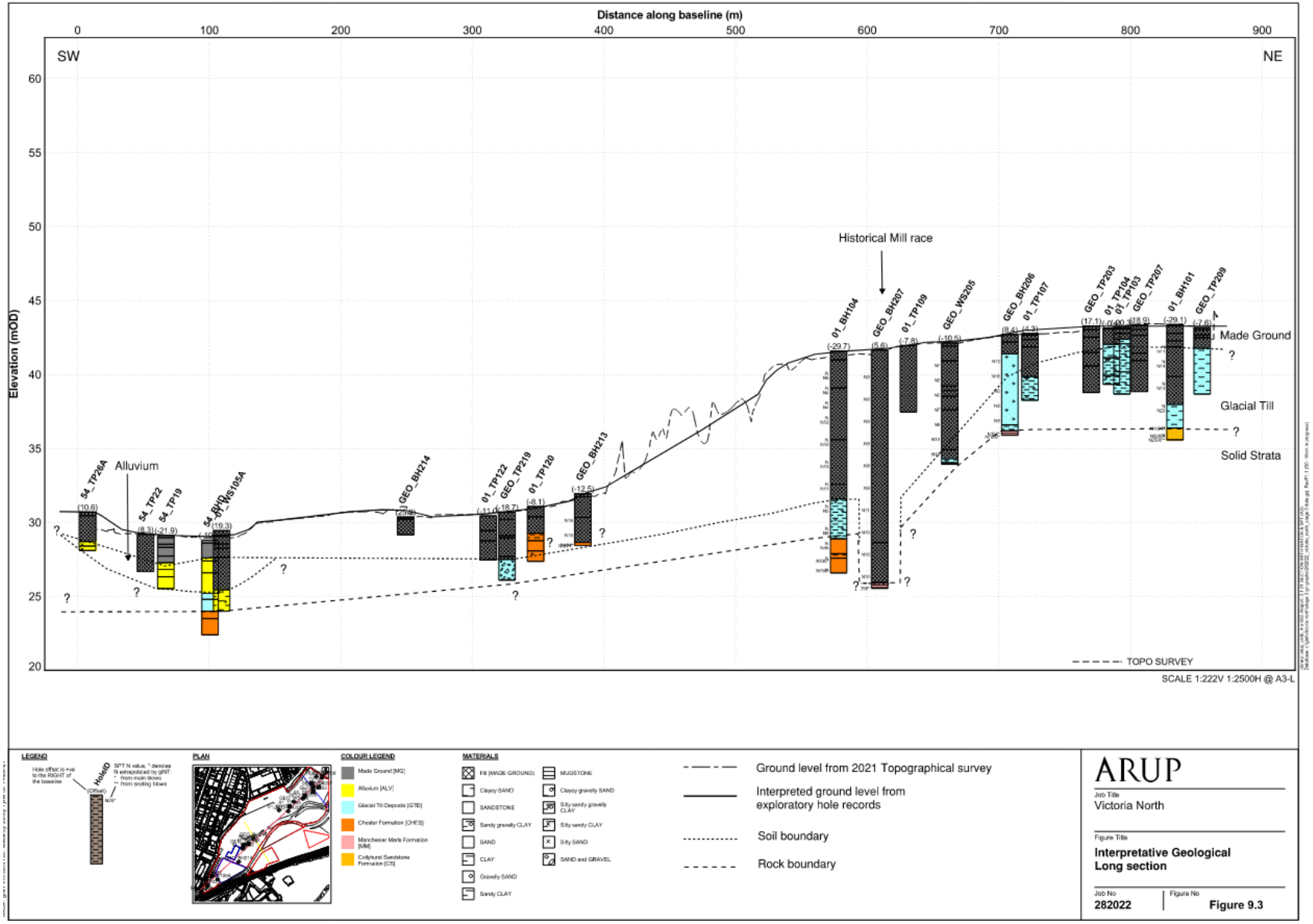
Alluvium	3-4.3 (28.51-29.2)	Unproven	Soft brown very sandy clay and loose brown slightly clayey sand.
Chester Pebble Beds	3.3 (28.64)	Unproven	Only BH213. Extremely weak fine grained red sandstone distinctly weathered.
Manchester Marls	Not encountered		
Collyhurst Sandstone	18 (23.89)	Unproven	Weak red-brown coarse grained weathered sandstone.

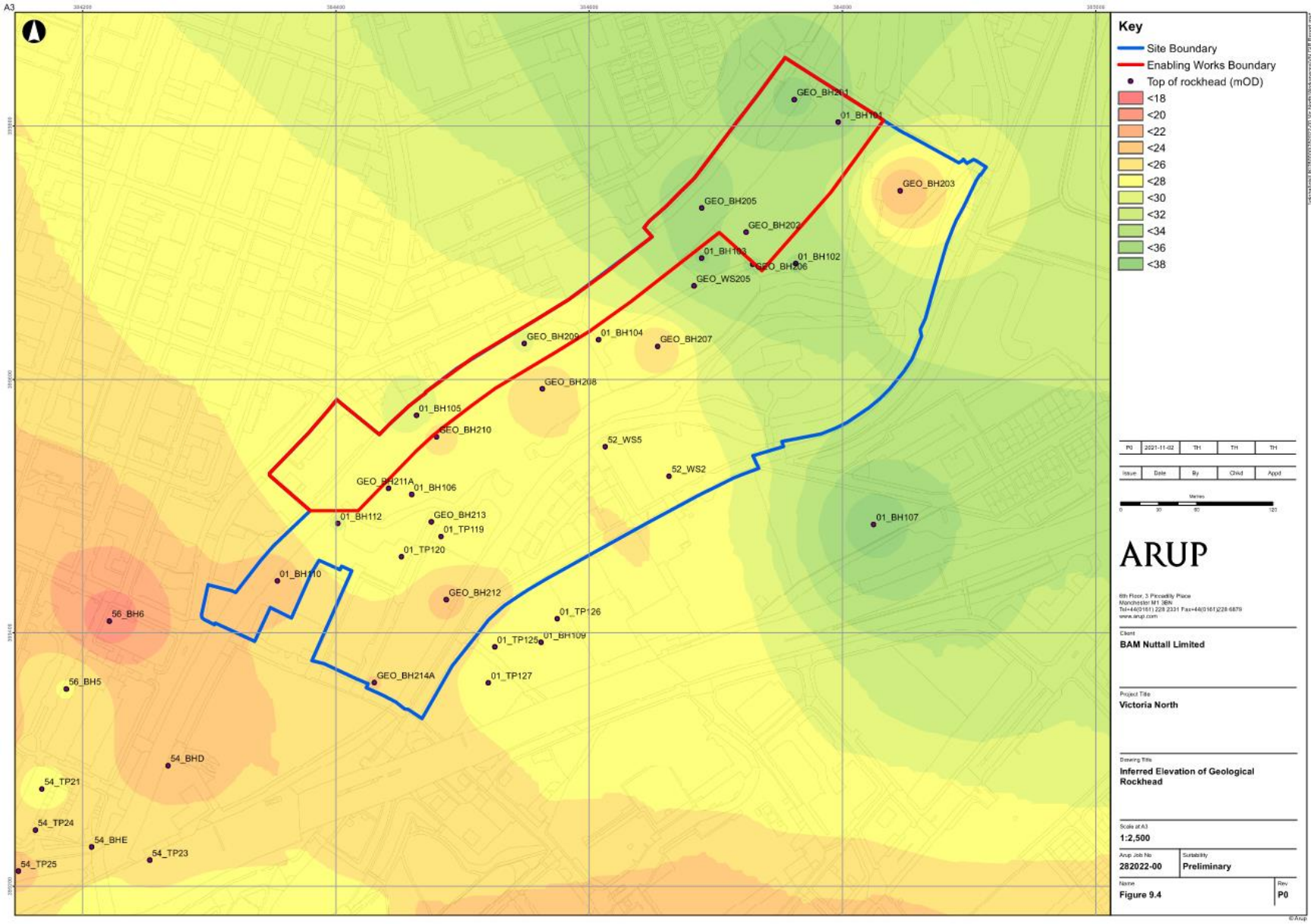
Rock Head levels

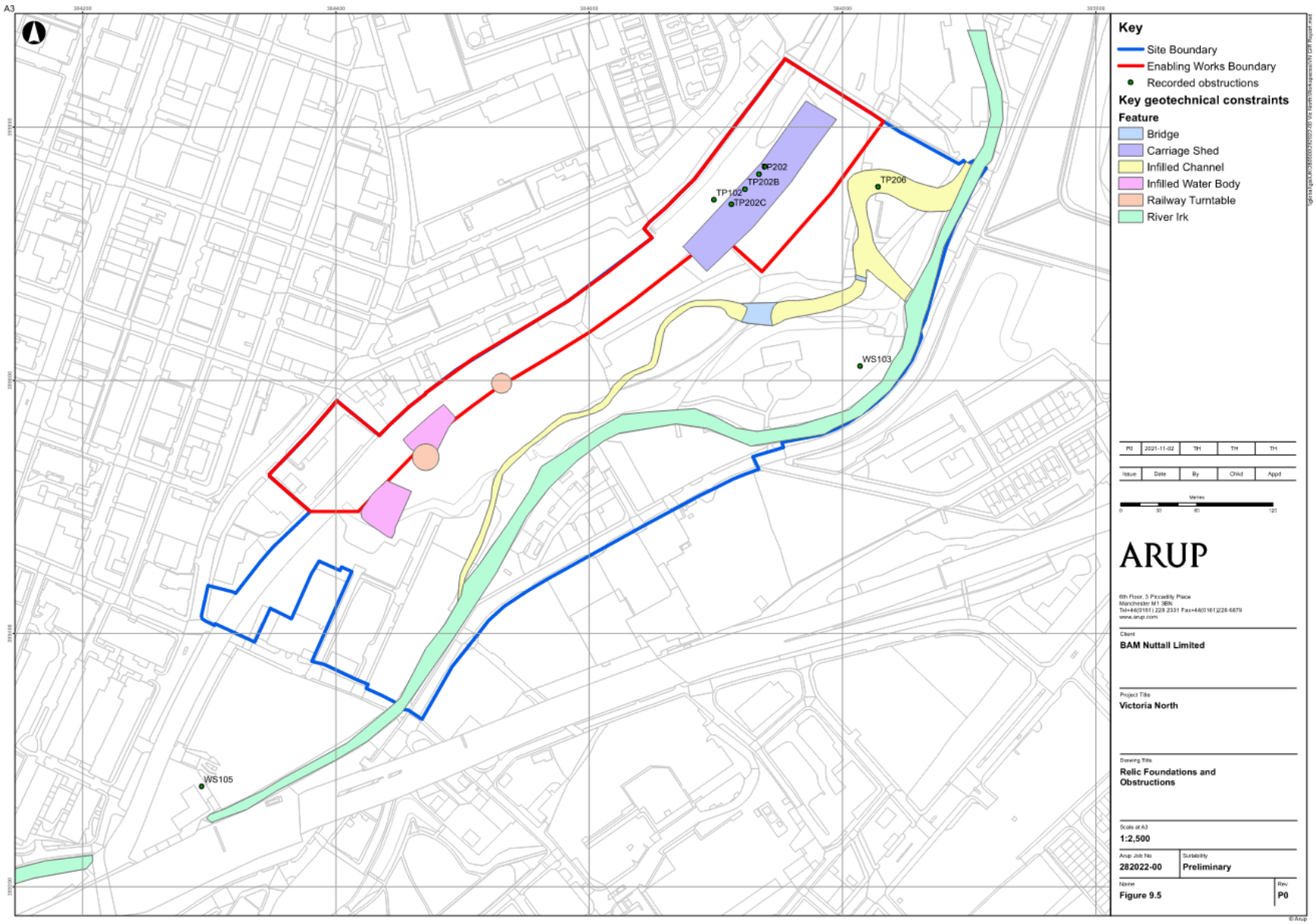
9.56 **Figure 9.4** identifies geological rockhead. In selected locations, the bedrock of the Chester Pebble Beds formation was found to be shallow (<4m bgl). Of these five locations, two were positioned in Red Bank Viaduct, two positioned in the New Town plots and one positioned in St. Catherine's Wood. The depth to bedrock in these locations ranged from 1.8 to 3.3m bgl. The average depth to bedrock across the site is 7.25m bgl with much deeper areas recorded in Red Bank Plateau and St. Catherine's Wood (in the area of the historic infilled channel feature). The implications of this variable rockhead is that a variety of foundation solutions may be required across the site.

Buried Obstructions

9.57 There is a high potential for encountering buried obstructions at the site due to the site development history. Potential relic foundations and obstructions intersecting the stratigraphy can be found in **Figure 9.5**.


Distance along baseline (m)
0
100
200
300
400
500
600
700
800
900
SW
NE
Elevation (mOD)
60
55
50
45
40
35
30
25
20
Historical Mill race
Made Ground
Glacial Till
Solid Strata
Alluvium
54_TP26A
54_TP22
54_TP19
54_BH105A
GEO_BH214
01_TP122
GEO_TP219
01_TP120
GEO_BH213
01_BH104
GEO_BH207
01_TP109
GEO_WS205
GEO_BH206
01_TP107
GEO_TP203
01_TP104
01_TP103
GEO_TP207
01_BH101
GEO_TP209
TOPO SURVEY
SCALE 1:222V 1:2500H @ A3-L
LEGEND
PLAN
COLOUR LEGEND
MATERIALS
Ground level from 2021 Topographical survey
Interpreted ground level from exploratory hole records
Soil boundary
Rock boundary
ARUP
Job Title
Victoria North
Figure Title
Interpretative Geological Long section
Job No
282022
Figure No
Figure 9.3


A3
Key
Site Boundary
Enabling Works Boundary
Top of rockhead (mOD)
<18
<20
<22
<24
<26
<28
<30
<32
<34
<36
<38
GEO_BH201
01_BH101
GEO_BH203
GEO_BH205
GEO_BH202
01_BH103
01_BH102
GEO_BH206
GEO_WS205
GEO_BH209
01_BH104
GEO_BH207
GEO_BH208
01_BH105
GEO_BH210
52_WS5
52_WS2
GEO_BH211A
01_BH106
01_BH112
GEO_BH213
01_TP119
01_TP120
01_BH107
01_BH110
GEO_BH212
01_TP126
56_BH6
01_TP125
01_BH109
GEO_BH214A
01_TP127
56_BH5
54_BHD
54_TP21
54_TP24
54_BHE
54_TP23
54_TP25
ARUP
BAM Nuttall Limited
Victoria North
Inferred Elevation of Geological Rockhead
1:2,500
282022-00
Preliminary
Figure 9.4
P0


A3
Key
Site Boundary
Enabling Works Boundary
Recorded obstructions
Key geotechnical constraints
Feature
Bridge
Carriage Shed
Infilled Channel
Infilled Water Body
Railway Turntable
River Irk
TP202
TP202B
TP102
TP202C
TP206
WS103
WS105
P0 2021-11-02 TH TH TH
Issue Date By Chkd Appd
ARUP
6th Floor, 3 Piccadilly Place
Manchester M1 3BN
Tel+44(0161) 228 2331 Fax+44(0161)228 6879
www.arup.com
Client
BAM Nuttall Limited
Project Title
Victoria North
Drawing Title
Relic Foundations and Obstructions
Scale at A3
1:2,500
Arup Job No
282022-00
Suitability
Preliminary
Name
Figure 9.5
Rev
P0

Hydrology

9.58 The closest surface water feature to the Site is the River Irk which at its closest point is some 65m to the south east, see **Figure 9.5**. The river lies in a valley and river levels are in the order of 15m below the general level of the Red Bank Plateau. The north bank of the River Irk is characterised by a series of steep slopes, with gradients locally approaching 1(v) to 1.7(h).

9.59 As also shown on **Figure 9.5**, during the industrial development of the Site (which began c. 1850) the natural channel of the river was modified, with some straightening of the channel undertaken in the north east together with the construction of a mill race and masonry retaining walls along the river banks.

Hydrogeology

9.60 The superficial geology within the site is classified as a Secondary (A) Aquifer (undifferentiated). There is small area in St. Catherine's Wood which is classified as a Secondary (A) Aquifer (permeable layers), associated with alluvial deposits. Secondary aquifers are defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

9.61 The Manchester Marl bedrock is classified as a Secondary (B) Aquifer (lower permeability layers), whereas the Chester Pebble Beds Formation and Collyhurst Sandstone Formation are classified as Principal Aquifers. Principal aquifers are defined as geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale.

9.62 No Source Protection Zones are located within 500m of the site.

Groundwater

9.63 During the ground investigations undertaken to date, groundwater was encountered across the site at varying depths. The groundwater strike details recorded during the 2019 and 2021 ground investigation are listed in **Table 9.9**. **Figure 9.6** provides an assessment of inferred groundwater elevations on site.

Table 0.9 Groundwater encountered during the 2019 ground investigations and 2021 ground investigations.

GI	Intrusive location ID	Site area	Groundwater strike depth (mbgl)	Groundwater strike elevation (mAOD)
2019	BH103	Red Bank Plateau	0.6	42.0
	TP104	Red Bank Plateau	3.5	39.6
	TP105	St. Catherine's Wood	2.0	39.1
	TP107	Red Bank Plateau	0.6	42.2
	TP110	Red Bank Plateau	1.8	39.6
	TP112	Red Bank Plateau	2.8	38.0
	WS101	St. Catherine's Wood	4.2	28.0
	WS104	Travis Island	2.2	29.3
	WS105A	Red Bank Viaduct	4.2	25.2
	WS106	Travis Island	2.2	29.3
2021	BH206	Red Bank Plateau	1.3	41.4
	BH207	Red Bank Plateau	13	28.6
	BH212	Red Bank Viaduct	5.6	24.8
	TP201	Red Bank Plateau	2.4	40.6
	TP202	Red Bank Plateau	0.6	42.3
	TP202A	Red Bank Plateau	0.6	42.4
	TP202B	Red Bank Plateau	0.5	42.2
	TP202C	Red Bank Plateau	0.4	42.2
	TP203	Red Bank Plateau	2.9	40.4
	TP204	St. Catherine's Wood	2.9	39.2

	TP205	St. Catherine's Wood	2.7	38.3
	TP206A	St. Catherine's Wood	3.5	38.5
	TP207	Red Bank Plateau	2.7	40.6
	TP208	St. Catherine's Wood	3.0	39.0
	TP210	Red Bank Plateau	3.7	39.4
	TP211	Red Bank Plateau	0.55	41.1
	TP212	St. Catherine's Wood	3.4	38.6
	TP213	Red Bank Plateau	2.7	40.6
	TP216	Red Bank Plateau	0.8	40.0
	TP217	Red Bank Plateau	1.2	40.1
	TP219	Red Bank Viaduct	3.0	27.7
	WS201	Red Bank Plateau	1.1	42.4
	WS204	St. Catherine's Wood	4.3	28.5
	WS205	Red Bank Plateau	5.0	37.1
	WS206	St. Catherine's Wood	4.1	28.5
	WS207	Red Bank Plateau	0.6	41.3
	WS208	Travis Island	1.2	29.0
	WS210	Red Bank Plateau	2.8	38.1


A3
Key
Site Boundary
Enabling Works Boundary
Monitoring Installations
Type
Gas and Groundwater
Groundwater
Groundwater Elevation (mOD)
<10
<15
<20
<25
<30
<35
<40
<45
<50
BH201
BH101
WS201B
BH203
BH205
BH202
BH204
BH103
BH206
BH102
WS207
BH209
BH104
BH207
WS210
BH208
BH105
BH210
WS212
BH211A
BH106
BH112
BH213
WS208
WS209
BH212
BH214A
ARUP
BAM Nuttall Limited
Victoria North
Inferred Groundwater Elevation
1:2,500
282022-00
Preliminary
Figure 9.6
P0

Groundwater Monitoring

9.64 Monitoring installations comprised a 50mm standpipe within a gravel screen and bentonite seal in each case. A summary of the groundwater monitoring results is included in **Table 9.10.**

Table 0.10 The groundwater monitoring results from 2019 and preliminary results from 2021

GI	Location	Complete rounds	Response Zone (mbgl)	Response zone stratum	Groundwater depth range (mbgl)	Groundwater Level (mOD)
2019	BH101	4	1 to 5	Made ground	4.81 to 4.95	38.43 to 38.57
	BH102	3	1.9 to 6.7	Made ground	Dry	Dry
	BH103	3	1 to 3.5	Made ground	0.91 to 3.4	39.17 to 41.66
	BH104	2	1.8 to 9.2	Made ground	8.1 to 8.95	33.49 to 32.64
	BH105	2	3 to 9.5	Alluvium	4.52	36.15
	BH106	2	2 to 10	Made ground	Dry	Dry
	BH112	2	0.5 to 4	Made ground	Dry	Dry
2021	BH201	5	3 to 5	Bedrock	4.95 to 5.46	37.94 to 38.45
	BH202	3	4 to 9	Glacial till	4.19 to 4.94	37.72 to 38.47
	BH203	5	18 to 24	Possibly Alluvium	12 to 12.17	29.89 to 29.72
	BH204	6	1.5 to 10	Glacial till	2.29 to 2.67	40.61 to 40.99
	BH205	3	4.8 to 10.8	Bedrock	5.68 to 6.11	36.47 to 36.9
	BH206	5	2 to 6	Glacial till	2.71 to 3.1	39.59 to 39.98
	BH207	6	1.5 to 15.5	Made ground	12.25 to 12.8	28.84 to 29.39
	BH208	5	3 to 13	Made ground	11.8 to 12.01	28.65 to 28.86
	BH209	3	11 to 17	Bedrock	12.39 to 12.47	28.74 to 28.82
	BH210	5	14 to 19.6	Bedrock	7.63 to 11.21	29.25 to 32.82

	BH211A	6	5 to 10.5	Made ground	6.86 to 7.73	32.71 to 33.58
	BH212	2	5.5 to 9	Bedrock	3.35	27.03
	BH213	6	1.5 to 3	Made ground	2.99 to 3.1	28.84 to 28.95
	BH214A	4	3 to 4	Glacial till	3.24 to 3.38	26.65 to 26.79
	WS201B	6	0.5 to 1.3	Made ground	0.78 to 1.17	42.38 to 42.77
	WS207	6	0.9 to 4.9	Made ground	0.27 to 1.22	40.69 to 41.64
	WS208	3	1 to 4.1	Made ground	1.3 to 1.38	28.87 to 28.79
	WS209	3	2.8 to 3.8	Made ground	Dry	Dry
	WS210	4	1.5 to 2.5	Made ground	2.2 to 2.54	38.34 to 38.68
	WS212	6	0.5 to 2.5	Made ground	Dry	Dry

Contamination – Soils

9.65 Field observations were recorded during the 2019 and 2021 ground investigations. A summary of encountered obstructions and visual and olfactory evidence of contamination is presented in **Figure 9.7** and in **Table 9.11.**

Table 0.11 Encountered visual and olfactory evidence of contamination

Location ID	Site area	Evidence of contamination
BH103	Red Bank Plateau	Hydrocarbon odour at 0.1 – 1.3mbgl
WS106	Travis Island	Hydrocarbon (benzene) odour at 2.8mbgl
TP101	Red Bank Plateau	Slight hydrocarbon odour at 0.8 – 0.9mbgl
TP120	Red Bank Viaduct	Strong hydrocarbon odour at 0.7 – 1.8mbgl
BH203	St. Catherine's Wood	Moderate hydrocarbon odour at 5.5 – 7.5mbgl
BH207	Red Bank Plateau	Moderate hydrocarbon odour at 13 – 15.7mbgl
BH211A	Red Bank Plateau	Strong hydrocarbon odour at 10.1 – 10.5mbgl

TP202B	Red Bank Plateau	Oily groundwater within foundations at 0.1 – 0.6mbgl
TP202C	Red Bank Plateau	Oily groundwater within foundations at 0.5 – 1.2mbgl
TP204	St. Catherine's Wood	Strong hydrocarbon odour at 2.4 – 4.5mbgl
TP205	St. Catherine's Wood	Strong hydrocarbon odour at 1.9 – 4.2mbgl
TP206A	St. Catherine's Wood	Strong hydrocarbon odour at 1.7 – 4.5mbgl
TP213	Red Bank Plateau	Strong hydrocarbon odour at 1.2 – 4.5mbgl
TP216	Red Bank Plateau	Mild hydrocarbon odour at 1.1 – 1.2mbgl

9.66 Soil guideline values (SGVs) generated using the CLEA software and accompanying toxicological reports have been issued by the EA for eleven contaminants. To supplement these, Arup has produced GACs using risk assessment software in accordance with the CLEA assessment framework for a residential without plant uptake end use, using a Soil Organic Matter (SOM) value of 6%, which has been selected based on the average SOM content of the soils sampled on site. Land Quality Management Ltd (LQM)[20] and the AGS/EIC/CL:AIRE [21] have also produced and published GACs for the standard CLEA end uses, using the CLEA v1.04 software. Arup GACs have been benchmarked against the LQM and AGS/EIC/CL:AIRE GACs and both are similar with respect to the research carried out and the criteria developed.

9.67 It is not considered appropriate to use GACs for proposed end-uses with plant uptake as it is understood that development will consist of apartments with managed soft landscaping and private gardens are not to be included.

9.68 The following contaminants have been reported above their respective screening criteria for a residential end use with no gardens: arsenic, beryllium, copper, lead, cyanide, asbestos, and PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenz(ah)anthracene and naphthalene). No exceedances were found in BTEX or TPH.

9.69 Visual evidence of asbestos containing materials (ACM) was recorded in 16 of 121 samples, identified as amosite and chrysotile fibres.

9.70 Exceedances in contaminants were found in all development areas and at a range of depths, both in made ground and natural deposits. The soil contamination assessment results are currently preliminary.

[20] Land Quality Management Ltd (LQM) (2013) Accessed via: LQM: Conceptual site model software - Land Quality Management Ltd Date accessed: November 2021
[21] AGS/EIC/CL:AIRE Accessed via: Generic Assessment Criteria (GAC) (claire.co.uk) Date accessed: November 2021.

Contamination – Controlled Waters

9.71 Groundwater testing identified exceedances in metals, inorganic contaminants, and PAHs. Some contaminants were found to exceed their screening criteria in only one location at the site, however others including cadmium, zinc and ammoniacal nitrogen exceeded the screening criteria in over half of the samples. The groundwater contamination assessment results are currently preliminary.

9.72 Exceedances in at least one chemical were found in all 15 water samples. However, all but one water samples were taken from exploratory holes within the Red Bank Plateau area, and therefore groundwater contamination in other areas of the site remains undetermined and further assessments will be required.

9.73 Due to the history of the Red Bank Plateau, it is considered possible that the made ground beneath the site may be a contributory source to the contaminants recorded within the groundwater. There is a potential pollutant pathway between contaminated groundwater and the adjacent River Irk which are likely to be in hydraulic continuity.

9.74 There is a potential for pathways to exist between any mobile contaminants in the made ground and groundwater, as made ground has been noted to directly overlie bedrock or alluvium in some areas of the site (e.g., Red Bank Viaduct). However, glacial till, typically 2.4m thick, covers much of the site and therefore may act as an aquitard preventing this pathway in some areas (e.g. in Red Bank Plateau).

9.75 Two former landfill sites, Queens Road tip and Sand Street landfill, are present within 100m of the site boundary, which may be potential sources of contaminated groundwater entering the site, assuming (in the worst case) that groundwater flow is towards the River Irk.

9.76 The River Irk runs through the site and therefore a potential pathway exists between contaminants and the river, particularly any contaminants released during construction e.g. from accidental spillages or runoff from stockpiles. The River Irk is also a potential pathway for leachate and contaminants travelling from the bordering former landfill sites including Queens Road tip and Sand Street landfill.

9.77 The primary controlled waters receptors within the site are considered to be the River Irk and the Principal Aquifers in the sandstone bedrock.

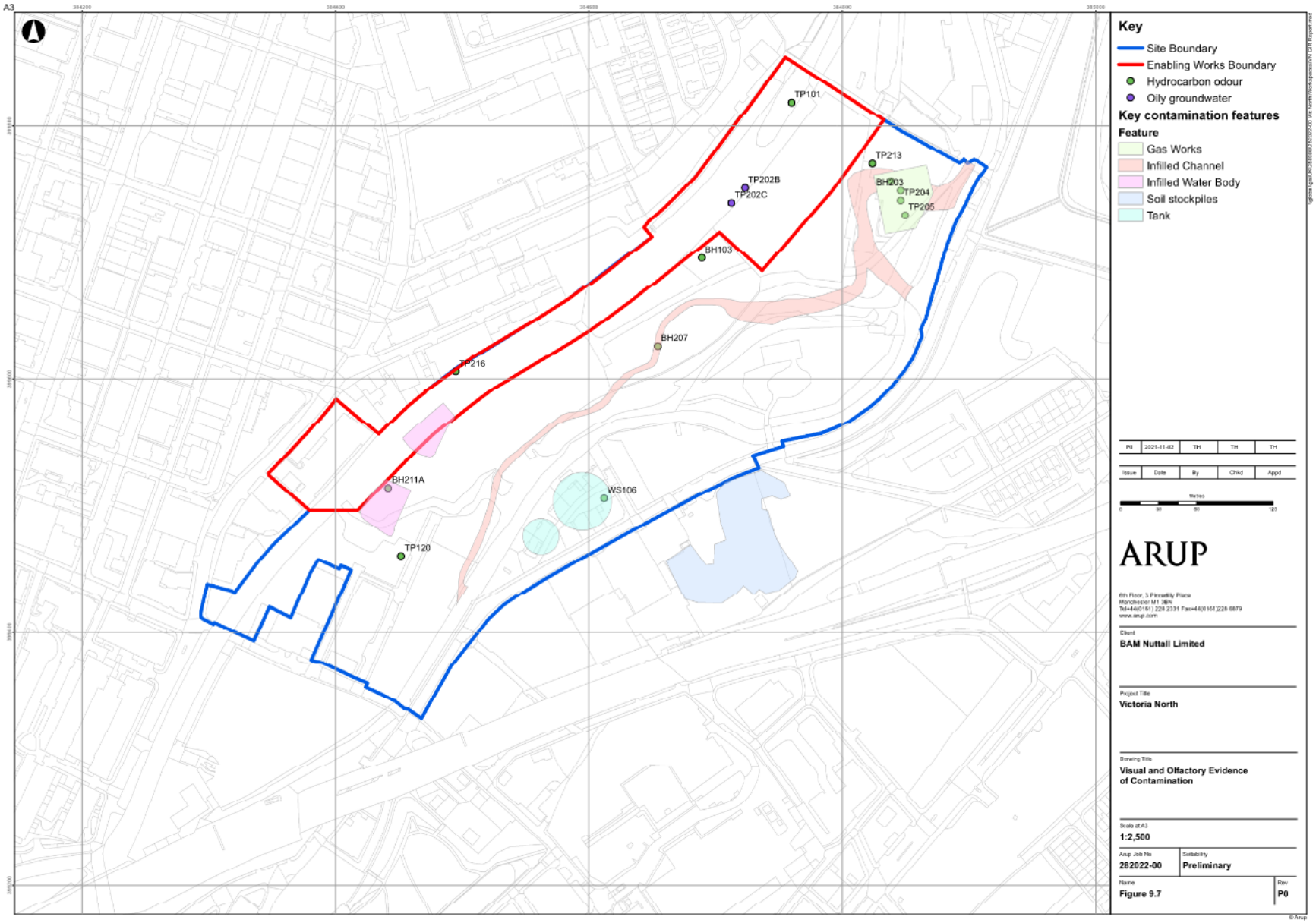
Water Framework Directive Classification

9.78 The study area is situated in the Manchester and East Cheshire Permo-Triassic Sandstone Aquifer (GB41201G10100) [22]. This is a principal aquifer with an Overall Water Body Status of Poor, with a failing Quantitative and Chemical status. The reasons for the failure to reach Good status include saline or other intrusion and unknown. The target overall status for the waterbody is Good by 2021.

[22] Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (2021) Accessed via: Manchester and East Cheshire Permo-Triassic Sandstone Aquifers | Catchment Data Explorer | Catchment Data Explorer Date accessed: November 2021

Table 9.12 Summary of WFD Quantitative and Chemical status of groundwater body in the study area.

WFD Waterbody	Manchester and East Cheshire Permo-Triassic Sandstone Aquifer
ID	GB41201G10100
Type of Waterbody	Groundwater
Management Catchment	North West GW
Area (km^2)	367.346
Quantitative Status	Poor
Quantitative Objective	Good by 2021
Chemical Status	Poor
Chemical Objective	Good by 2021
Reason for not achieving Good status	Unknown, Saline or other intrusion


A3
Key
Site Boundary
Enabling Works Boundary
Hydrocarbon odour
Oily groundwater
Key contamination features
Feature
Gas Works
Infilled Channel
Infilled Water Body
Soil stockpiles
Tank
TP101
TP213
TP202B
TP202C
BH203
TP204
TP205
BH103
BH207
TP216
BH211A
WS106
TP120
ARUP
BAM Nuttall Limited
Victoria North
Visual and Olfactory Evidence of Contamination
1:2,500
282022-00
Preliminary
Figure 9.7
P0

Ground Gas

9.79 The site is not on a landfill site but is within 100m of former landfill sites including Queens Road tip and Sand Street landfill. These off-site areas represent potential sources of hazardous ground gasses (methane, carbon dioxide, hydrogen sulphide and carbon monoxide).

9.80 No gas data is available from the 2019 assessment; however, data has been collected throughout the ground investigation works of 2021.

9.81 Six rounds of gas monitoring were completed in twenty standpipes installed within the Victoria North site in 2021. Access issues prevented a full set of complete monitoring rounds for several standpipes. **Table 9.13** below displays the 2021 ground gas monitoring results.

Table 0.13 The 2021 ground gas results.

Monitoring well	Response Zone strata	No. of completed visits	Methane (range % v/v)	Carbon Dioxide (range % v/v)	Peak gas flow (l/hr)	Characteristic Situation
BH201	Bedrock	5 of 5	0.1 to 1.7	0.2 to 0.9	0	CS1
BH202	Glacial till	3 of 3	0.1 to 0.1	0.1 to 0.1	1.2	CS1
BH203	Possibly Alluvium	3 of 5	0.1 to 0.1	1.8 to 2.1	0.1	CS1
BH204	Glacial till	6 of 6	0.1 to 0.1	4.0 to 9.7	1.5	CS1
BH205	Bedrock	3 of 3	0.1 to 0.1	0.5 to 11	1	CS2
BH206	Glacial till	5 of 5	0.1 to 0.3	0.7 to 6.6	0.1	CS1
BH207	Made ground	6 of 6	0.1 to 0.1	0.4 to 5.6	0.6	CS1
BH208	Made ground	5 of 5	0.1 to 0.1	0.4 to 3.1	0.1	CS1
BH209	Bedrock	3 of 3	0.1 to 0.1	0.1 to 0.3	0.3	CS1
BH210	Bedrock	5 of 5	0.1 to 0.2	0.1 to 3.1	1.2	CS1
BH211A	Made ground	6 of 6	0.1 to 0.2	0.1 to 3.0	1.5	CS1
BH212	Bedrock	1 of 2	0.1	0.1	0.1	CS1

BH213	Made ground	6 of 6	0.1 to 0.4	0.1 to 2.1	1.1	CS1
BH214A	Glacial till	4 of 5	0.1 to 0.1	0.1 to 1.0	0	CS1
WS201B	Made ground	6 of 6	0.1 to 0.2	0.1 to 2.3	0.1	CS1
WS207	Made ground	6 of 6	0.1 to 0.1	0.4 to 1.8	1	CS1
WS208	Made ground	2 of 3	0.1 to 0.1	0.1 to 0.2	0.1	CS1
WS209	Made ground	1 of 3	0.2	0.4	0.1	CS1
WS210	Made ground	6 of 6	0.1 to 0.4	0.1 to 3.9	1.2	CS1
WS212	Made ground	6 of 6	0.1 to 0.1	0.1 to 0.9	1.2	CS1

9.82 Ground gas monitoring across the site has generally not indicated significantly elevated concentrations of methane or carbon dioxide. The gas risk assessment undertaken indicates that the site predominantly falls within Characteristic Situation (CS) 1, however some limited indications of CS2 conditions have been identified. According to CIRIA C665, Table 8.5 [23], CS1 conditions carry a very low risk classification, typically where recorded methane concentrations are below 1%v/v and carbon dioxide concentrations are less than 5%v/v. CS2 conditions carry a low risk classification and generally apply to sites where elevated methane or carbon dioxide is present but borehole flow rates are less than 70l/hr.

9.83 In summary, on the basis of available data, ground gas does not represent a demonstratable risk to the site or proposed development.

Sensitivity of Receptors

9.84 The potential receptors that have been identified through the 2019 Desk study and reviewed during the 2019 and 2021 ground investigations and are of relevance to the Enabling Works site are listed in **Table 9.14.**

[23] CIRIA C665 (2007) Assessing Risks posed by hazardous ground gases to buildings.

Table 0.14 Summary of the sensitivity of potential receptors.

Receptor	Receptor sensitivity value	Description
Construction workers during construction	Medium	Construction workers are at the greatest risk of exposure to contaminants during works on site. An understanding of site conditions and specifically the quality of underlying soils will be required to assist with the identification of any contamination hot spots and associated mitigation measures.
Site neighbours during construction	Medium	Site neighbours are considered at risk of exposure to windblown contaminants and vapours during the site development but unlikely to be at risk of exposure post-completion of construction works.
Groundwater within the alluvial deposits (secondary A aquifer), Manchester Marls Formation (secondary B aquifer) and Chester Formation and Collyhurst Sandstone Formation (principal aquifer)	Medium	Any mobile contaminants in the made ground and groundwater, as made ground has been noted to directly overlie bedrock or alluvium in some areas of the site. Two former landfill sites, Queens Road Tip and Sand Street landfill, are present to the north and east of the site boundary, which may be potential sources of contaminated groundwater entering the site, assuming groundwater flow is towards the River Irk. WFD classify the groundwater aquifer as having poor status.
River Irk and surface water features.	Medium	Accidental leaks and spills during construction and impacted shallow groundwater can have direct contact with River Irk adjacent to site boundary.
Buried buildings and services	Low	Water pipes and concrete foundations may be at risk if in contact with areas of. Buildings and other confined spaces may also be at risk from potential ground gas ingress.
Vegetation and plants planted in soft landscaping.	Low	There is potential for concentrations of potentially toxic elements to be present within the soil which may be phytotoxic to vegetation planted in proposed soft landscaping areas

Conceptual Site Model

9.85 A conceptual model has been developed for the Enabling Works site and is presented in **Table 9.15.** This presents the potential sources, receptors and pathways during the construction phase of the proposed development.

Table 0.15 Summary of source pathway and receptors on the site.

Source	Pathway	Receptor
Made Ground (containing solid contaminants, asbestos fibres, and possible hydrocarbons)	Dermal contact	Construction worker / site neighbours
	Ingestion of soil/ soil dust	
	Inhalation of soil vapour	
	Inhalation of soil and soil dust	Construction worker / site neighbours
		Site end users
Temporary stockpiles of excavated arisings Accidental leaks and spills during construction	Leaching and runoff	Surface water drainage
		River Irk
	Leaching and infiltration	Principal aquifers in bedrock River Irk
Impacted shallow groundwater, including groundwater entering the site from landfill to the north	Dermal contact	Construction worker
	Ingestion	Construction worker
	Lateral migration	River Irk
Ground gases/landfill gases	Ingress and accumulation of toxic, asphyxiating or explosive concentrations within excavations	Construction worker in deep trenches and chambers

Standard Mitigation

9.86 The assessment of Standard Mitigation that follows focuses primarily on the Enabling Works. As appropriate, the assessment also considers the Victoria North proposed development and wider SRF developments.

9.87 Standard Mitigation is tried and tested mitigation measures. These are widely adopted measures and often conditioned through Planning.

Demolition and Construction

9.88 The proposed Enabling Works consist of the following activities:

- Demolition of Creamline Dairies;
- Provision of access onto the site;
- Tree and shrub clearance to facilitate the construction of a temporary haul road;
- Construction of the temporary haul road including partial dismantling of the existing retaining wall.

9.89 Those aspects of the Enabling Works that are most relevant to this chapter on Ground Conditions are to be undertaken in general accordance with the principles detailed in the Manual of Contract Documents for Highways Works (MCHW) Volume 1 "Specification for Highway Works" (SHW). Specifically, during the Enabling Works on the site, the Enabling Works Contractor (EWC) will be required to:

- Safeguard adjacent property using protection, special techniques and monitoring as appropriate.
- Ensure the dismantled sections of existing retaining wall and associated earthworks are stable.
- Ensure excavations do not encroach on adjacent services or structures or in any way jeopardise their integrity.

9.90 The requirements for remediation will be presented in a remediation strategy. The EWC will develop a methodology to carry out the Enabling Works which will be described in a method statement and Construction Environmental Management Plan (CEMP). As part of the development of this methodology, the EWC will also prepare:

- A Materials Management Plan (MMP) in line with the Disposal of Waste: Code of Practice (DoWCoP)[24] which is signed off by an appropriately qualified professional.
- A Site Waste Management Plan (SWMP). The EWC shall establish targets for the recovery and re-use of site-won material based on an assessment of the estimated composition and quantity of waste arisings. This should be supplemented by information on how the targets will be achieved during construction activities and how the actual levels of waste reduction and recovery shall be monitored for comparison with the targets set.

[24]CL: AIRE (2011) Definition of Waste Code of practice. Accessed via https://www.claire.co.uk/projects-and-initiatives/dow-cop, Date accessed November 2021

- A Construction Traffic Management Plan to detail proposals for traffic management (both vehicular and pedestrian traffic) during all phases of the Enabling Works.

9.91 Notwithstanding the findings of the 2019 and 2021 ground investigations, it is possible that areas of contamination may exist which have not yet been identified. Mitigation measures will be required to deal with the potential for encountering unidentified contamination during construction.

9.92 The EWC will be required to set out method statements which demonstrate how stability of the dismantled section of retaining wall and associated earthworks is to be maintained. These methods statements will need to be agreed with all relevant parties prior to the relevant works commencing.

9.93 As mentioned previously a Construction Environmental Management Plan (CEMP) will be produced and implemented during the demolition and construction phase. The plan will outline how adverse effects on the environment will be avoided or mitigated against during construction in accordance with current environmental legislation.

The Completed and Operational Development

9.94 Within the Enabling Works site, the following standard mitigation measures will be adopted with regards to ground conditions in the completed and operational development:

- An Enabling Works Completion and Validation Report will be prepared by the EWC following the completion of the Enabling Works. This report will form part of the Health and Safety File, submitted in accordance with Regulation 12 of the CDM Regulations 2015. The Health and Safety file is to be forwarded to the future site operator, to allow them to address any residual risks.

9.95 Considering the other Assessment Scenarios, described in the following section, no Standard mitigation measures with regards to ground conditions have been identified.

Assessment of Likely Significant Effects

9.96 This section covers potential effects, issues identified in the EIA Scoping Report, issues raised through all consultations and the LPA's formal scoping opinion. This section details the likely significant effects taking into consideration Standard mitigation, where appropriate.

Demolition and Construction

9.97 The assessment of contaminated land related significant effects has been conducted based on existing information about the site, the Victoria North proposed development, and adjacent SRF sites. The following assessment considers potential pathways and receptors as described in the context of the demolition and construction phase.

Assessment Scenario 1a – Proposed Development Only (Enabling Works)

9.98 Demolition and construction activities proposed under Assessment Scenario 1a, with the potential to impact ground conditions, are detailed in Section 9.84.

Human Health

9.99 The conceptual model identifies a plausible pollutant linkage relating to construction workers and adjacent site users as a result of the excavation of potentially contaminated materials (which may contain a number of potential contaminants including asbestos). Additionally, the generation of contaminated dust and vapour, can result in exposure to contamination, via dermal contact and ingestion as excavation of made ground is to be undertaken. However, exposure periods are generally shorter than those experienced by long term site users and can usually be reduced to an acceptable level through adoption of adequate health and safety procedures.

9.100 The 2021 ground investigation results suggest ground gas risk is low (CS1). Ground gases may pose a risk to construction workers and adjacent site users in enclosed or confined spaces. Given the scope of the Enabling Works however, it is not envisaged that new or additional confined spaces will be introduced into the site under this scenario. In addition, depending on the existing conditions within the Creamline Dairies site, demolition may remove existing confined spaces. On this basis, proposed construction activities may result in a temporary reduction in risk associated with hazardous ground gases compared to baseline. On the basis of known site information, the magnitude of impact is assessed to be low for construction workers and very low for users of adjacent developments. The effect is assessed to be **Minor Beneficial** to construction workers and users of adjacent sites and therefore not significant.

Controlled waters

9.101 A potential pollutant linkage has been identified during construction as a result of the exposure of additional areas of contaminated soils during demolition in the Creamline Dairies site, removal of areas of existing hardstanding and to a lesser extent, vegetation removal. This may result in a temporary increase in infiltration of rainwater and vertical migration, and consequently an increase in the leaching of contaminants into groundwater. The sensitivity value of the receptors, in this case the groundwater, is considered to be medium, as the water body is mainly the Principal Aquifer. The magnitude of these impacts would be medium and therefore the effect would be **Moderate Adverse** and significant.

9.102 Another plausible pollutant linkage is between leached soil contaminants in shallow groundwater and the principal aquifers where glacial till is absent, and the River Irk. It is noted that groundwater quality entering the site from the north and east, from the former Queens Road tip and Sand Street landfills, may be impacted by landfill leachate. During excavation and construction potential contaminant transport through the Primary Aquifer and Secondary A Aquifer can impact the River Irk. The magnitude of these impacts with Standard Mitigation measures implemented can be classed as medium, and therefore the effect is **Moderate Adverse** which is significant.

9.103 Potential pollutant linkages have been identified during construction as a result of contaminated runoff from stockpiles, which could enter the River Irk where it could impact the water quality. As discussed above, the sensitivity value of the relevant controlled waters is medium, the magnitude of these impacts with Standard Mitigation measures implemented can be classed as low. The effect is therefore **Minor Adverse** and not significant.

Summary

9.104 The significance of impacts arising during demolition and construction on the Enabling Works site are considered **Minor to Moderate Adverse and Minor Beneficial,** and therefore some impacts are significant in EIA terms. Appropriate mitigation measures may be required.

Assessment Scenario 1b – Proposed Development (Enabling Works) plus impacts associated with Applications 2, 3 and 4

9.105 During the construction and infrastructure works proposed in Assessment Scenario 1b, the identified significant effects from Scenario 1a (Enabling Works) will largely remain the same. Given what is currently understood regarding the nature of works that will be undertaken as part of Applications 2, 3 and 4, principally the much greater area of the development, the likelihood of these effects occurring will be greater. Any potential significant effects associated with the works undertaken as part of Applications 2, 3 and 4 will be identified in advance of those applications being submitted, once the design has been developed and the assessments submitted in respect of the associated applications will align with the latest available information.

9.106 As summarised in **Table 9.16**, additional significant effect can be associated with Assessment Scenario 1b and are related to proposed piling activities (most likely associated with Applications 3 and 4). A potential pollutant linkage has been identified where piling could drive contaminants down into groundwater from the overlying made ground, however as the superficial deposits and underlying bedrock appear to be in hydraulic connection the risk of a new contaminant pathway being created is considered to be low. The sensitivity value of the groundwater body is medium, and the magnitude of impact would be low. The effect following Standard mitigation is reduced to **Minor Adverse** and therefore not significant.

Table 0.16 Summary of additional source pathway and receptors identified in this assessment for Scenario 1b.

Source	Pathway	Receptor
Made Ground (containing solid contaminants, asbestos fibres, and possible hydrocarbons)	Formation of piles	Natural strata, controlled waters.

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

9.107 During the construction and infrastructure works proposed in Assessment Scenario 1c, the identified significant affects identified in Assessment Scenario 1b remain the same. However similar to Assessment Scenario 1b, significant effects associated with Assessment Scenario 1c will be re-assessed in advance of those applications, once the design has been developed, and the assessments submitted in respect of the associated applications will align with the latest available information.

Completed Development

9.108 The assessment of contaminated land related significant effects has been conducted based on existing information about the site, the Victoria North proposed development, subsequent phases of development including development within adjacent SRF sites. The following assessment considers potential pathways and receptors as described in the context of the completed operational phase.

Assessment Scenario 2a – Proposed Development Only (Enabling Works)

Human health

9.109 On completion of the Enabling Works activities, the site will predominantly comprise areas of exposed made ground, possibly with relatively small stockpiles of potentially suitable site-won material intended for re-use within the subsequent development phases. Therefore, soil/dust ingestion, dust inhalation and dermal pathways will exist between adjacent site users in any areas of exposed soil. On the basis of known site information, the magnitude of impact is assessed to be medium for users of adjacent developments. The effect is assessed to be **Minor Adverse** to users of adjacent sites and therefore not significant.

9.110 Along the alignment of the proposed haul road, engineered imported fill will have been placed in preparation for use by construction traffic in subsequent development phases. The acceptable chemical content of imported fill materials will have been determined and verified through a MMP (Standard Mitigation), and on this basis, it is likely that the placed engineered fill will present a lower risk to human health than the made ground soils that underlie the haul road. The sensitivity of future site users is classed as low and the magnitude of impact with Standard Mitigation measures implemented is classed as low. The effect is assessed to be **Minor Beneficial** to future site users and therefore not significant.

9.111 A potential pollutant linkage exists between contaminants in the soil and future maintenance workers who may encounter the soil, for example to repair utilities. Maintenance workers will adopt relevant health and safety measures during excavation and handling of soils and will use appropriate PPE (Standard Mitigation). Maintenance workers value and the magnitude of impact are classed as negligible. The effect is assessed to be **Negligible** and therefore not significant.

9.112 A similar potential pollutant linkage exists between contaminants in the soil and future construction workers who may encounter the soil. Construction workers will adopt relevant health and safety measures during excavation and handling of soils and will use appropriate PPE (Standard Mitigation). Construction workers value is classed as medium and the magnitude of impact is low. The effect is assessed to be **Minor adverse** and therefore not significant.

Controlled Waters

9.113 In the Creamline Dairies site and in areas of the site in which the haul road has been constructed, existing areas of hardstanding will have been removed. This will increase the potential for leaching through any remaining made ground which has the potential to reach groundwater or to migrate laterally into the River Irk, where it could impact on the water quality. However, during construction significant risks of soil leachate contamination will be addressed and phasing the development to limit the amount of time which soil is exposed, coupled with groundwater quality monitoring during construction to identify any derogation in quality such that action can be taken. The sensitivity of the receptors, in this case the groundwater and River Irk, is considered to be medium. The magnitude of these impacts with Standard Mitigation measures implemented is classed as low, and therefore the effect is **Minor Adverse** which is not significant.

Phytotoxicity

9.114 There is likelihood for concentrations of potentially toxic elements to be present within the soil which may be phytotoxic to vegetation, however no new planting is proposed at this stage in the development, therefore the sensitivity value of soft landscaping is very low. The magnitude of this impact can be classed as low and the significant effect is **Negligible** and not significant.

Buried structures and services

9.115 Risks to structural concrete or buried utilities (e.g., measures to stabilise the dismantled sections of the retaining wall, temporary surface water drainage etc) may occur as a result of direct contact with made ground, groundwater or free phase hydrocarbons. The sensitivity value of buried structures and services is low, and the magnitude of impact is medium, therefore the effect is currently assessed as being **Minor Adverse** and not significant.

Summary

9.116 The significance of impacts arising during the operational phase of the Enabling Works site are considered **Negligible to Moderate Adverse and Minor Beneficial** and therefore some impacts are significant in EIA terms. Appropriate mitigation measures may be required (see Additional Mitigation and Enhancement Measures section of this chapter for more information)

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

9.117 Following completion of the construction and infrastructure works proposed in Assessment Scenario 1b, the completed development significant effects identified from Scenario 2a (Enabling Works) will largely remain the

same. Given what is currently understood regarding the nature of works that will be undertaken as part of Applications 2, 3 and 4, principally the much greater area of the development, the likelihood of these effects occurring will be greater. Any potential significant effects associated with the works undertaken as part of Applications 2, 3 and 4 will be identified in advance of those applications being submitted, once the design has been developed and the assessments submitted in respect of the associated applications will align with the latest available information.

9.118 Available data (see **Table 9.13**) suggests the future development can largely be categorised as CS1 with respect to the risk from ground gases and therefore no gas protection measures will be required within the development. The effect is therefore currently assessed as Minor Adverse and therefore not significant. The sensitivity value of future site users and the magnitude of impact is low; therefore, the effect is currently assessed as being **Negligible** and not significant.

9.119 During proposed development, new areas of impermeable hardstanding, building roofs etc will be constructed. These impermeable areas across the proposed development will reduce rainfall infiltration and vertical migration, and consequently a decrease in the leaching of contaminants into groundwater. The sensitivity value of the groundwater body is medium, and the magnitude of impact would be low. The effect following Standard mitigation is reduced to **Minor Adverse** and therefore not significant.

9.120 Buried structures and services: Risks to structural concrete or buried utilities, in particular water supply pipe, may occur as a result of direct contact with made ground, groundwater or free phase hydrocarbons. Assessment of the available site data relevant to these risks is currently underway and once complete, it will be possible to assess the aggressivity of ground to concrete structures and buried services.

9.121 In areas that are not provided with hard cover and those areas outside building footprints, potential impacts have been identified where future site residents may be exposed to existing contaminated site soils via dermal contact and ingestion. The sensitivity value of future site users is classed as low and the magnitude of impact with can be classed as medium. The effect is assessed to be **Minor Adverse** to future site users and therefore not significant.

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

9.122 Post the construction and infrastructure works proposed in Assessment Scenario 2c, the identified completed development significant effects from Scenario 2b will largely remain the same.

Additional Mitigation / Enhancement Measures

9.123 This section describes the measures which are required to mitigate any significant environmental effects with regards to ground conditions. The additional mitigation/enhancement measures will specifically relate to the

Enabling Works site only. Additional mitigation measures associated with Assessment Scenarios 1b, 1c, 2b and 2c will be addressed in application 2, 3 and 4.

Demolition and Construction

Human health

9.124 A potential significant impact to construction workers and site neighbours during construction as a result of exposure to site soils and inhalation of soil-derived dust, fibres and vapours has been identified.

9.125 Specific precautions to reduce potential exposure in accordance with the principle of 'as low as reasonably practical' (ALARP) will be implemented. This will include appropriate safety briefings, protective equipment (PPE), hygiene measures and dust suppression. In addition, any areas of contamination identified during construction will be removed and/or treated. Appropriate mitigation measures will be applied to protect construction workers and site neighbours and will be designed and implemented by a competent contractor.

9.126 In areas of the site which have been subject to historical development, the site preparation work will include the systematic excavation of shallow made ground to remove obstructions such as old foundations and confirmed contaminant source-pathway target linkages.

9.127 Where appropriate, material will be replaced to achieve the required development levels and in accordance with an agreed geotechnical and chemical specification. Material re-use criteria will be developed to be protective of human health and controlled waters based on the proposed development and agreed with MMC and the EA. Only soils that have been validated as meeting the required re-use criteria will be used in the earthworks.

9.128 Based on the available information, there is a low risk of ground gas on site and currently no requirement for protective measures has been identified.

9.129 Specific procedures and precautions must be taken to reduce potential exposure to vapours in accordance with the ALARP principle.

Controlled waters

9.130 Significant impacts have been identified where plausible pollutant linkages exist between mobile contaminants in soil and groundwater, the River Irk and principal aquifers. The removal of surface cover during construction will temporarily expose a greater area of soil to infiltration, which may create larger volumes of leachate. Any contamination that leaches into the groundwater during construction has the potential to reach groundwater or to migrate laterally into the River Irk, where it could impact on the water quality.

9.131 Leachable contamination from within the site may be identified by on-going assessment of the ground investigation data and if identified as a demonstrable risk, will need to be addressed by the removal or treatment of existing contaminated materials and phasing the development to limit the amount of time which soil is exposed,

coupled with groundwater quality monitoring during construction to identify any deterioration in quality such that action can be taken.

9.132 A potential significant impact has been identified where contaminated runoff from stockpiles could enter the River Irk and impact the water quality. To mitigate this impact, where site won soils are stockpiled on site appropriate management measures will be implemented to ensure that surface runoff will not enter the River Irk. These measures may include placing stockpiles at a distance from the river and the provision of bunding around the stockpiles.

Completed Development

Human health

9.133 A risk remains from the exposure of contaminants in made ground to adjacent site users during the post-construction phase. Overall, it is considered these risks can be adequately mitigated by the use of appropriate control measures during the post-construction phase which are standard for brownfield development.

9.134 With the implementation of the recommended standard mitigation measures, a risk remains of the presence of unidentified contaminant hotspots within the site soils/groundwater and exposure of these contaminants to construction workers during future construction phases. Overall, it is considered the risks posed to construction personnel if unidentified contamination is encountered can be adequately mitigated by the use of PPE and the adoption of good hygiene and site practices which are standard for brownfield development. The CEMP (and remediation strategy, as required) will include measures that should be implemented if any sources of contamination are uncovered during the site development that are not identified during the ground investigation. This is likely to include further risk assessment to determine if any additional PPE or site practices need to be implemented to mitigate risks to construction workers.

Controlled Waters

9.135 A risk remains from the mobilisation of leachable contamination where existing areas of hardstanding have been removed. This will increase the potential for leaching through any remaining made ground which has the potential to reach groundwater or to migrate laterally into the River Irk, where it could impact on the water quality. Overall, it is considered these risks can be adequately mitigated by the use of appropriate control measures during the post-construction phase which are standard for brownfield development.

Phytotoxicity

9.136 No significant impact identified once all Standard mitigation measures are implemented.

Buried structures and services

9.137 Assessment of the available site data relevant to this risk is currently underway and once complete, it will be possible to assess the aggressivity of ground to concrete structures and buried services and to assess appropriate

measures required to safeguard against identified chemical aggressivity. No significant impact identified once all Standard mitigation measures are implemented.

Likely Residual Effects of the Development and their Significance

9.138 This section specifically relates to any residual effects from the Enabling Works site only. The residual effects are summarised in **Table 9.17**, the assessment assumes that the mitigation described in the section above has been implemented.

Table 9.17 Residual Effects Summary.

Description of Effect	Standard mitigation	Potential effect including significance	Additional Mitigation	Residual Effect including significance
Construction and Demolition				
Assessment Scenario 1a – proposed development only				
Human Health Construction workers and users of adjacent sites	Remediation strategy, method statements, CEMP, MMP, SWMP, construction traffic management plan	*Minor Beneficial, which is **not significant***	Specific precautions in line with ALARP including dust suppression.	*Negligible Beneficial, which is **not significant***
Controlled Waters - Principal aquifer (vertical migration of leachate)	Remediation strategy, method statements, CEMP, MMP, SWMP, construction traffic management plan	*Moderate Adverse, which is **significant***	Specific management measures including removal and treatment of contaminated materials, phased construction plan, stockpile management	*Negligible Adverse, which is **not significant***
Controlled Waters - Principal aquifer and River Irk (vertical and lateral migration from leachate)	Remediation strategy, method statements, CEMP, MMP, SWMP, construction traffic management plan	*Moderate Adverse, which is **significant***	Specific management measures including removal and treatment of contaminated materials, phased construction plan, stockpile management	*Negligible Adverse, which is **not significant***
Controlled Waters	Remediation strategy, method statements, CEMP, MMP, SWMP,	*Minor Adverse, which is **not significant***	Specific management measures including removal and treatment of contaminated materials, phased	*Negligible Adverse, which is **not significant***

- River Irk (surface runoff)	construction traffic management plan		construction plan, stockpile management	
Assessment Scenario 1b – proposed development plus Applications 2, 3 and 4				
Similar to Assessment Scenario 1a; Human Health Controlled Waters	Expected to be similar to Scenario 1a, however design works are still at an early stage	*Human Health* - *Minor Beneficial, which is **not significant*** *Controlled Waters* - *Moderate Adverse, which is **significant*** - *Minor Adverse, which is **not significant***	*Best practice measures will be committed to, and implemented using typical management measures, such as through a CEMP etc. Specific mitigation measures required in respect of any issues pertinent to those future applications will be identified and agreed within the scope of the assessments prepared and submitted with those applications*	Expected to be similar to Scenario 1a, however design works are still at an early stage
Controlled Waters Principal aquifer (vertical migration)		*Minor Adverse, which is **not significant***		*Negligible Adverse, which is **not significant***
Assessment Scenario 1c – proposed development plus Applications 2, 3 and 4 and wider SRF				
Similar to Assessment Scenario 1b; Human Health Controlled Waters	Expected to be similar to Scenario 1b, however design works are still at an early stage	*Human Health* - *Minor Beneficial, which is **not significant*** *Controlled Waters* - *Moderate Adverse, which is **significant*** - *Minor Adverse, which is **not significant***	*Best practice measures will be committed to, and implemented using typical management measures, such as through a CEMP etc. Specific mitigation measures required in respect of any issues pertinent to those future applications will be identified and agreed within the scope of the assessments prepared and submitted with those applications*	Expected to be similar to Scenario 1b, however design works are still at an early stage
Completed Development				
Assessment Scenario 2a – proposed development only				

Human Health Adjacent site users	EW Completion and Validation Report including health and safety file under CDM	*Minor Adverse, which is **not significant***	Use of appropriate control measures during the post-construction phase which are standard for brownfield development.	It is likely this effect will be reduced to '*Negligible Adverse, which is **not significant'*** during the works in future development
Human Health Future site users	The acceptable chemical content of imported fill materials will have been determined and verified through a MMP	*Minor Beneficial, which is **not significant***	None required.	*Minor Beneficial, which is **not significant***
Human Health Maintenance Workers	EW Completion and Validation Report including health and safety file under CDM. Specific precautions in line with ALARP including dust suppression.	*Negligible, which is **not significant***	None required	*Negligible, which is **not significant***
Human Health Future Construction Workers	EW Completion and Validation Report including health and safety file under CDM Specific precautions in line with ALARP including dust suppression.	*Minor Adverse, which is **not significant***	Use of appropriate control measures during the post-construction phase which are standard for brownfield development.	It is likely this effect will be reduced to '*Negligible Adverse, which is **not significant'*** during the works in future development
Controlled Waters Principal aquifer and River Irk (vertical and lateral migration from leachate)	Specific management measures including removal and treatment of contaminated materials, phased construction plan, stockpile management	*Minor Adverse, which is **not significant***	Use of appropriate control measures during the post-construction phase which are standard for brownfield development.	It is likely this effect will be reduced to '*Negligible Adverse, which is **not significant'*** during the works in future development

Phytotoxicity	No new planting is proposed at this stage in the development	*Negligible, which is **not significant***	None required	*Negligible, which is **not significant***
Buried Structures	Specific management measures during construction phase including removal and treatment of contaminated materials	*Minor Adverse, which is **not significant***	Assessment of the available site data relevant to this risk is currently underway. Once complete, it will be possible to assess the aggressivity of ground and to confirm appropriate measures required to safeguard against this	*Negligible Adverse, which is **not significant***
Assessment Scenario 2b – proposed development plus Applications 2, 3 and 4				
Similar to Assessment Scenario 2a; Human Health Controlled Waters Phytotoxicity Buried Structures	***Expected to be similar to Scenario 2a, however design works are still at an early stage***	*Human Health* - *Minor Adverse, Minor Beneficial, Negligible, which are **not significant*** *Controlled Waters* - *Minor Adverse, which is **not significant*** *Phytotoxicity* - *Negligible, which is **not significant*** *Buried Structures* - *Minor Adverse, which is **not significant***	Best practice measures will be committed to and implemented using typical management measures. Specific mitigation measures required in respect of any issues pertinent to those future applications will be identified and agreed within the scope of the assessments prepared and submitted with those applications	Expected to be similar to Scenario 2a, however design works are still at an early stage
Assessment Scenario 2c – proposed development plus Applications 2, 3 and 4 and wider SRF				
Similar to Assessment Scenario 2b; Human Health	***Expected to be similar to Scenario 2b, however design works are still at an early stage***	*Human Health* - *Minor Adverse, Minor Beneficial, Negligible, which*	***Best practice measures will be committed to*** and implemented using typical management measures. Specific mitigation measures	***Expected to be similar to Scenario 2b, however design works are still at an early stage***

Controlled Waters Phytotoxicity Buried Structures		*are **not significant*** *Controlled Waters* - *Minor Adverse, which is **not significant*** *Phytotoxicity* - *Negligible, which is **not significant*** *Buried Structures* - *Minor Adverse, which is **not significant***	required in respect of any issues pertinent to those future applications will be identified and agreed within the scope of the assessments prepared and submitted with those applications	

Conclusions

9.139 The ground conditions at the site have been assessed utilising available information. A number of geological, hydrogeological, and contaminated land related impacts have been identified, of which the main points of focus are related to potential for contamination in the soils beneath the site and potential for migration of contaminants into groundwater and the River Irk.

9.140 The effect of the potential impacts has been assessed in the context of the construction phase and operational phase. A number of risks have been identified associated with the ground conditions and the potential for contaminated land. Mitigation measures have been recommended to reduce these risks.

9.141 Baseline conditions pertaining to ground conditions have been assessed as part of an Arup Desk Study (**Appendix 9.1**). The information presented in this chapter is based on the results of two phases of intrusive site investigation undertaken by AEG and a number of previous investigations undertaken by others.

9.142 Where appropriate, specific precautions will be taken to reduce potential exposure of construction workers and site neighbours in accordance with the principle of 'as low as reasonably practical' (ALARP). This will include appropriate safety briefings, protective equipment (PPE), hygiene measures and dust suppression. In addition, any areas of contamination identified as presenting a demonstrable risk to health or the environment, will need to be addressed by removal or treatment.

9.143 A Construction Environmental Management Plan (CEMP) will be produced and implemented during the construction phase. The plan will outline how adverse effects on the environment will be avoided or mitigated during construction in accordance with current environmental legislation.

9.144 As part of any future remediation implementation plan, materials re-use criteria will be developed to be protective of human health and controlled waters based on the proposed development and agreed with the EA. Only soils that have been validated as meeting the required re-use criteria will be used in the earthworks.

9.145 During construction any areas of leachable contamination identified as presenting a demonstrable risk, will need to be addressed by removal or treatment. In addition, consideration will be given to the control of generation of leachable contaminants by phasing the development to limit the amount of time which soil is exposed. Any stockpiles of site won soil will have appropriate management measures in place to prevent runoff into the River Irk, including placement at a distance from the river and provision of bunding.

9.146 With the implementation of the recommended mitigation measures, residual risks remain from the presence of unidentified contaminant hotspots within the site soils/groundwater and dust from any exposed made ground. The receptors are future construction workers of other development phases and adjacent site users respectively. Similarly, a controlled waters risk remains with regards to the potential of leachate contamination from exposed made ground left at surface post construction towards the Principal aquifer and River Irk. It is considered the risks posed can be adequately mitigated by the use of appropriate control measures during the post-construction phase which are standard for brownfield development.

9.147 With the implementation of the recommended mitigation measures, no significant adverse residual effects have been identified during the operational phase of the proposed scheme.

Assessment of Cumulative Effects and their Significance

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

- Scenario 3a - Assessment of the cumulative impacts relating to the enabling works plus impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites.
- Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, the wider SRF, and the agreed cumulative sites.

9.149 **Table 9.18** provides a list of the developments which are to be included within the cumulative site's assessment.

Table 9.18 Cumulative SitesRef.	Application No.	Proposal	Approx. Distance and Direction	Status	Scoped In / Scoped Out	Justification
1	129393/VO/2021	City Council Development for the erection of 168, three and four storey dwelling houses (Use Class C3a) and two, five and six storey apartment buildings to form 76 residential apartments (Use Class C3a) with associated ground floor flexible commercial unit (162 sqm) (Use Class E); and the creation of a new public park; all with associated car and parking, refuse storage, landscaping, public realm and other associated works and infrastructure following demolition of 29 existing residential dwelling houses, the Collyhurst Village Store and associated car parking	650m north east	Approved Jun 2021	Scoped Out	Assessment of cumulative impacts assumes that the developments identified in the cumulative effects' assessment will be delivered in accordance with the same environmental standards and require the appropriate level of mitigation at construction and operation to meet regulatory requirements. Therefore, it is predicted that the cumulative impacts are no greater than those from the proposed scheme in isolation
2	127971/FO/2020	Erection of a 6-storey building to form 90 residential apartments (Use Class C3a) following demolition of existing structures with associated access, car parking, amenity space, landscaping, and other associated works	950m east	Approved May 2021	Scoped Out	
3	128248/FO/2020	Erection of 9 buildings ranging from 8 to 34 storeys in height to form 1202 residential apartments (Use Class C3a) and ground floor commercial uses (Use Class E) (192 sqm) together with associated car parking, new vehicular and pedestrian access, public realm, landscaping, and other associated works following demolition of existing structures and buildings | Land Bound By Gould Street, Williamson Street, Bromley Street And Bilbrook Street Manchester M4 4DD	150m south	Approved June 2021	Scoped Out	
4	116366/FO/2017	Erection of four residential buildings (22 storey building, 17 storey building, 40 storey building and part 12, part 9 storey building) to form 756 residential apartments (Use Class C3a) together with ground floor commercial uses (616 sqm) (Use Classes A1, A2, A3, A4, A5, D1 and B1) with associated car parking, landscaping, amenity areas, creation of new public realm following the closure of Aspin Lane, Mincing Street and Irk Street and other associated works following demolition of existing structures | Land Bounded By Dantzic Street & Aspin Lane, Land Bounded By Gould Street &	150m south	Approved Aug 2017 Under construction	Scoped Out	

		Angel Meadows And Land Bounded By Old Mount Street, School Street, Naples Street & Ludgate Street Manchester				
5	118120/FO/2017	Erection of a part 15, part 9, part 7 storey building to form 155 residential apartments together with ground floor commercial uses (Use Classes A1, A3 and B1) (288 sqm) with associated car parking, access arrangements and other associated works following the demolition of existing buildings and structure and the closure of Hatter Street | Land Bounded By Thompson Street / Mason Street / Bendix Street And Rochdale Road Manchester	450m south	Approved May 2018 Under construction	Scoped Out	
6	127537/FO/2020	Erection of a 11 storey 229-bedroom hotel (Use Class C1) with ancillary ground floor bar/restaurant together associated public realm and other associated works | 25 Rochdale Road Manchester M4 4HT	400m south	Approved Oct 2016	Scoped Out	
7	124973/FO/2019	Erection of an 11-storey building and a 12-storey building with plant rooms above to form a mixed-use development comprising 39,184 sq. m (NIA) of Class B1a office use and commercial units of 1,286 sqm (NIA) (Use Classes A1, A2, A3, A4, B1a and D1) along with associated lower ground level car parking, hard and soft landscaping, and associated works, including the creation of a new pedestrian route between Angel Street and Miller Street. | Land Bounded By Co-op Headquarters Miller Street And Angel Street Manchester	350m south	Approved Feb 2016	Scoped Out	
8	111777/FO/2016/C1	Erection of two residential buildings of a maximum 21 and 26 storeys to accommodate 520 apartments (178 x 1 bed, 286 x 2 bed and 56 x 3 bed apartments) (Use Class C3). Erection of one office building of maximum eight storeys comprising up to 11,647 sq. m (GIA) of office accommodation. Ground floor commercial space (Use Class A1, A2, A3 and B1), lower ground level car parking, access and servicing arrangements, alterations to Corporation Street, new public realm and other associated works. | New Victoria Land At Corporation Street Manchester M3 1NX	250m south east	Approved Sep 2016 Under construction	Scoped Out	
9	121375/FO/2018	Construction of a 22 storey building comprising 361 residential apartments (122 x 1 bed 2 person, 119 x 2 bed 3 person, 94 x 2 bed 4 person, 21 x 3 bed 5 person and 5 x 3 bed 6 person (34% 1 bed, 59% 2 bed and 7% 3 bed) ground floor commercial floorspace (Use Classes A1 (Shop), A3 (Restaurant and Cafe), A4 (Drinking Establishment) and A5 (Hot Food Take-away) associated	840m south	Approved Oct 2020	Scoped Out	

		landscaping, including new public realm and pedestrian route, together with servicing, cycle parking, access and other associated works following demolition of buildings at 20-22 and 24-26 High Street and 5 market stalls to Church Street.				
10	18/71330/FUL	Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping	850m south west	Approved Oct 2018 Under construction	Scoped Out	
11	20/76134/FUL	Erection of 16-storey building plus plant comprising a hotel (Use Class C1) with ancillary bar and restaurant uses, access, servicing, landscaping and other associated works	1000m south west	Approved Feb 2020	Scoped Out	
12	17/70626/FUL	Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works.	840m south west	Approved Nov 2017 Under construction	Scoped Out	
13	19/74465/HYBEIA	Hybrid planning application for demolition of existing buildings on the site and comprehensive redevelopment to create between 1,407 and 1,521 dwellings, comprising of: (a) Phase 1 (submitted in full with no matters reserved) for development of a 50-storey residential building; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new public park; highways and public realm improvements and other associated works; and, (b) Phases 2 and 3 (submitted in outline with all matters reserved) for the development of two residential buildings up to 42 storeys in height; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new highways; a public square; public realm improvements and other associated works. (EIA development, accompanied by Environmental Statement) | Land Bound By Greengate, Collier Street, Queen And King Street And Gravel Lane M3 7BN	960m south west	Validated Nov 2019	Scoped Out	
14	126944/FO/2020	Erection of a residential-led mixed use development comprising 3 no. towers (37, 26 and 18 storeys) and podium levels (6 storey) to	140m south east	Approved Sep 2020	Scoped Out	

		form 634 residential apartments and townhouse accommodation (Use Class C3) together with commercial accommodation (1222 sqm) (Use Classes A1,A2,A3,A4,A5,B1, D1 and D2)); with associated residential amenity areas, refuse storage, plant (including substation), car parking, cycle storage, landscaping and new public realm including the re-instatement of Bromley Street and other associated works		Under Construction		
15	114860/FO/2016	Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings	145m south east	Approved October 2017	Scoped Out	
16	131708/FO/2021	Erection of a part 11, part 13 storey building to form residential apartments (Use Class C3a) together with the erection of two blocks of 3 storey townhouses (Use Class C3a) to form 237 residential homes in total with associated commercial floor (Use Class E) (132 sqm), basement car parking, landscaping and public realm, and associated engineering and infrastructure works following demolition of existing buildings and structures	450m south	Validated September 2021	Scoped Out	
17	118831/FO/2018	Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works	635m south west	Approved June 2018	Scoped Out	
18	128997/FO/2020	Erection of a ground plus 9-storey building to form 118 no. residential apartments (Use Class C3), including amenity areas, ground floor food and beverage/ commercial units (Sui Generis/ Use Class E), public realm and landscaping, with supporting infrastructure and associated works following demolition of existing building	730m south	Approved September 2021	Scoped Out	
19	124888/FO/2019	Erection of a 6-9 storey residential building (Use Class C3) comprising 80 no. dwellings including 9 no. townhouses and 71 no. apartments with resident's lounge, refuse, plant, new substation, cycle storage, an internal landscaped courtyard, and improvements to the adjacent footways	665m south	Approved January 2020 Under Construction	Scoped Out	

20	125678/FO/2019	Erection of 8-storey residential building (Use Class C3) comprising 73 residential units, with ground floor commercial use (Classes A1, A2, A3, B1 and D1 (excluding Places of Worship)) (205 sqm); alterations to the retained perimeter wall and chimney including the introduction of a light box; disabled car parking, highways, landscaping and other associated works	640m south	Approved December 2020	Scoped Out	

Table 9.19 Cumulative Impact Assessment summary

Assessment scenario	Potential effects
3a – Assessment of the cumulative impacts relating to the enabling works plus impacts associated with the agreed cumulative sites	• It is assumed that the developments identified in the cumulative effects' assessment will be delivered in accordance with the same environmental standards and require the appropriate level of mitigation at construction and operation to meet regulatory requirements. • Therefore, it is predicted that the cumulative effects are no greater than those from the proposed scheme in isolation.
3b – Assessment of cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites	• Expected to be similar to Scenario 3a, however as each associated development is completed it is expected that a betterment of the surrounding environment will occur. • Therefore, it is predicted that the cumulative effects are of a greater beneficial significance considering Application 2, 3 and 4, and the agreed cumulative sites.
3c – Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3, and 4, the wider SRF and the agreed cumulative sites	• Expected to be similar to Scenario 3b, however as each associated development is completed it is expected that a betterment of the surrounding environment will occur. • Therefore, it is predicted that the cumulative effects are of a greater beneficial significance considering Application 2, 3, and 4, the wider SRF and the agreed cumulative sites.

Likely Residual Cumulative Effects and their Significance

9.150 As stated in Table 9.18, assessment of cumulative impacts assumes that the developments identified in the CIA will be delivered in accordance with the same environmental standards and require the appropriate level of mitigation at construction and operation to meet regulatory requirements. Table 9.19 presents the cumulative effects in respect of Scenarios 3a, 3b and 3c, and are summarised below.

Assessment Scenario 3a: Assessment of the cumulative impacts relating to the enabling works plus impacts associated with the agreed cumulative sites

9.151 Assessment of cumulative impacts assumes that the developments identified in the cumulative effects' assessment will be delivered in accordance with the same environmental standards and require the appropriate level of mitigation at construction and operation to meet regulatory requirements.

9.152 Therefore, it is predicted that the cumulative impacts are no greater than those from the proposed scheme in isolation.

Assessment Scenario 3b: Assessment of cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites

9.153 Assessment of cumulative impacts is likely to be similar to Scenario 3a, however as each associated development is completed it is expected that a betterment of the surrounding environment will occur.

9.154 Therefore, it is predicted that the cumulative effects are of a greater beneficial significance considering Application 2, 3, and 4 and the agreed cumulative sites.

Assessment Scenario 3c: Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3, and 4, the wider SRF and the agreed cumulative sites

9.155 Assessment of cumulative impacts is likely to be similar to Scenario 3b, however as each associated development is completed it is expected that a betterment of the surrounding environment will occur.

9.156 Therefore, it is predicted that the cumulative effects are of a greater beneficial significance considering Application 2, 3, and 4, the wider SRF and the agreed cumulative sites.

10. Climate Change

Introduction

10.1 The Red Bank Neighbourhood project as a whole is the First Phase in respect of the Initial Development Area identified for development within the Northern Gateway SRF. It is intended that FEC will progress an application for a new residential-led neighbourhood application for approximately 4,000 dwellings on land controlled by the JV. This project is proposed for on an area of land which forms part of Victoria North, located to the north east of Victoria Station.

10.2 A number of associated developments are proposed in relation to the Red Bank Neighbourhood project, including:

- HIF Advance Enabling Works (referred to hereafter as 'Application 1').
- HIF Infrastructure Works (referred to hereafter as 'Application 2').
- HIF Flood Defence Works (referred to hereafter as 'Application 3').
- Red Bank Neighbourhood (referred to hereafter as 'Application 4').

10.3 This chapter assesses the climate change effects of the HIF Advance Enabling Works (including construction of a temporary haul road) (hereafter referred to as the 'proposed development'). See Figures 1.1 and 5.1-5.3 for information relating to this proposed development.

10.4 In alignment with IEMA guidance the chapter presents the assessment under the following two headings:

- **Impact of the project on climate (Greenhouse Gas (GHG) emissions assessment)** – this section covers the potential additional and avoided GHG emissions associated with demolition, construction and operation, in comparison with current and future baseline GHG emissions.
- **Vulnerability of the project to climate change (Climate Change Risk (CCR) assessment)** – this section covers how climate change is anticipated to manifest itself in the future and the vulnerability of the project to such climate change.

10.5 Each heading describes the methods used to assess the likely significant effects, the current and future baseline conditions, the potential direct and indirect effects of the development arising in terms of climate change, the mitigation measures required to prevent, reduce, or offset the identified significant effects and the residual effects.

10.6 The chapter also presents a high-level assessment of the climate change effects of the proposed development in-combination with the wider development project (inclusive of Applications 2, 3 and 4), and also of the wider SRF

for which it is a part. See Chapter 2 and supporting Figures 2.1 to 2.4b for information relating to the available information in respect of the wider development project.

10.7 It has been written by Arup.

Planning Policy Context

10.8 This section identifies the planning policies and legislation of relevance to the climate change assessment of the proposed development.

International Legislation and Agreements

10.9 The key international legislation and agreements of relevance to climate change are summarised as follows:

Kyoto Protocol (1997)

10.10 The Kyoto Protocol is an international treaty which extends the United Nations Framework Convention on Climate Change (UNFCCC) and commits its parties by setting internationally binding emission reduction targets. Under Article 4 of the Kyoto Protocol, the EU created an Effort Sharing Regulation that requires the setting of individual binding GHG emission reduction targets for each of its Member States.

The Paris Agreement (2015)

10.11 At the Conference of the Parties (COP) 21 an agreement, (the Paris Agreement), was reached under the UNFCC and came into force in November 2016 and pledges long-term temperature goals to keep the increase in global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the increase to 1.5°C.

National Legislation

10.12 The principal national statutes relating to climate change are summarised as follows:

National Planning Policy Framework (2021) (NPPF)

10.13 The NPPF sets out the government's planning policies for England and how these are expected to be applied. It also provides a high-level framework within which development should come forward.

10.14 Paragraph 153 of the NPPF states that "*Plans should take a proactive approach to mitigating and adapting to climate change*". The NPPF states that new development should be planned for in ways that avoid increased vulnerability to the range of impacts arising from climate change and help to reduce greenhouse gas emissions.

Town and Country Planning (Environmental Impact Assessment) Regulations 2017

10.15 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) places a requirement upon projects which have the potential for significant effects on the surrounding environment and communities to make a formal assessment of these effects. The EIA Regulations identify the role that the EIA process can play in assessing climate change impacts. It states that EIAs shall identify, describe and assess the direct and indirect significant effects of climate change relevant to the proposed development.

Climate Change Act 2008

10.16 The Climate Change Act 2008[1] committed the UK to its first statutory carbon reduction target to reduce carbon emissions by at least 80% from 1990 levels by 2050.

10.17 In June 2019, following the recommendation made by the UK Committee on Climate Change (UK CCC), the Climate Change Act 2008 (2050 Target Amendment) Order 2019 amended the legislated target to reduce GHG emissions by '*at least 100% below the 1990 baseline year*' (net zero Greenhouse Gas emissions) by 2050.

10.18 The Act requires that five-yearly Carbon Budgets are set and not exceeded. It also established a requirement to undertake a Climate Change Risk assessment every five years and development of a programme for adaptation action in response to the risks identified. In December 2020, the UK CCC released its advice to the UK Government on setting the Sixth Carbon Budget, for the period 2033-2037. Table 10.1 presents the six Carbon Budgets.

Table 10.1: UK Carbon Budgets

Carbon budget	Years	5-year Carbon Budget ($MtCO_2e$)
First	2008-2012	3,018
Second	2013-2017	2,782
Third	2018-2022	2,544
Fourth	2023-2027	1,950
Fifth	2028-2032	1,725
Sixth	2033-2037	965

UK Nationally Determined Contribution (NDC) (2020)[2]

10.19 As a signatory of the Paris Agreement the UK submits a *Nationally Determined Contribution* (NDC) to the UNFCCC which sets out how the UK as a nation will pursue efforts to limit temperature increase to 1.5°C.

[1] *UK Government (2008) Climate Change Act 2008. Available from: https://www.legislation.gov.uk/ukpga/2008/27/contents [Accessed 14 October 2021]*

2 UK Government (2020) United Kingdom of Great Britain and Northern Ireland's Nationally Determined Contribution. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/943618/uk-2030-ndc.pdf [Accessed 19 October 2021]

10.20 In its NDC, the UK is committing to reduce economy-wide greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels.

UK Climate Change Risk Assessment (2017 & 2021)

10.21 The Adaptation Committee's UK Climate Change Risk Assessment Evidence Report sets out the priority climate change risks and opportunities for the UK.

Climate Change: second national adaptation programme (2018 – 2023) (NAP)

10.22 The National Adaptation Programme (NAP) sets the actions that government and others will take to adapt to the challenges of climate change in the UK. It sets out key actions for the next 5 years.

Local Planning Policy

Manchester Core Strategy (Adopted March 2012)[3]

10.23 Manchester's Core Strategy is the key Development Plan document in Manchester's Local Development Framework (LDF). It replaced significant elements of the existing Unitary Development Plan (UDP) as the document that sets out the long-term strategic policies for Manchester's future development and forms the framework that planning applications are assessed against.

10.24 As part of the Core Strategy Vison, "*by 2027 Manchester will be [...] meeting the challenge of climate change at the forefront of environmental initiatives and improvements and continuing to deliver sustainable development and a more effective Green Infrastructure*."

10.25 Spatial objective 'S06. Environment' of the Manchester Core Strategy aims to "*Protect and enhance both the natural and built environment of the City and ensure the sustainable use of natural resources, in order to mitigate and adapt to climate change*". Objective S06 also states "*The development of networks of green infrastructure across the City and City Region, together with protecting and enhancing townscape character and securing a high standard of design in all development proposals, will promote healthy, low-carbon lifestyles, contribute to a sense of wellbeing, and help to facilitate the sustainable and inclusive growth of the City*."

Manchester Climate Change Framework 2020-2025

10.26 The Manchester Climate Change Framework 2020-25 is the city's high-level strategy for tackling climate change. It sets out how Manchester will *'play its full part in limiting the impacts of climate change'*, a commitment in the Our Manchester Strategy 2016-25.

[3] *Manchester City Council (2018) Manchester's Core Strategy.*
Available from: https://secure.manchester.gov.uk/downloads/download/4964/core_strategy_development_plan [Accessed 19 October 2021]

10.27 The Strategy sets out seven areas for action to meet objectives and targets, including 'buildings (existing and new)', 'Transport' and 'Green infrastructure and nature-based solutions'

MCC Climate Change Action Plan 2020-2025

10.28 In July 2019, Manchester City Council declared a climate emergency. The MCC Climate Change Action Plan sets out the Council's commitments to tackling climate change over the next 5 years. The Plan supports the delivery of the citywide Manchester Climate Change Framework (2020-2025).

Manchester Climate Risk: A Framework for Understanding Hazards & Vulnerability

10.29 The Manchester Climate Adaptation and Resilience Advisory Group was established in early 2020 to guide efforts in developing informed targets on resilience and adaptation, to identify how action across the city might be supported, and to make recommendations regarding how progress can be monitored and evaluated.

10.30 The Framework sets out the following high-level objective:

> *"To adapt the city's buildings, infrastructure and natural environment to the changing climate and to increase the climate resilience of our residents and organisations."*

Other Relevant Policy, Standards and Guidance

10.31 In addition to the aforementioned policy and legislation, this assessment has been compiled in accordance with professional standards and guidance.

Best practice guidance for assessing GHG emissions in EIA

- IEMA's 2017 Guidance on 'Assessing Greenhouse Gas Emissions and Evaluating their Significance';
- PAS 2080 Guidance Document (2016) on Carbon Management in Infrastructure and
- RICS (2017) Whole Life Carbon Assessment for the built environment (1st edition).

Best practice guidance for assessing the vulnerability of the development to climate change in EIA

- IEMA's EIA Guide to: Climate Change Resilience and Adaptation (2020); and
- IEMA's Principles on Climate Change Mitigation and EIA.

Impact of the project on climate (Greenhouse Gas (GHG) emissions assessment)

Assessment methodology

10.32 As set out in Chapter 2, the EIA approach is made as robust as possible by the presentation of a series of assessment scenarios, enabling the absolute worst case to be identified and assessed. The assessment scenarios in respect of the EIA for the proposed development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
  - Scenario 1a - Assessment of the impacts relating to the proposed development only.
  - Scenario 1b - Assessment of the impacts relating to the proposed development, plus impacts associated with Application 2, 3 and 4.
  - Scenario 1c - Scenario 1c – Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF.
- Assessment Stage 2 - Completed Development and Operational Phase:
  - Scenario 2a - Assessment of the impacts relating to the proposed development only.
  - Scenario 2b - Assessment of the impacts relating to the proposed development, plus impacts associated with Application 2, 3 and 4.
  - Scenario 2c - Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF.

10.33 The general approach to estimating GHGs for the baseline and the proposed development has been to quantify GHG emissions combining:

- Activity data – a measure of the quantity of an activity.
- GHG factor – a measure of the GHG emissions per unit of activity.

10.34 This is based on the generalised formula:

- Activity data x GHG factor = GHG emissions or removals.

10.35 GHG emissions are reported as tonnes of carbon dioxide equivalent (tCO2e). CO2e refers to a common unit employed to compare the emissions from various GHGs (methane, ozone, nitrous oxide etc.) based on their global-warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide (CO2) with the same GWP.

10.36 **Error! Reference source not found.** presents the proposed scope and approach of the GHG assessment for each scenario. Table 10.3 presents the scope of the quantitative assessment proposed to be undertaking for assessment scenario 1a. All other assessment scenarios are to be presented as either qualitative assessment (Scenarios 1b, 1c, 2b and 2c) or scoped out (Scenario 2a).

Table 10.1: Proposed scope of assessment (GHG emissions)

Assessment scope: Impact of the development on climate (GHG emissions)				
Stage	Assessment Scenario	Scoped in/out	Rationale for scoping	Approach to assessment
Stage 1 – Demolition and Construction Phase	1a	Scoped in	The proposed development could give rise to significant effects on GHG emissions due to the impact of demolition and construction activities.	The GHG assessment, for assessment scenario 1a quantifies and reports the GHG emissions anticipated to be generated or avoided by the proposed development in the form of a 'carbon footprint'. The carbon footprint is reported in tonnes of carbon dioxide equivalent (tCO_2e). To adequately capture direct and indirect emissions associated with the proposed development, a lifecycle approach has been adopted. Table 10.2 identifies the key contributing GHG sources or activities from the proposed development, with a justification for those excluded from GHG emissions assessment. Emissions from the 'scoped in' sources are compared to the baseline 'do minimum' scenario to quantify the net impact (carbon footprint) of the proposed development.
	1b	Scoped in - Qualitative assessment	Demolition and construction activities required for the delivery of Applications 2,3 and 4 could give rise to significant effects on GHG emissions.	Detailed demolition and construction information is not available for Applications 2,3 and 4 at the time of the assessment. To ensure the potential impacts of the four combined applications are considered as part of this EIA a high-level, qualitative assessment on the potential impact on GHG emissions will be undertaken. This will be based on current, high-level understanding of the applications. The high-level assessment will be presented in Assessment of Likely Significant Effects & In-Combination Assessment.

	1c	Scoped in - Qualitative assessment	Demolition and construction activities required for the delivery of Applications 2,3 and 4 and the wider SRF could give rise to significant effects on GHG emissions.	Detailed demolition and construction information is not available for Applications 2,3,4 and the wider SRF at the time of the assessment. To ensure the potential impacts of the four combined applications and the wider SRF are considered as part of this EIA a high-level, qualitative assessment on the potential impact on GHG emissions will be undertaken. This will be based on current, high-level understanding of the applications and the wider SRF. The high-level assessment will be presented in Assessment of Likely Significant Effects & In-Combination Assessment.
Stage 2 – Completed Development and Operational Phase	2a	Scoped out	Due to the nature of scenario 2a (i.e. the short programme prior to future, associated development) it is considered that there will be no energy consumption, maintenance and refurbishment requirements or increases in traffic during operation and therefore no significant change in GHG emissions.	N/A
	2b	Scoped in - Qualitative assessment	Operational activities associated with Applications 2, 3 and 4 could give rise to significant effects on GHG emissions.	Detailed operational information is not available for Applications 2,3 and 4 at the time of the assessment. In order to ensure the potential impacts of the four combined applications are considered as part of this EIA a high-level, qualitative assessment on the potential impact on GHG emissions will be undertaken. This will be based on current, high-level understanding of the applications. The high-level assessment will be presented in

				Assessment of Likely Significant Effects & In-Combination Assessment.
	2c	Scoped in - Qualitative assessment	Operational activities associated with Applications 2, 3 and 4 and the wider SRF could give rise to significant effects on GHG emissions.	Detailed operational information is not available for Applications 2,3,4 and the wider SRF at the time of the assessment. To ensure the potential impacts of the four combined applications and the wider SRF are considered as part of this EIA a high-level, qualitative assessment on the potential impact on GHG emissions will be undertaken. This will be based on current, high-level understanding of the applications and the wider SRF. The high-level assessment will be presented in Assessment of Likely Significant Effects & In-Combination Assessment.

Table 10.2: Scenario 1a GHG assessment – Scope of quantitative assessment

Lifecycle stage and source of GHG emissions[4]	Scoped in	Scoped out	Justification where scoped out	Assessment methodology	Data sources
Pre-construction phase (A0)					
GHG emissions associated with the planning and consenting phases		✓	Carbon emissions from preliminary studies and works are largely desk-based and for this reason are assumed to be not significant.	n/a	n/a
Demolition and Construction phase – (A1-A5)					
Materials & Transport of materials (A1-A4)	✓		n/a	Materials emissions factors have been taken from the Inventory of Carbon and Energy (ICE) version 3. Total quantities of materials were provided by the proposed development designers for each area of development and were multiplied by an appropriate emissions factor available in the ICE database.	Embodied Carbon – the Inventory of Carbon and Energy (ICE) Version 3.
Plant (A5)	✓		n/a	RICS provide a benchmark for calculating emissions associated with plant use during construction from total cost of the proposed development.	RICS (2017) Whole life carbon assessment for the built environment
Habitat loss (A5)	✓		n/a	Data from the Biodiversity Net Gain assessment has been used to estimate the carbon stocks within the habitats and soils lost. Carbon storage estimates were calculated using factors for the relevant	Natural England (2021) Carbon storage and sequestration by habitat: a review of the evidence (second edition).

[4] For the purpose of this assessment the 'before use stage' is referred to as the 'demolition construction phase', the 'use stage' is referred to as the 'completed development and operational phase' and the 'end of life stage' is referred to as the 'decommissioning phase'.

				habitat type from a Natural England Report multiplied by the area of lost habitat.	
Completed Development and Operational Phase **(B1-B9)**					
Transport emissions (B1)		✓	Due to the nature of scenario 1a it is considered that there will be no increase in traffic during operation and therefore no change in GHG emissions associated with road users.	n/a	n/a
Maintenance and refurbishment (B2 to B5)		✓	Due to the nature of scenario 1a it is considered that there will be no operational maintenance or refurbishment requirements	n/a	n/a
Habitats (B5)		✓	Due to the nature of scenario 1a it is considered that there will be no operational loss of habitats.	n/a	n/a
Operational emissions (B6)		✓	Due to the nature of scenario 1a it is considered that there will be no operational energy consumption	n/a	n/a
Operational water use (B7)		✓	Due to the nature of scenario 1a it is considered that there will be no operational water consumption	n/a	n/a
Other operational processes (B8)		✓	Due to the nature of scenario 1a it is considered that there will be no other operational processes	n/a	n/a
Users utilisation of infrastructure (B9)		✓	Due to the nature of scenario 1a it is considered that there will be user utilisation of infrastructure	n/a	n/a

Decommissioning phase (C1-C4)					
End of life emissions		✓	No end of life emissions are anticipated. Design life is anticipated to be 120 years	n/a	n/a

Significance Criteria

10.37 Guidance from the Institute of Environmental Management and Assessment (IEMA) on assessing GHG emissions and evaluating their significance has also been used to inform the assessment. This guidance states that "*in the absence of a defined quantitative threshold of GHG emissions, all GHG emissions can be deemed significant*". The IEMA guidance also provides a framework for ensuring a proportionate, good-practice approach to assessment is adopted.

10.38 In accordance with this guidance, any carbon emissions associated with the proposed development can be deemed significant. The guidance however does not provide significance criteria to assess potential effects against a scale of significance in the context of the EIA Regulations. The GHG assessment will be evaluated with reference to the national carbon budgets, and regional emissions profiles and targets (where relevant), in order to contextualise the emissions.

10.39 Adverse or beneficial effects are considered to be significant, taking into account the IEMA guidance.

Assumptions and limitation

10.40 Assumptions and limitations associated with the scenario 1a GHG assessment are presented in Table 10.3.

Table 10.3: Scenario 1a GHG assessment - assumptions and limitations

Emissions source	Assumptions **/ Limitations**
General	The assessment of GHG emissions for scenario 1a requires the collation of activity data from a range of sources within the design teams, e.g. construction material quantities, transport and plant emissions, etc. Where there are gaps in data, professional judgement has been used to adopt appropriate benchmark data.
General	High-level qualitative assessments for scenarios 1b, 1c, 2b and 2c are based on indicative quantities of development for Applications 2, 3 and 4 and the wider SRF as set out in Chapter 2 Approach.
Material transport distances	Where material is being imported to site it has been assumed that this will be by HGV and an average of 50km.
Aggregate	ICE V3 Carbon factor for 'Aggregate - general mixture' used
Asphalt	ICE V3 Carbon factor for 'Asphalt - general asphalt used
Pipework	ICE V3 Carbon factor for 'Pipework - plastic HDPE 900mm diameter' used
Construction – installation process emissions	Due to the absence of detailed construction information the RICs benchmark for calculating emissions associated with plant use during construction has been used. Emissions are calculated

	based on a figure of 1400kgCO_{2e}/£100k of project value.
Land use	Carbon stock factors for soils and for vegetation have been taken from Natural England (2021) Carbon storage and sequestration by habitat: a review of the evidence (second edition).
Land use	Assumptions and limitations for calculating Biodiversity Net Gain are referred to within Chapter 6: Ecology

Study area

Demolition and Construction Phase

10.41 For assessment scenario 1a the study area for the GHG emissions assessment is the site red line application boundary (see **Figure 1.1**). The assessment covers all direct GHG emissions arising from activities and land use change where demolition and construction works take place within the boundary. It also includes indirect emissions embedded within any construction materials arising as a result of the energy used for their production as well as emissions arising from the transportation of materials and waste to and from the site.

10.42 For assessment scenarios 1b and 1c the study area is the indicative site location plans for those associated developments and the wider SRF (see **Figures 2.1, 2.2, 2.3 2.4a** and **2.4b**).

Completed Development and Operational Phase

10.43 For assessment scenarios 2b and 2c the study area for operational GHG emissions arising from maintenance and refurbishment activities is indicative site location plans for each of those associated developments and wider SRF(see **Figures 2.1, 2.2, 2.3 2.4a** and **2.4b**). For emissions associated with vehicles using the highways infrastructure the study area is indicative site location plans, with consideration given to their setting within the wider transport network.

Baseline Conditions

10.44 The baseline ("do-minimum" scenario) is the reference point against which the impact of the proposed development can be compared and assessed. The GHG emissions without implementing the proposed development represent the current and future baseline ("do-minimum" scenario). In this scenario it is assumed that no construction activity would take place and the area would continue to operate in its current configuration.

10.45 The UK's most recent final GHG emissions national statistics (for 2019)[5], set out the total UK GHG emissions for 2019 at 454.8 million tonnes of carbon dioxide equivalents ($MtCO_{2e}$). UK total emissions are showing a general

[5] UK Government (2020) National Statistics for carbon emissions. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957887/2019_Final_greenhouse_gas_emissions_statistical_release.pdf [last accessed 03.11.21]

downward trend, with 2019 UK total GHG emissions down 2.8% from 468.1 $MtCO_{2e}$ in 2018. In 2019, the largest emitting sector was transport, accounting for 27% of the UK GHG emissions.

10.46 At a local level, in 2019, emissions in Manchester were 2,019,800 tonnes of carbon dioxide equivalents (tCO_{2e})[6].

Potential Impacts

10.47 As set out in Chapter 5, construction works are expected to commence in Q1 2022 and last for approximately 14 weeks.

10.48 The potential sources of GHG emissions during both phases are listed in Table 10.4.

Table 10.4: Potential sources of GHG emissions

Lifecycle stage	Life cycle sub-stage	Potential Sources of GHG Emissions
Demolition and Construction phase	Product stage; including raw material supply, transport and manufacture	Embodied GHG emissions associated with the required raw materials. Vehicle emissions for transportation prior to factory gate. Industrial and energy emissions in the manufacture of materials.
	Construction process stage: including transport to/from works site and construction /installation processes	Vehicle emissions for transportation of materials to site. Energy use in construction processes.
	Land use change	GHG emissions mobilised from vegetation or soil loss/degradation during construction phase.
Completed Development and Operational Phase	Use of the infrastructure by the end-user (road users)	Emissions from vehicles using highway infrastructure
	Operation and maintenance (including repair, replacement and refurbishment)	Energy consumption for infrastructure operation and activities of organisations conducting routine maintenance including extraction, manufacture, transportation and installation energy use.
	Land use and forestry	Ongoing land use GHG emissions/sequestration each year during the lifetime of the infrastructure.

Embedded Mitigation

10.49 This section sets out the measures that have been incorporated into the scheme design or proposed as additional mitigation to avoid or minimise potential effects on the climate.

[6] UK Government (2021) Local Authority and Regional Carbon emissions per industry. Available at: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2019 [last accessed 03.11.21]

Demolition and Construction

10.50 Minimising GHG emissions through design is a core principle of the UK Government's Infrastructure Carbon Review (H.M. Treasury, 2013)[7] and the Specification of infrastructure carbon management (PAS 2080) (British Standard Institute, 2016)[8].

10.51 The PAS2080 carbon management hierarchy is being used to influence the design of the Northern Gateway SRF. A carbon management hierarchy outlines broad categories of mitigation strategies that are more favourable than others. This was applied to the proposed development design by considering the following:

- Build nothing: assess the basic need for development and consider alternative approaches to achieve the desired outcomes.
- Build less: evaluate the potential for re-using and/or refurbishing existing assets to reduce the extent of new construction required.
- Build clever: consider the use of low carbon solutions (including technologies materials and products) to minimise resource consumption during the construction and operation.
- Build efficiently: use techniques (e.g. construction, operational) that reduce resource consumption during the construction and operation phases of an asset or programme of work.

10.52 An examples of how the mitigation hierarchy has been applied for the proposed development include:

- **Reuse of materials** – Where appropriate excavated material and material generated during demolition will be reused on site thus reducing emissions associated with transport and disposal of material.
- **Design of the temporary haul road** - The construction of the road has been designed in such a way to avoid the better-quality habitats in the local area and thus reduce GHG emissions mobilised from loss of good quality vegetation and soil during construction.

The Completed and Operational Development

10.53 There are no completed or operational development mitigation measures with regard to climate change in respect of the proposed development.

[7] H.M. Treasury (2013) Infrastructure Carbon Review. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/260710/infrastructure_carbon_review_251113.pdf [Accessed 27.10.21]
[8] British Standard Institute (2016) PAS 2080:2016 Carbon Management in Infrastructure, available at: https://shop.bsigroup.com/ProductDetail?pid=000000000030323493&_ga=2.44876396.974118440.1626686164-579123538.1626686162 [Accessed 27.10.21]

Assessment of Likely Significant Effects & In-Combination Assessment

Demolition and Construction

Scenario 1a

10.54 Total demolition and construction phase emissions are estimated to be 1567.5tCO2e. The largest source of emissions during the construction phase of the project is from land use change, accounting for 77% of total emissions.

10.55 To contextualise emissions, in accordance with the relevant IEMA guidance, the construction phase emissions have been compared against regional and national emissions information.

10.56 Construction of the proposed development is anticipated to last 14 weeks, commencing in February 2022 and finishing in May 2022. Construction phase GHG emissions have therefore been assessed against the UK's Third Carbon Budget (2018-2022). The estimated construction phase GHG emissions would represent 0.0000006% of the Third Carbon Budget.

Table 10.5: Estimated emissions as a % of UK Carbon Budget

UK Carbon Budget	Years	Carbon Budget (for 5-year period) ($MtCO_2e$)	Estimated emissions from the project as a % of the UK Carbon Budget
Third	2018-2022	2544	0.0000006%

10.57 At a local level carbon budgets have not been set or are not publicly available. Therefore, emissions have been compared to the latest emissions data (2019) for the region.

10.58 In 2019, emissions in Manchester were 2,019,800 tCO2e. Construction phase emissions would therefore represent 0.0008% of Manchester's total annual emissions in 2019.

10.59 The assessment has concluded that there would be emissions associated with the demolition and construction phase of the development. These emissions are unlikely to impact the UK Government's ability to adhere to the carbon budgets for the construction's time period. However, as the IEMA guidance states that any GHG emissions are significant, it is concluded that there will be a significant effect due to these increases in GHG emissions.

Scenario 1b

10.60 Indicative quanta of development for Applications 2, 3 and 4 are set out in Chapter 2: Approach. All applications involve demolition and construction works and therefore are likely to result in GHG emissions.

10.61 The assessment for Application 1 concluded there would be emissions associated with the construction phase of the development.

10.62 Therefore, in combination, Applications 1,2,3 and 4 are likely to result in emissions during demolition and construction phases. As the IEMA guidance states that any GHG emissions are significant, it is concluded that there will be a significant in combination effect due to these increases in GHG emissions.

Scenario 1c

10.63 Indicative quanta of development for Applications 2, 3 and 4 and the wider SRF are set out in Chapter 2: Approach. All applications and the SRF involve demolition and construction works and therefore are likely to result in emissions.

10.64 The assessment for Application 1 concluded there would be emissions associated with the construction phase of the development.

10.65 Therefore, in combination, Applications 1,2,3, 4 and the wider SRF are likely to result in emissions during demolition and construction phases. As the IEMA guidance states that any GHG emissions are significant, it is concluded that there will be a significant in combination effect due to these increases in GHG emissions.

The Completed and Operational Development

Scenario 2b

10.66 Whilst there is likely to be no/minimal operational requirements for Applications 2 and 3 (i.e. no energy consumption, maintenance and refurbishment requirements or increases in traffic during operation) Application 4 is likely to result in emissions associated with energy consumption, maintenance and refurbishment and vehicles using the infrastructure.

10.67 No assessment of operational emissions was conducted for Application 1 due to the nature of scenario 1a (i.e. the short, temporary programme prior to future associated development). However, when considered in combination with Applications 2,3 and 4 there is likely to be an increase in emissions. As the IEMA guidance states that any GHG emissions are significant, it is concluded that there will be a significant in combination effect due to these increases in GHG emissions.

Scenario 2c

10.68 Whilst there is likely to be no/minimal operational requirements for Applications 2 and 3 (i.e. no energy consumption, maintenance and refurbishment requirements or increases in traffic during operation) Application 4 and the wider SRF are likely to result in emissions associated with energy consumption, maintenance and refurbishment and vehicles using the infrastructure.

10.69 No assessment of operational emissions was conducted for Application 1 due to the nature of scenario 1a (i.e. the short, temporary programme prior to future development). However, when considered in combination with Applications 2,3,4 and the wider SRF there is likely to be an increase in emissions. As the IEMA guidance states that

any GHG emissions are significant, it is concluded that there will be a significant in combination effect due to these increases in GHG emissions.

Additional Mitigation and Enhancement Measures

10.70 A Construction Environmental Management Plan (CEMP) will also be produced for the site which will include standard construction working practices, such as:

- The appointment of a site manager that will manage waste generated by the development using a bespoke version of the Building Research Establishment (BRE) SMARTWaste Plan. The project team will use this plan to identify waste streams, forecast waste volumes and identify suitable methods to eliminate, or where this is not practicable, reduce waste generated by the project.
- The burning of materials or waste on site will not be permitted.
- Best practice measures and an environmental toolbox of procedures that will minimise the risk and in the event of an incident, will seek to mitigate the environmental impacts. These will ensure minimal loss of carbon stock within vegetation and soil.

Vulnerability of the project to climate change (Climate Change Risk (CCR) assessment)

Assessment methodology

10.71 The assessment scenarios in respect of the EIA for the proposed development are as follows:

- Assessment Stage 1 - Demolition and Construction Phase:
  - Scenario 1a - Assessment of the impacts relating to the proposed development only.
  - Scenario 1b - Assessment of the impacts relating to the proposed development, plus impacts associated with Application 2, 3 and 4.
  - Scenario 1c - Scenario 1c – Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF.
- Assessment Stage 2 - Completed Development and Operational Phase:
  - Scenario 2a - Assessment of the impacts relating to the proposed development only.
  - Scenario 2b - Assessment of the impacts relating to the proposed development, plus impacts associated with Application 2, 3 and 4.
  - Scenario 2c - Assessment of the impacts relating to the proposed development, Applications 2, 3 and 4, and the wider SRF.

10.72 In line with IEMA guidance, the CCR assessment is a qualitative assessment to identify whether anticipated changing climate conditions and weather events are likely to have significant adverse effects on the proposed development. It considers the potential impacts and risks of climate change on the project based on professional expertise and judgement.

10.73 Table 10.6 presents the proposed scope and approach of the climate assessment for each scenario.

Table 10.6: Proposed scope of assessment (CCR)

Assessment scope: Impact of the development on climate (GHG emissions)				
Stage	Assessment Scenario	Scoped in/out	Rationale for scoping	Approach to assessment
Stage 1 – Demolition and Construction Phase	1a	Scoped out	Assessment of the vulnerability of the development to climate change has been scoped out for assessment scenarios 1a, 1b and 1c as the construction programme is not expected to be long enough to experience any notable changes in the climate. Key issues related to adaptation to climate change e.g. flood risk are considered within other chapters e.g. Drainage and Flood Risk.	N/A
	1b	Scoped out		
	1c	Scoped out		
Stage 2 – Completed Development and Operational Phase	2a	Scoped out	The operational programme, prior to future development is not expected to be long enough to experience any notable changes in the climate, as such this scenario is scoped out.	N/A
	2b	Scoped in - Qualitative assessment	Operational activities associated with Applications 2, 3 and 4 could give rise to significant effects on climate change resilience.	Detailed operational information is not available for Applications 2, 3 and 4 at the time of the assessment. To ensure the potential impacts of the four combined applications are considered as part of this EIA a high-level, qualitative assessment on the potential impact on climate change resilience will be undertaken.

				This will be based on current, high-level understanding of the applications. The high-level assessment will be presented in Assessment of Likely Significant Effects.
	2c	Scoped in - Qualitative assessment	Operational activities associated with Applications 2, 3 and 4 and the wider SRF could give rise to significant effects on climate change resilience.	Detailed operational information is not available for Applications 2, 3, 4 and the wider SRF at the time of the assessment. To ensure the potential impacts of the four combined applications and the wider SRF are considered as part of this EIA a high-level, qualitative assessment on the potential impact on climate change resilience will be undertaken. This will be based on current, high-level understanding of the applications and the wider SRF. The high-level assessment will be presented in Assessment of Likely Significant Effects.

Assumptions and limitation

10.74 As detailed operational information is not available for Applications 2,3 and 4 at the time of the assessment a qualitative assessment has been undertaken for scenarios 2b and 2c based on high level understanding of the applications.

10.75 The CCR assessment has assumed that mitigation measures for effects assessed by other topics will be implemented effectively and that a CEMP will be developed for the construction phase that will be effectively implemented and provide appropriate mitigation for extreme weather-related effects during construction.

Study area

10.76 For assessment scenarios 2b and 2c the study area for the climate change resilience (CCR) assessment is the indicative site location plans for the associated developments and wider SRF (see **Figures 2.1, 2.2, 2.3, 2.4a and 2.4b**).

Baseline Conditions

Historic baseline

10.77 The Meteorological Office (Met Office) generates climatologies for different areas of the UK, known as climate districts, including historical regional climate information. The proposed development is located within the North-West and North Wales climate district[9].

10.78 Table 10.8 describes the baseline climate data for the region[10].

Table 10.8: UK regional historical climate characteristics for the NW England region of the UK, representing the current climate conditions in the study area.

Parameter	North England Regional Climate Observations
Temperature	Mean annual temperatures over the region depend very much on altitude and, to some extent, proximity to the coast.
Rainfall	The exposure of NW England to westerly maritime air masses and the presence of extensive areas of high ground mean that the region has some of the wettest places in the UK. Manchester averages 830mm. Whilst rainfall is generally well distributed through the year, there is a seasonal pattern. The driest season is spring whilst there is an autumn/winter maximum, when the Atlantic depressions are at their most vigorous.

9 UK climate districts map. Available online: https://www.metoffice.gov.uk/research/climate/maps-and-data/about/districts-map

10 UK regional climates. Available online: north-west-england--isle-of-man_-climate---met-office.pdf (metoffice.gov.uk)

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

Future baseline

10.79 All future climate projections for the UK indicate an increased likelihood of warmer, wetter winters and hotter, drier summers, in addition to an increase in the frequency of extreme weather. Near surface wind speeds over the UK are also projected to increase for the second half of the 21st century.

10.80 The likely increase in floods, storms, and extreme heat as a result of changes in weather patterns can cause damage to buildings, disrupt transport, and affect health with buildings and infrastructure needing to be adapted to cope with the new conditions.

Potential Impacts

10.81 During the completed and operational phase there is potential for the changing climate and more frequent severe weather events to impact on the wider SRF project in the medium to longer-term.

10.82 A summary of the potential impacts on the project from weather events that may affect the study area is presented in Table 10.9.

Table 10.7: Summary of weather events and the potential impacts on the project

Primary Weather Event	Potential Impacts

Heavy rain / flooding	Raised river levels, flooded drains, collapsed culverts Road closures Danger to road users from reduced grip on the road surface Contaminated water Fallen trees Water scour causing structural damage Weakening or wash out of structural soils Changes in ground water level and soil moisture impacting earthwork stability
High winds / gales	Damage to structures from wind borne debris and power cuts Additional or uneven loading of structures Fallen trees and damage to landscaping Disruption and potential danger to crossing users Road closures Danger to road users from wind borne debris
Increased temperatures and prolonged periods of hot weather	Health impacts from breathing problems and sunstroke Grass and forest fires Stress on structures and technology Challenges from maintenance regimes
Increased frequency of extreme weather events	Increased requirement for maintenance and repair Increased costs (e.g. associated with increased frequency of maintenance and repair)
Lightning	Structural damage Danger to road users (e.g. from fallen trees blocking the road) Power surge and tripping electricity breakers. Fires Health impacts from direct strikes
Snow and ice	Road closures Danger to road users from reduced grip on the road surface Damage to roads Health impacts from slipping on ice and chest illnesses
Fog	Danger to road users due to reduced visibility

Embedded Mitigation

10.83 There are no mitigation measures embedded into the design of the proposed development that relate to carbon or climate change in respect of the completed and operational development stage.

Assessment of Likely Significant Effects

10.84 As detailed operational information is not available for Applications 2, 3 and 4 and the wider SRF at the time of assessment a high-level qualitative CCR assessment has been undertaken for scenarios 2b and 2c based on current understanding of the applications.

Scenario 2b

10.85 The design life of Application 4 is assumed to be 120 years[11]. By 2070 the Met Office projects that winters will be between 1 and 4.5°C warmer and up to 30% wetter, while summers will be between 1 and 6°C warmer and up to 60% drier. These changes in climate have the potential, in the absence of mitigation to result in a significant impact on the resilience of the project to climate change.

Scenario 2c

10.86 The design life of Application 4 and the wider SRF is assumed to be 120 years. By 2070 the Met Office projects that winters will be between 1 and 4.5°C warmer and up to 30% wetter, while summers will be between 1 and 6°C warmer and up to 60% drier. These changes in climate have the potential, in the absence of mitigation to result in a significant impact on the resilience of the project to climate change.

Additional Mitigation and Enhancement Measures

10.87 Details on additional mitigation to reduce the risk of surface water flooding can be found in Chapter 8 Drainage and Flood Risk.

Likely Residual Effects of the Development and their Significance

10.88 Table 10.10 summarises the significance of the anticipated residual effects on climate change, which are those that remain after all proposed mitigation measures are implemented.

Table 10.10 Residual Effects Summary

Description of Effect	Potential effect including significance	Mitigation	Residual Effect including significance
GHG ASSESSMENT			
Construction and Demolition			
Assessment Scenario 1a	**Significant effect**	Best practice measures implemented via a CEMP	**Significant effect**
Assessment Scenario 1b	**Significant effect**	Best practice measures implemented via a CEMP	**Significant effect**

[11] In line with RICS (2017) Whole Life Carbon Assessment for the built environment (1st edition).

Assessment Scenario 1c	**Significant effect**	Best practice measures implemented via a CEMP	**Significant effect**
Completed Development			
Assessment Scenario 2a	Scoped out of the assessment due to the nature of scenario 2a (i.e. the short, temporary programme prior to future, associated development)	n/a	n/a
Assessment Scenario 2b	**Significant effect**	Use of mitigation hierarchy to influence the design of applications 2,3 and 4.	**Significant effect**
Assessment Scenario 2c	**Significant effect**	Use of mitigation hierarchy to influence the design of applications 2,3 4 and the wider SRF.	**Significant effect**
CCR ASSESSMENT			
Construction and Demolition			
Assessment Scenario 1a	Scoped out of the assessment as the construction programme is not expected to be long enough to experience any notable changes in the climate.	n/a	n/a
Assessment Scenario 1b	Scoped out of the assessment as the construction programme is not expected to be long enough to experience any notable changes in the climate.	n/a	n/a
Assessment Scenario 1c	Scoped out of the assessment as the construction programme is not expected to be long enough to experience any notable changes in the climate.	n/a	n/a
Completed Development			
Assessment Scenario 2a	Scoped out of the assessment as the	n/a	n/a

	operational programme, prior to future development is not expected to be long enough to experience any notable changes in the climate.		
Assessment Scenario 2b	Significant effect	Most weather and climate-related resilience effects during operation are expected to be mitigated through measures embedded in the design of applications 2,3 and 4 as a result of meeting current planning, design and engineering practice and codes.	**Not significant effect**
Assessment Scenario 2c	Significant effect	Most weather and climate-related resilience effects during operation are expected to be mitigated through measures embedded in the design of applications 2,3,4 and the wider SRF as a result of meeting current planning, design and engineering practice and codes.	**Not significant effect**

Conclusions

Impact of the project on climate (Greenhouse Gas (GHG) emissions assessment)

10.89 The UK's most recent final GHG emissions national statistics (for 2019) , set out the total UK GHG emissions for 2019 at 454.8 million tonnes of carbon dioxide equivalents (MtCO2e). At a local level, in 2019, emissions in Manchester were 2,019,800 tonnes of carbon dioxide equivalents (tCO2e).

10.90 The assessment of the impact of the project on climate quantitatively assessed the demolition and construction phase of scenario 1a. The assessment has concluded that there would be emissions associated with the demolition and construction phase of the development. These emissions are unlikely to impact the UK Government's ability to adhere to the carbon budgets for the construction's time period. However, as the IEMA guidance states that any GHG emissions are significant, it is concluded that there will be a significant effect due to these increases in GHG emissions. It should be noted that the IEMA Guidance will be updated in the near future and significance will no longer be determined solely on % of carbon budgets. Other factors should also be considered such as: does the propose scheme reduce emissions in comparison to baseline, does the project have measures in place to mitigate emissions during construction and operation, is it meeting local / regional planning requirements, does it align with Net Zero aspirations, etc.

10.91 High-level, qualitative assessments were undertaken of scenarios 1b, 1c 2b and 2c based on current understanding of the applications. All scenarios were considered likely to result in GHG emissions.

Vulnerability of the project to climate change (Climate Change Risk (CCR) assessment))

10.92 All future climate projections for the UK indicate an increased likelihood of warmer, wetter winters and hotter, drier summers, in addition to an increase in the frequency of extreme weather. The likely increase in floods, storms, and extreme heat as a result of changes in weather patterns can cause damage to buildings, disrupt transport, and affect health with buildings and infrastructure needing to be adapted to cope with the new conditions.

10.93 High-level, qualitative assessments were undertaken of scenarios 2b and 2c based on current understanding of the applications. All scenarios were considered likely to have a significant impact on the resilience of the project to climate change without mitigation. However, most weather and climate-related resilience effects during operation are expected to be mitigated through measures embedded in the design of applications 2,3 and 4 as a result of meeting current planning, design and engineering practice and codes.

Cumulative Assessment

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

- Scenario 3a - Assessment of the cumulative impacts relating to the enabling works plus impacts associated with agreed cumulative sites.
- Scenario 3b - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites.
- Scenario 3c - Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, the wider SRF, and the agreed cumulative sites.

10.95 The cumulative assessment seeks to determine whether any non-significant effects on climate change arising from this application could become significant, or whether the significance of any effects arising from this application would increase when considered alongside similar effects from other plans or proposals. When determining the potential for effects to accumulate, it considers the geographical and as far as can be determined, temporal nature of any effects and associated mitigation proposals.

10.96 In line with the approach to cumulative assessment in EIA, the following section can only consider existing and available information relating to baseline conditions and mitigation proposals when identifying the potential for cumulative effects to arise. Wherever possible, definitive and fixed information relating to each permission, application or allocation, has been used to ensure that the assessment is as robust as is reasonably possible.

10.97 Owing to the transboundary nature of GHG emissions, the effects of the proposed development must be considered in the context of global GHG emissions and concentrations of GHGs in the atmosphere. All sites listed in Table 10.11 have been scoped into the cumulative assessment in respect of GHG emissions and CCR. Table 10.12 presents a conclusion relating to cumulative effects with regard to both GHG and CCR for each relevant scenario.

Table 10.11 Cumulative Sites

Site Ref.	Application No.	Proposal	Approx. Distance and Direction	Status	Scoped In / Scoped Out	Justification
1	129393/VO/2021	City Council Development for the erection of 168, three and four storey dwellinghouses (Use Class C3a) and two, five and six storey apartment buildings to form 76 residential apartments (Use Class C3a) with associated ground floor flexible commercial unit (162 sqm) (Use Class E); and the creation of a new public park; all with associated car and parking, refuse storage, landscaping, public realm and other associated works and infrastructure following demolition of 29 existing residential dwellinghouses, the Collyhurst Village Store and associated car parking	650m north east	Approved Jun 2021	Scoped In	**Impact of the project on climate (Greenhouse Gas (GHG) emissions assessment)** Owing to the transboundary nature of GHG emissions, the effects of the proposed development must be considered in the context of global GHG emissions and concentrations of GHGs in the atmosphere. The IEMA guidance states that the GHG emissions from all projects will contribute to climate change, the largest inter-related cumulative environmental effect.
2	127971/FO/2020	Erection of a 6 storey building to form 90 residential apartments (Use Class C3a) following demolition of existing structures with associated access, car parking, amenity space, landscaping and other associated works	950m east	Approved May 2021	Scoped In	
3	128248/FO/2020	Erection of 9 buildings ranging from 8 to 34 storeys in height to form 1202 residential apartments (Use Class C3a) and ground floor commercial uses (Use Class E) (192 sqm) together with associated car parking, new vehicular and pedestrian access, public realm, landscaping and other associated works following demolition of existing structures and buildings | Land Bound By Gould Street, Williamson Street, Bromley Street And Bilbrook Street Manchester M4 4DD	150m south	Approved June 2021	Scoped In	
4	116366/FO/2017	Erection of four residential buildings (22 storey building, 17 storey building, 40 storey building and part 12, part 9 storey building) to form 756 residential apartments (Use Class C3a) together with ground floor commercial uses (616 sqm) (Use Classes A1, A2, A3, A4, A5, D1 and B1)	150m south	Approved Aug 2017	Scoped In	**Vulnerability of the project to climate change (Climate**

		with associated car parking, landscaping, amenity areas, creation of new public realm following the closure of Aspin Lane, Mincing Street and Irk Street and other associated works following demolition of existing structures | Land Bounded By Dantzic Street & Aspin Lane, Land Bounded By Gould Street & Angel Meadows And Land Bounded By Old Mount Street, School Street, Naples Street & Ludgate Street Manchester		Under construction		**Change Risk (CCR) assessment))** The consequences of a changing climate have the potential to lead to significant environmental effects on all topics in the EIA Directive – e.g. Population, Fauna, Soil, etc.
5	118120/FO/2017	Erection of a part 15, part 9, part 7 storey building to form 155 residential apartments together with ground floor commercial uses (Use Classes A1, A3 and B1) (288 sqm) with associated car parking, access arrangements and other associated works following the demolition of existing buildings and structure and the closure of Hatter Street | Land Bounded By Thompson Street / Mason Street / Bendix Street And Rochdale Road Manchester	450m south	Approved May 2018 Under construction	Scoped In	
6	127537/FO/2020	Erection of a 11 storey 229 bedroom hotel (Use Class C1) with ancillary ground floor bar/restaurant together associated public realm and other associated works | 25 Rochdale Road Manchester M4 4HT	400m south	Approved Oct 2016	Scoped In	
7	124973/FO/2019	Erection of an 11 storey building and a 12 storey building with plant rooms above to form a mixed use development comprising 39,184 sq.m (NIA) of Class B1a office use and commercial units of 1,286 sqm (NIA) (Use Classes A1, A2, A3, A4, B1a and D1) along with associated lower ground level car parking, hard and soft landscaping and associated works, including the creation of a new pedestrian route between Angel Street and Miller Street. | Land Bounded By Co-op Headquarters Miller Street And Angel Street Manchester	350m south	Approved Feb 2016	Scoped In	
8	111777/FO/2016/C1	Erection of two residential buildings of a maximum 21 and 26 storeys to accommodate 520 apartments (178 x 1 bed, 286 x 2 bed and 56 x 3 bed apartments) (Use Class C3). Erection of one office building of maximum eight storeys comprising up to 11,647 sq. m (GIA) of office accommodation. Ground floor commercial space (Use Class A1, A2, A3 and B1), lower ground level car parking, access and servicing arrangements, alterations to Corporation Street, new public realm and	250m south east	Approved Sep 2016 Under construction	Scoped In	

		other associated works. | New Victoria Land At Corporation Street Manchester M3 1NX				
9	121375/FO/2018	Construction of a 22 storey building comprising 361 residential apartments (122 x 1 bed 2 person, 119 x 2 bed 3 person, 94 x 2 bed 4 person, 21 x 3 bed 5 person and 5 x 3 bed 6 person (34% 1 bed, 59% 2 bed and 7% 3 bed) ground floor commercial floorspace (Use Classes A1 (Shop), A3 (Restaurant and Cafe), A4 (Drinking Establishment) and A5 (Hot Food Take-away) associated landscaping, including new public realm and pedestrian route, together with servicing, cycle parking, access and other associated works following demolition of buildings at 20-22 and 24-26 High Street and 5 market stalls to Church Street.	840m south	Approved Oct 2020	Scoped In	
10	18/71330/FUL	Erection of three residential blocks, comprising of a total of 156 apartments, together with car parking and landscaping	850m south west	Approved Oct 2018 Under construction	Scoped In	
11	20/76134/FUL	Erection of 16-storey building plus plant comprising a hotel (Use Class C1) with ancillary bar and restaurant uses, access, servicing, landscaping and other associated works	1000m south west	Approved Feb 2020	Scoped In	
12	17/70626/FUL	Erection of one 18 storey residential building (Block A, Use Class C3); one 16 storey residential building (Block B, Use Class C3); one 18 storey building providing a mix of residential and serviced apartment accommodation and amenity facilities including lounge, swimming pool and gym (Block C, Use Class Sui Generis); 536sqm of commercial floorspace (Use Classes A1, A2, A3, A4); new access from Greengate; car and cycle parking; public realm and landscaping; and other associated works.	840m south west	Approved Nov 2017 Under construction	Scoped In	
13	19/74465/HYBEIA	Hybrid planning application for demolition of existing buildings on the site and comprehensive redevelopment to create between 1,407 and 1,521 dwellings, comprising of: (a) Phase 1 (submitted in full with no matters reserved) for development of a 50-storey residential building; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2);	960m south west	Validated Nov 2019	Scoped In	

		new public park; highways and public realm improvements and other associated works; and, (b) Phases 2 and 3 (submitted in outline with all matters reserved) for the development of two residential buildings up to 42 storeys in height; commercial floor-space (Use Classes A1, A2, A3, A4, A5, B1, D1 and D2); new highways; a public square; public realm improvements and other associated works. (EIA development, accompanied by Environmental Statement) | Land Bound By Greengate, Collier Street, Queen And King Street And Gravel Lane M3 7BN				
14	126944/FO/2020	Erection of a residential-led mixed use development comprising 3 no. towers (37, 26 and 18 storeys) and podium levels (6 storey) to form 634 residential apartments and townhouse accommodation (Use Class C3) together with commercial accommodation (1222 sqm) (Use Classes A1,A2,A3,A4,A5,B1, D1 and D2)); with associated residential amenity areas, refuse storage, plant (including substation), car parking, cycle storage, landscaping and new public realm including the re-instatement of Bromley Street and other associated works	140m south east	Approved Sep 2020 Under Construction	Scoped In	
15	114860/FO/2016	Erection of a part 6, part 10, part 15, part 24 storey building to form 415 residential apartments (Use Class C3a) together with commercial floor space (268 sqm) (Use Classes A1, A2, A3, A4, B1 and/or D2) with associated car parking, public realm, hard and soft landscaping, access from Dantzic Street and other associated works following demolition of existing buildings	145m south east	Approved October 2017	Scoped In	
16	131708/FO/2021	Erection of a part 11, part 13 storey building to form residential apartments (Use Class C3a) together with the erection of two blocks of 3 storey townhouses (Use Class C3a) to form 237 residential homes in total with associated commercial floor (Use Class E) (132 sqm), basement car parking, landscaping and public realm, and associated engineering and infrastructure works following demolition of existing buildings and structures	450m south	Validated September 2021	Scoped In	
17	118831/FO/2018	Erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use	635m south west	Approved June 2018	Scoped In	

		Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works				
18	128997/FO/2020	Erection of a ground plus 9-storey building to form 118 no. residential apartments (Use Class C3), including amenity areas, ground floor food and beverage/ commercial units (Sui Generis/ Use Class E), public realm and landscaping, with supporting infrastructure and associated works following demolition of existing building	730m south	Approved September 2021	Scoped In	
19	124888/FO/2019	Erection of a 6-9 storey residential building (Use Class C3) comprising 80 no. dwellings including 9 no. townhouses and 71 no. apartments with residents lounge, refuse, plant, new substation, cycle storage, an internal landscaped courtyard and improvements to the adjacent footways	665m south	Approved January 2020 Under Construction	Scoped In	
20	125678/FO/2019	Erection of 8-storey residential building (Use Class C3) comprising 73 residential units, with ground floor commercial use (Classes A1, A2, A3, B1 and D1 (excluding Places of Worship)) (205 sqm); alterations to the retained perimeter wall and chimney including the introduction of a light box; disabled car parking, highways, landscaping and other associated works	640m south	Approved December 2020	Scoped In	

Table 10.12 Cumulative Impact Assessment summary

Assessment scenario	Potential effects
GHG ASSESSMENT	
3a – Assessment of the cumulative impacts relating to the enabling works plus impacts associated with the agreed cumulative sites	The assessment of the impact of the project on climate concluded that there would be emissions associated with the demolition and construction phase of the development. These emissions are unlikely to impact the UK Government's ability to adhere to the carbon budgets for the construction's time period. However, as the IEMA guidance states that any GHG emissions are significant, it is concluded that there will be a significant effect due to these increases in GHG emissions. Owing to the transboundary nature of GHG emissions, the effects of the proposed development must be considered in the context of global GHG emissions and concentrations of GHGs in the atmosphere. The IEMA guidance states that the GHG emissions from all projects will contribute to climate change, the largest inter-related cumulative environmental effect.
3b – Assessment of cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites	The assessment of the impact of the project on climate concluded that there would be emissions associated with the demolition, construction and operation of the project. These emissions are unlikely to impact the UK Government's ability to adhere to the carbon budgets. However, as the IEMA guidance states that any GHG emissions are significant, it is concluded that there will be a significant effect due to these increases in GHG emissions. Owing to the transboundary nature of GHG emissions, the effects of the proposed development must be considered in the context of global GHG emissions and concentrations of GHGs in the atmosphere. The IEMA guidance states that the GHG emissions from all projects will contribute to climate change, the largest inter-related cumulative environmental effect.
3c – Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3, and 4, the wider SRF and the agreed cumulative sites	The assessment of the impact of the project on climate concluded that there would be emissions associated with the demolition, construction and operation of the project. These emissions are unlikely to impact the UK Government's ability to adhere to the carbon budgets. However, as the IEMA guidance states that any GHG emissions are significant, it is concluded that there will be a significant effect due to these increases in GHG emissions. Owing to the transboundary nature of GHG emissions, the effects of the proposed development must be considered in the context of global GHG emissions and concentrations of GHGs in the atmosphere. The IEMA guidance states that the GHG emissions from all projects will contribute to climate change, the largest inter-related cumulative environmental effect.
CCR ASSESSMENT	
3a – Assessment of the cumulative impacts relating to the enabling	The consequences of a changing climate have the potential to lead to significant environmental effects. However, most weather and climate-related resilience effects are expected to be mitigated through measures embedded in the design of applications 1 and the agreed cumulative sites as a result of meeting current planning, design and engineering practice and codes.

works plus impacts associated with the agreed cumulative sites	
3b – Assessment of cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3 and 4, and the agreed cumulative sites	The consequences of a changing climate have the potential to lead to significant environmental effects. However, most weather and climate-related resilience effects are expected to be mitigated through measures embedded in the design of applications 1,2,3, 4 and the agreed cumulative sites as a result of meeting current planning, design and engineering practice and codes.
3c – Assessment of the cumulative impacts relating to the enabling works, plus impacts associated with Application 2, 3, and 4, the wider SRF and the agreed cumulative sites	The consequences of a changing climate have the potential to lead to significant environmental effects. However, most weather and climate-related resilience effects are expected to be mitigated through measures embedded in the design of applications 1,2,3, 4 the wider SRF and the agreed cumulative sites as a result of meeting current planning, design and engineering practice and codes.

11. Summary of Mitigation and Residual Effects

Introduction

11.1 The EIA and the design evolution have been an iterative process therefore many measures to mitigate potential adverse environmental effects have been incorporated into the design of the proposed development in order to avoid, reduce or offset negative changes. These measures are 'embedded mitigation' and are presented in Chapter 5: Proposed Development. They have been accounted for in each of the technical assessments, where relevant (see Chapters 6 to 10).

11.2 The residual effects of the proposed development have been assessed as part of the EIA and can be described as the effects which remain after the implementation of the embedded and any additional proposed mitigation measures. The residual effects have been identified for each category in the preceding technical chapters (Chapters to 10) and are summarised in Tables 11.1 to 11.6. It is expected that the appropriate mitigation measures will be secured through appropriately worded planning conditions. Reference should be made to the technical chapters for the definition of the significance of the effect stated.

11.3 Following the table is a discussion of the residual effects and a conclusion.

Table 11.1: Summary of Mitigation and Residual Effects – Scenario 1a – impacts of the proposed development only during Demolition and Construction

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
Ecology and Trees	Semi-Natural Woodland *(Regional Value)*	Certain loss of 1.05ha of young semi-natural woodland.	No mitigation proposed under this phase of development.	Minor Adverse
		Possible impact on adjacent retained woodland.	Implementation of tree protection measures as outlined within AMS.	Negligible
		Likely spread of Himalayan balsam during clearance works across site and wider area.	Implementation of invasive species mitigation strategy.	Neutral
	Bat Foraging & Commuting *(Local Value)*	Loss of available bat foraging habitat.	No mitigation proposed under this phase of development.	Minor Adverse
		Construction lighting impact on offsite retained commuting corridors and foraging habitat.	Implementation of lighting strategy which would include bat sensitive measures.	Negligible
	Breeding Birds *(Local Value)*	Loss of available bird nesting and foraging habitat.	No mitigation proposed under this phase of development.	Minor Adverse
		Potential for killing or injuring birds/destroying active nests through	Restrictions on vegetation clearance	Negligible

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
		vegetation clearance.	during nesting bird season (March to August inclusive). Outlined within CEMP	
Townscape and Visual	Site Character - change in site character due to the removal of all tree cover, removal of areas of hard standing and the demolition of Creamline Dairies.	Small adverse short-term change at the local level.	Best practice measures implemented via a CEMP.	Not significant
	View 1: Visible change with the demolition works to the Creamline Dairies, and the construction of the access haul road. There will be visible hoarding around the site and site compounds at the lower level of the view.	Small, adverse short- term change at the local level.	Best practice measures implemented via a CEMP..	Not significant
	View 2: Potential for some views of the tree removal works, however the nature of this change will be very small. The overall character of the view will	Small, adverse short-term change at the local level.	Best practice measures implemented via a CEMP.	Not significant

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
	be unchanged.			
	View 3: The construction and demolition works will be largely screened from this viewpoint by tree cover along Dalton Street. The overall composition of the view will be unchanged.	Negligible adverse short-medium term change at the local level.	Best practice measures implemented via a CEMP.	Not significant
	View 4: The demolition and construction works are predicted to be largely screened by existing woodland in the foreground of the view. There is predicted to be a minor change to the character of the view throughout the construction phase as a result of works to remove trees.	Small, adverse short-term change at the local level.	Best practice measures implemented via a CEMP.	Not significant
	View 5: The character of the view will change as a result of demolition and construction works due to proximity of the view to the site, and the elevation	Small, adverse short-term change at the local level.	Best practice measures implemented via a CEMP.	Minor significance

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
	of the view on the steps which allows for prospect over the eastern end of the site.			
Drainage and Flood Risk	Water quality impacts from sediment and contaminant runoff: River Irk	Moderate adverse	• Following standard construction best practice relating to pollution prevention. • Adequate construction drainage system to ensure runoff is treated prior to discharge from the site. • Emergency response procedures.	Minor adverse (not significant)
	Water quality impacts from sediment and contaminant runoff: Drain	Minor adverse		Negligible (not significant)
	Hydromorphology impacts: River Irk	Negligible	None required	Negligible (not significant)
	Hydromorphology impacts: Drain	Negligible		Negligible (not significant)
	Changing local drainage patterns due to construction activities:	Minor adverse	• Design of haulage road and suitable surface water drainage	Negligible (not significant)

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
	River Irk		system. • Construction site drainage system.	
	Changing local drainage patterns due to construction activities: Drain	Negligible		Negligible (not significant)
Ground Conditions	Human Health Construction workers and users of adjacent sites	Minor Beneficial, which is not significant	Remediation strategy, method statements, CEMP, MMP, SWMP, construction traffic management plan. Specific precautions in line with ALARP including dust suppression.	Negligible Beneficial, which is not significant
	Controlled Waters Principal aquifer (vertical migration of leachate)	Moderate Adverse, which is significant	Remediation strategy, method statements, CEMP, MMP, SWMP, construction traffic management plan. Specific management measures including removal and treatment of contaminated materials, phased construction plan, stockpile management	Negligible Adverse, which is not significant
	Controlled Waters	Moderate Adverse, which is significant	Remediation strategy, method statements,	Negligible Adverse, which

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
	Principal aquifer and River Irk (vertical and lateral migration from leachate)		CEMP, MMP, SWMP, construction traffic management plan. Specific management measures including removal and treatment of contaminated materials, phased construction plan, stockpile management	is not significant
	Controlled Waters - River Irk (surface runoff)	Minor Adverse, which is not significant	Remediation strategy, method statements, CEMP, MMP, SWMP, construction traffic management plan. Specific management measures including removal and treatment of contaminated materials, phased construction plan, stockpile management	Negligible Adverse, which is not significant
Climate Change	GHG assessment – potential for additional and avoidable GHG emissions	Significant effect	Material reuse, managed and implemented via MMP. Best practice measures implemented via a CEMP	Significant effect
	Climate Change Resilience	Scoped out of the assessment as the construction programme is not expected to be long enough to experience any notable	n/a	n/a

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
		changes in the climate		

Table 11.2: Summary of Mitigation and Residual Effects – Scenario 1b – Impacts of the proposed development alongside Applications 2, 3 and 4 during Demolition and Construction.

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
Ecology and Trees	Semi-Natural Woodland *(Regional Value)*	No effects on woodland habitat are anticipated to arise from Applications 3 or 4. Applications 1 and 2 would have certain loss of woodland.	Commitment to achieve 10% BNG for the combined applications, losses arising from Applications 1 & 2 will be adequately mitigated or compensated.	Negative significant effect but only at the Local level in the short term changing to positive significant effect in the medium to long term (CIEEM). Minor Adverse changing to minor beneficial in the medium to long term (traditional)
	Bat Foraging & Commuting *(Local Value)*	Loss of available bat foraging & commuting habitat as a result of Applications 1, 2 and 3. No loss of bat foraging or commuting habitat is anticipated as a result of Application 4.	Commitment to achieve 10% BNG for the combined applications, losses of bat foraging and commuting habitat arising from Applications 1, 2 &	No significant effect (CIEEM) Negligible (Traditional)

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
			3 will be adequately mitigated or compensated. The River Irk will be enhanced under Application 3 which will improve the quality of existing bat foraging and commuting habitat.	
		Construction lighting impact on offsite retained commuting corridors and foraging habitat.	Implementation of lighting strategy which would include bat sensitive measures.	No significant effect (CIEEM) Negligible (Traditional)
	Breeding Birds *(Local Value)*	Loss of available bird nesting habitat as a result of Applications 1, 2 and 3. No loss of nesting bird habitat is anticipated as a result of Application 4.	Commitment to achieve 10% BNG for the combined applications, losses of nesting bird habitat arising from Applications 1, 2 & 3 will be adequately mitigated or compensated habitat.	No significant effect (CIEEM) Negligible (Traditional)
Townscape and	Change to townscape receptors including	Moderate, adverse short-term change at	Best practice measures	Moderately significant

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
Visual	landscape character, urban grain, land use, building heights, movement and linkages, environmental designations and public opens space as a result of demolition and construction works. All views : Potential for change to in the character and composition of all views due to the close-range views of new demolition and construction works.	the neighbourhood level.	implemented via a CEMP.	
Drainage and Flood Risk	Impacts on the River Irk	Moderate adverse	• Following standard construction best practice relating to pollution prevention. • Identifying additional mitigation for pollution prevention and potential impacts on hydromorphology	Minor adverse (not significant)
	Impacts on the drain	Minor adverse		Negligible (not significant)

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
			where required for works within the river corridor. • Adequate construction drainage system to ensure runoff is treated and attenuated prior to discharge from the site. • Emergency response procedures.	
Ground Conditions	Similar to Assessment Scenario 1a; Human Health Controlled Waters	Human Health - Minor Beneficial, which is not significant Controlled Waters - Moderate Adverse, which is significant - Minor Adverse, which is not significant	Best practice measures will be committed to, and implemented using typical management measures, such as through a CEMP etc. Specific mitigation measures required in respect of any issues pertinent to those future applications will be identified and agreed within the	Expected to be similar to Scenario 1a, however design works are still at an early stage

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
			scope of the assessments prepared and submitted with those applications	
	Controlled Waters Principal aquifer (vertical migration)	Minor Adverse, which is not significant		Negligible Adverse, which is not significant
Climate Change	GHG assessment	Significant effect	Best practice measures implemented via a CEMP	Significant effect
	CCR assessment	Scoped out of the assessment as the construction programme is not expected to be long enough to experience any notable changes in the climate.	n/a	n/a

Table 11.3: Summary of Mitigation and Residual Effects – Scenario 1c – Impacts of the proposed development alongside Applications 2, 3 and 4, and the wider SRF during Demolition and Construction

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
Ecology and Trees	Semi-Natural Woodland *(Regional Value)*	No effects on woodland habitat are anticipated to arise from Applications 3 or 4. Applications 1 and 2 would have certain loss of woodland. It is anticipated there will be woodland losses in the wider SRF.	Commitment to achieve 10% BNG, losses arising from Application 1 & 2 will be adequately mitigated or compensated. It is anticipated commitments within the Northern Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated.	Negative significant effect but only at the Local level in the short term changing to positive significant effect in the medium to long term (CIEEM). Minor Adverse changing to minor beneficial in the medium to long term (Traditional).
	Bat Foraging & Commuting *(Local Value)*	Loss of available bat foraging habitat as a result of Applications 1, 2 and 3. No loss of bat foraging or commuting habitat is anticipated as a result of Application 4. It is anticipated there will be losses of bat commuting & foraging habitat in the wider SRF.	Commitment to achieve 10% BNG, losses arising from Application 1 & 2 will be adequately mitigated or compensated. It is anticipated commitments within the Northern	No significant effect (CIEEM) Negligible (Traditional)

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
			Gateway Biodiversity Plan will ensure losses are adequately mitigated or compensated.	
		Construction lighting impact on offsite retained commuting corridors and foraging habitat.	Implementation of lighting strategy which would include bat sensitive measures.	No significant effect (CIEEM) Negligible (Traditional)
	Breeding Birds *(Local Value)*	Loss of available bird nesting and foraging habitat as a result of Applications 1, 2 and 3. No loss of nesting bird habitat is anticipated as a result of Application 4. It is anticipated there will be losses of nesting bird habitat in the wider SRF.	Commitment to achieve 10% BNG for the combined applications, losses of nesting bird habitat arising from Applications 1, 2 & 3 will be adequately mitigated or compensated habitat.	No significant effect (CIEEM) Negligible (Traditional)
		Potential for killing or injuring birds/destroying active nests through vegetation clearance during Applications 1, 2, and 3. Potential for killing or injuring	Restrictions on vegetation clearance during nesting bird season (March to August inclusive). Outlined	No significant effect (CIEEM) Negligible (Traditional)

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
		birds/destroying active nests through vegetation clearance during is not anticipated as a result of Application 4. It is anticipated there will be potential for killing or injuring birds/destroying active nests through vegetation clearance in the wider SRF.	within CEMP	
Townscape and Visual	Change to townscape receptors including landscape character, urban grain, land use, building heights, movement and linkages, environmental designations and public opens space as a result of demolition and construction works. Change will signal positive regeneration of the area and the likely phased approach to development will restrict the overall magnitude of effect. All views : Potential for change to in the character and composition of all views due to the close-range views of new demolition and	Moderately, adverse short-term change at the neighbourhood level.	Best practice measures implemented via a CEMP.	Moderately significant

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
	construction works. Change to views will signal positive regeneration of the area and the likely phased approach to development will restrict the overall magnitude of effect.			
Drainage and Flood Risk	Impacts on the River Irk	Moderate adverse	• Following standard construction best practice relating to pollution prevention. • Identifying additional mitigation for pollution prevention and potential impacts on hydromorphology where required for works within the river corridor. • Adequate construction drainage system to ensure runoff	Minor adverse (not significant)
	Impacts on the drain	Minor adverse		Negligible (not significant)

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
			is treated and attenuated prior to discharge from the site. • Emergency response procedures.	
Ground Conditions	Similar to Assessment Scenario 1b; Human Health Controlled Waters	Human Health - Minor Beneficial, which is not significant Controlled Waters - Moderate Adverse, which is significant - Minor Adverse, which is not significant	Best practice measures will be committed to, and implemented using typical management measures, such as through a CEMP etc. Specific mitigation measures required in respect of any issues pertinent to those future applications will be identified and agreed within the scope of the assessments prepared and submitted with those applications	Expected to be similar to Scenario 1b, however design works are still at an early stage

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
Climate Change	GHG assessment	Significant effect	Best practice measures implemented via a CEMP	Significant effect
	CCR assessment	Significant effect	Use of mitigation hierarchy to influence the design of applications 2,3 4 and the wider SRF.	Significant effect

Table 11.4: Summary of Mitigation and Residual Effects – Scenario 2a – Impacts of the proposed development only during Completed Development and Operation

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
Ecology and Trees	There are no further residual effects at the completed/operational phase of the development	None	n/a	None
Townscape and Visual	Site Character: The character of the view will be changed during the operational phase due to the nature of the works proposed which result in tree clearance, modified ground levels and installation of the new haul road.	Small, neutral long-term term change at the local level	No additional mitigation/enhancement proposed under this phase of development.	Not significant
	View 1: The character of the view will be changed. The existing view of Creamline Dairies will be replaced by views of the new access to the haul road.	Small long-term change at the local level which is adverse in nature.	No additional mitigation/enhancement proposed under this phase of development.	Not significant
	View 2: Potential for a minor change in the view due to the removal of	Small, adverse long-term change at the local level.	No additional mitigation/enhancement proposed under this	Not significant

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
	trees from the site. Views of the haul road will be screened by intervening trees.		phase of development.	
	View 3: Potential for a very minor change in the view due to the removal of trees from the site. Views of the haul road will be screened by intervening trees.	Negligible, adverse long-term change at the local level.	No additional mitigation/enhancement proposed under this phase of development.	Not significant
	View 4: Minor change to the character of the view due to a reduction in tree cover. Views of the haul road will be screened by intervening trees.	Small long-term change that is neutral in nature at the local level.	No additional mitigation/enhancement proposed under this phase of development.	Not significant
	View 5: Minor change in the character of the view with partial views of the new haul road replacing the existing low quality hard standing.	Small long-term change that is neutral in nature at the local level.	No additional mitigation/enhancement proposed under this phase of development.	Not significant
Drainage and Flood Risk	Water quality impacts from accidental spills:	Moderate adverse	Emergency response procedures.	Minor adverse (not significant)

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
	River Irk			
	Water quality impacts from accidental spills: Drain	Minor adverse		Negligible (not significant)
	Hydromorphology impacts: River Irk	Negligible	None required.	Negligible (not significant)
	Hydromorphology impacts: Drain	Negligible		Negligible (not significant)
	Changing local drainage patterns due to drainage of haul road: River Irk	Minor adverse	• Design of haulage road and suitable surface water drainage system. • Maintenance of drainage system.	Negligible (not significant)
	Changing local drainage patterns due to drainage of haul road: Drain	Negligible		Negligible (not significant)
Ground Conditions	Human Health Adjacent site users	Minor Adverse, which is not significant	EW Completion and Validation Report including health and safety file under CDM. Use of appropriate control measures during the post-construction phase which are standard	Negligible Adverse, which is not significant

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
			for brownfield development.	
	Human Health Future site users	Minor Beneficial, which is not significant	The acceptable chemical content of imported fill materials will have been determined and verified through MMP.	Minor Beneficial, which is not significant
	Human Health Maintenance Workers	Negligible, which is not significant	EW Completion and Validation Report including health and safety file under CDM. Specific precautions in line with ALARP including dust suppression.	Negligible, which is not significant
	Human Health Future Construction Workers	Minor Adverse, which is not significant	EW Completion and Validation Report including health and safety file under CDM Specific precautions in line with ALARP including dust suppression. Use of appropriate control measures during the post-construction phase which are standard for	Negligible Adverse, which is not significant

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
			brownfield development.	
	Controlled Waters Principal aquifer and River Irk (vertical and lateral migration from leachate)	Minor Adverse, which is not significant	Specific management measures including removal and treatment of contaminated materials, phased construction plan, stockpile management. Use of appropriate control measures during the post-construction phase which are standard for brownfield development.	Negligible Adverse, which is not significant
	Phytotoxicity	Negligible, which is not significant	No new planting is proposed at this stage in the development.	Negligible, which is not significant
	Buried Structures	Minor Adverse, which is not significant	Specific management measures during construction phase including removal and treatment of contaminated materials. Assessment of the available site data relevant to this risk is currently underway. Once complete, it will be possible to assess the	Negligible Adverse, which is not significant

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
			aggressivity of ground and to confirm appropriate measures required to safeguard against this.	
Climate Change	GHG assessment – potential for additional and avoidable GHG emissions	Scoped out of the assessment due to the nature of scenario 2a (i.e. the short, temporary programme prior to future, associated development)	n/a	n/a
	Climate Change Resilience	Scoped out of the assessment as the operational programme, prior to future development is not expected to be long enough to experience any notable changes in the climate	n/a	n/

Table 11.5: Summary of Mitigation and Residual Effects – Scenario 2b – Impacts of the proposed development alongside Applications 2, 3 and 4 during Completed Development and Operation.

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
Ecology and Trees	Semi-Natural Woodland *(Regional Value)*	Increase in public pressure entering St. Catherine's Wood.	Ongoing woodland management is anticipated to form mitigation associated with Application 2. A series of footpaths/ boardwalks throughout the woodland designed to direct public pressure & reduce impact on surrounding ground flora.	No significant effect (CIEEM) Negligible (Traditional)
	Bat Foraging & Commuting *(Local Value)*	Operational lighting impact on offsite retained and newly planted commuting corridors and foraging habitat associated with Application 4.	Implementation of lighting strategy which would include bat sensitive measures.	No significant effect (CIEEM) Negligible (Traditional)
Townscape and Visual	Change to townscape receptors including landscape character, urban grain, land use, building heights, movement and linkages, environmental designations and public	Moderate, beneficial long-term change at the neighbourhood level.	No additional mitigation/enhancement proposed under this phase of development.	Moderately significant

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
	opens space once completed and operational. All views : Potential for change to in the character and composition of all views due to the close-range views once completed and operational			
Drainage and Flood Risk	Impacts on the River Irk	Moderate adverse	• Design of works within river corridor to ensure off-site fluvial flood risk is not increased. • Site wide drainage strategy includes separate systems for foul and surface water and should reduce runoff rates from the site. • Works within the river corridor will aim to have a neutral or beneficial impact on channel morphology (if found to be possible), or off-site mitigation will be	Minor adverse (not significant)
	Impacts on the drain	Minor adverse		Negligible (not significant)

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
			used to off-set impacts.	
Ground Conditions	Similar to Assessment Scenario 2a; Human Health Controlled Waters Phytotoxicity Buried Structures	Human Health - Minor Adverse, Minor Beneficial, Negligible, which are not significant Controlled Waters - Minor Adverse, which is not significant Phytotoxicity - Negligible, which is not significant Buried Structures - Minor Adverse, which is not significant	Best practice measures will be committed to and implemented using typical management measures. Specific mitigation measures required in respect of any issues pertinent to those future applications will be identified and agreed within the scope of the assessments prepared and submitted with those applications	Expected to be similar to Scenario 2a, however design works are still at an early stage
Climate Change	GHG assessment	Significant effect	Use of mitigation hierarchy to influence the design of applications 2,3 and 4.	Significant effect
	CCR assessment	Significant effect		Not significant effect

Table 11.6: Summary of Mitigation and Residual Effects – Scenario 2c – Impacts of the proposed development alongside Applications 2, 3 and 4, and the wider SRF during Completed Development and Operation

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
Ecology and Trees	Semi-Natural Woodland *(Regional Value)*	Increase in public pressure entering woodland.	Ongoing woodland management is anticipated to form mitigation associated with Application 2.	No significant effect (CIEEM) Negligible (Traditional)
	Bat Foraging & Commuting *(Local Value)*	Operational lighting impact on offsite retained and newly planted commuting corridors and foraging habitat associated with Application 4 and anticipated in the wider SRF.	Implementation of lighting strategy which would include bat sensitive measures.	No significant effect (CIEEM) Negligible (Traditional)
Townscape and Visual	Change to townscape receptors including landscape character, urban grain, land use, building heights, movement and linkages, environmental designations and public opens space once completed and operational. All views : Potential for change to in	Major, beneficial long-term change at the neighbourhood level.	No additional mitigation/enhancement proposed under this phase of development.	Significant

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
	the character and composition of all views due to the close-range views once completed and operational.			
Drainage and Flood Risk	Impacts on the River Irk	Moderate adverse	• Design of works within river corridor to ensure off-site fluvial flood risk is not increased. • Site wide drainage strategy includes separate systems for foul and surface water and should reduce runoff rates from the site. • Works within the river corridor will aim to have a neutral or beneficial impact on channel morphology (if found to be possible), or off-site mitigation will be used to off-set impacts.	Minor adverse (not significant)
	Impacts on the drain	Minor adverse		Negligible (not significant)

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
Ground Conditions	Similar to Assessment Scenario 2b; Human Health Controlled Waters Phytotoxicity Buried Structures	Human Health - Minor Adverse, Minor Beneficial, Negligible, which are not significant Controlled Waters - Minor Adverse, which is not significant Phytotoxicity - Negligible, which is not significant Buried Structures - Minor Adverse, which is not significant	Best practice measures will be committed to and implemented using typical management measures. Specific mitigation measures required in respect of any issues pertinent to those future applications will be identified and agreed within the scope of the assessments prepared and submitted with those applications	Expected to be similar to Scenario 2b, however design works are still at an early stage
Climate Change	GHG assessment	Significant effect	Use of mitigation hierarchy to influence the design of applications 2,3 4 and the wider SRF.	Significant effect
	CCR assessment	Significant effect	Most weather and climate-related resilience effects during operation are expected to be mitigated through measures embedded in	Not significant effect

Category	Description of Effect	Description of Potential Effects Including Significance	Mitigation Measures	Residual Effect Including Significance
			the design of applications 2,3,4 and the wider SRF as a result of meeting current planning, design and engineering practice and codes.	

Summary and Conclusions

11.4 An assessment of the potential effects of the demolition and construction, and operational phases of the proposed development has been undertaken as part of this EIA to establish the environmental changes associated with the proposals.

11.5 The proposed development has been designed in accordance with the findings and recommendations of the EIA. Any adverse effects identified through the assessment have been minimised as far as possible through the design process or the application of appropriate mitigation measures.

11.6 Residual effects during the demolition and construction stage are considered to be short term, temporary in nature, and are not significant in the main.

11.7 Removal of 1.05ha of semi-natural broad-leaved woodland, which is predominantly self-seeded silver birch Betula pendula regeneration, will be a permanent effect of the proposed development. Due to the nature of the proposed development, the ecological impacts cannot be mitigated for as part of this application, however, it is anticipated that planned future applications for the area (Applications 2,3 and 4) will include sufficient landscaping measures, including habitat creation and enhancement, to result in no significant residual effect. Additionally, there is a commitment to achieving at least 10% Biodiversity Net Gain across the Red Bank Neighbourhood development.

11.8 Significant effect relating to GHG emissions associated with the demolition and construction of the proposed development is expected, although this will be minimised as far as possible by the reuse of material on site and best practice measures implemented during the construction phase.

11.9 Such best practice measures will be implemented via an overarching CEMP. In addition, a range of management plans are proposed to ensure any potential environmental effects as a result of the proposed development are minimised. These include, but are not limited to:

- Invasive Species Management Plan (ISMP).
- Materials Management Plan (MMP).
- Site Waste Management Plan (SWMP).
- Construction Traffic Management Plan (CTMP).

11.10 No significant residual effects are expected as a result of the proposed development once completed.

11.11 An assessment of the proposed development in the context of the wider development project at Red Bank Neighbourhood, and considering the wider SRF, has been undertaken. In respect of ecology and trees, no new or

increased adverse effects on the ecological features identified during the assessment of the proposed development, wider development project and the wider SRF are predicted to arise. As previously noted, there is a commitment to achieve 10% BNG for the combined applications via both on and off-site provision and a range of best practice ecological mitigation measures to manage the ecological enhancement proposed. There are likely to be temporary, moderately significant adverse effects during demolition and construction for both townscape and views due to the extent of the works proposed. Change to views will signal positive regeneration of the area. Once completed, there are predicted to be permanent, moderately significant beneficial effects, again for both townscape and views. There are no significant adverse effects likely in respect of drainage and flood risk. There is the opportunity for beneficial effects during the operational phase of the wider development, for example through the site wide drainage strategy reducing runoff rates. Impacts relating to ground conditions are not predicted to be significant, assuming best practice mitigation measures all implemented. Overall, the proposed development, considered in the context of the wider development project, will facilitate redevelopment of an existing poor quality environment, and the delivery of the aspirations of the Northern Gateway SRF, and with it a range of beneficial impacts.

11.12 The proposed development constitutes sustainable development in accordance with the NPPF when taken as a whole. It is an essential area of regeneration to improve the area immediately adjacent Manchester City Centre. Significant change and regeneration is planned for the surrounding area as presented in the Northern Gateway SRF and this planning application will facilitate an early start on site and clear a path for the main infrastructure, flood works and, ultimately, residential development proposed by associated successive prospective planning applications at the site.