



Plot C, Sister

Environmental Statement: Volume 1

May 2025

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1. Introduction

- 1.1. This Environmental Statement ('ES') has been prepared in respect of three applications for planning permission and listed building consent concerning the redevelopment of part of 'Sister,' a Strategic Regeneration Area known as Plot C in Manchester City Centre. As such, the proposals form a key component of realising Sister's ambitions to transform the former University of Manchester Institute of Science and Technology (UMIST) campus into a 4 million sq. ft. globally competitive innovation district, including 2 million sq. ft. of commercial and retail space, and over 1,500 homes.
- 1.2. Plot C falls under within Zone C of the ID Manchester Strategic Regeneration Framework (2023) ('the SRF') and will be hereby referred to solely as Plot C. ID Manchester has since been rebranded as 'Sister' and shall be referred to as such throughout this Statement.
- 1.3. The Applicants are ID Manchester Ltd and University of Manchester ('the Applicants'). ID Manchester Ltd is a joint venture ('JV') between Bruntwood SciTech Ltd and the University of Manchester formed to deliver Sister.
- 1.4. The three applications, which are being submitted concurrently to Manchester City Council ('MCC') and which form the 'Proposed Development' are as follows:
 - **Full Planning Application:** An application for Full Planning Permission for the construction of an office-led development ('the Planning Application') with the following formal description of development:

Full Planning Application for phased development comprising: Phase A - demolition of existing buildings and structures, erection of a basement (C1 Building and C2 Building) and a podium across lower ground and upper ground floors comprising flexible commercial space (Class E and/ or Sui Generis – drinking establishment), erection of a building (C1 Building) to form offices (Class E), landscaping works, highways, access, servicing, infrastructure and other associated works; Phase B – erection of a podium across lower ground and upper ground floors and a new building (C2 Building) to form offices (Class E) and flexible commercial and community uses (Class E, F2 and/ or Sui Generis – drinking establishment), alterations to the existing Sculptural Wall (Hollaway Wall), relocation of existing art work, landscaping works, highways, access, servicing, infrastructure and other associated works; Phase C - change of use and associated works to railway Viaduct arches to form flexible commercial units (Class E, and/ or Sui Generis - drinking establishment) including highways, access and servicing arrangements, and other associated works.
 - **Hollaway Wall Listed Building Consent ('LBC'):** An application for Listed Building Consent, relating to changes to Hollaway Wall, ('the Hollaway Wall LBC'). The description of Development is as follows:

Listed Building Consent for alterations to Sculptural Wall (Hollaway Wall), to encapsulate the all within new office building (C2 Building), as part of mixed use development proposals comprising offices use (Class E) and flexible commercial and community uses (Class E, F2 and/ or Sui Generis – drinking establishment).
 - **Viaduct LBC:** An application for Listed Building Consent, relating to the Manchester South Junction and Altrincham Railway Viaduct ('the Viaduct') ('the Viaduct LBC'). The description of Development is as follows:

Listed Building Consent for alterations to Manchester South Junction and Altrincham Railway Viaduct to facilitate the change of use to form flexible commercial units (Class E, and/ or Sui Generis - drinking establishment).

- 1.5. Please note that for the remainder of this statement ‘the Site’ and ‘Proposed Development’ refers to each of the three concurrent applications.

The Site

- 1.6. Figure 1.1 shows the location of the site in its local context as well as the application boundary edged in red alongside the Applicants’ wider ownership identified in blue.
- 1.7. The Site is bound by Vimto Park and the rear of buildings fronting onto Granby Row to the north, London Road to the east, Jackson’s Mill and the Maths and Social Sciences (MSS) Tower to the south, and the Renold Building to the west.
- 1.8. The Site is partially located within the Whitworth Street Conservation Area, with the north aspect of the Plot C boundary (Viaduct) forming the Conservation Area boundary. The Site therefore forms part of the designated area.
- 1.9. The Site is located within the Piccadilly Ward in Manchester City Centre, including significant levels of current or planned private sector investment near to the site at Mayfield and London Road Fire Station for example.
- 1.10. Please refer to Chapter 4 of this Environment Statement for further details on the Site Context.
- 1.11. This ES sets out the findings of an Environmental Impact Assessment (‘EIA’) carried out in respect of the Proposed Development of the Site.

Requirements for EIA

- 1.12. The EIA process is the mechanism by which development proposals are appraised in terms of their likely environmental effects, in addition to engineering and technical considerations.
- 1.13. The purpose of the EIA is to establish the nature of the Proposed Development and the environment in which it is likely to take place, during both construction and operational phases, as to identify the likely significant effects on the environment. The assessment compares the existing situation at the start of the work (baseline) with the situation during demolition, construction and operation.
- 1.14. The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the ‘EIA Regulations’) require that any Proposed Development falling within the description of a ‘Schedule 2 development’ (as defined within the meaning of the EIA Regulations), will be subject to an EIA where such development is likely to have ‘significant’ effects on the environment by virtue of such factors as its nature, size or location (Regulations 2(b))
- 1.15. The Proposed Development is considered likely to fall under the category of ‘urban development projects’ (Schedule 2, 10, (b)) where:
- The development includes more than 1 hectare of urban development which is not dwellinghouse development; or
 - The development includes more than 150 dwellings; or
 - The overall area of the development exceeds 5 hectares
- 1.16. The Site covers an area of approximately 2.2 ha, which exceeds the threshold in relation to parts (i) listed in Schedule 2, 10, (b) of the Regulations. In addition, given that the Proposed Development results in development of a greater scale than the existing use, an EIA is therefore considered appropriate to test the likely significant effects of the Proposed Development.
- 1.17. A formal EIA scoping request was submitted to MCC on 20 February 2025 requesting formal confirmation of the proposed scope of the Environmental Impact Assessment required in respect of the Proposed Development. A formal scoping opinion was received on 7th April. The technical Chapters are based on a scope of assessment that has been agreed with the relevant statutory consultees through the scoping exercise. A copy of the EIA Screening and Scoping Report and the Scoping Opinion is included in Appendix 2.1 and 2.2 of this ES.
- 1.18. In accordance with the EIA Regulations, this ES sets out the following information:

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

Project Team

- 1.19. Deloitte has significant experience and expertise in managing the EIA process and hold the IEMA EIA Quality Mark. Details of the Project Team, EIA Technical Team and qualifications are set out in Table 1.2 and Table 1.3 below.

Table 1.2: Project Team and Technical Discipline

Consultant	Technical Disciplines
Deloitte	Planning and EIA Co-ordinator
Allies and Morrison	Architecture and design
Layer Studios	Townscape and Visual Impact
Heritage Architecture	Heritage
Buro Happold	Air Quality
Sol Acoustics	Noise and Vibration
GIA	Daylight/Sunlight/Overshadowing and Solar Glare
HND Civil Engineering	Water Resources and Structural
GIA	Wind
Buro Happold	Climate Change
Ekosgen	Socio Economic
Buro Happold	Human Health
Pager Power	Broadband Connectivity, Aviation, TV Reception
Civic Earth	Ground Conditions
Civic	Traffic and Transport
Tyler Grange	Ecology
BWB	Archaeology
Greater Manchester Police	Crime and Security

Table 1.3 EIA Technical Team

Topic	EIA Consultant	Qualifications
EIA Coordinator	Deloitte	IEMA, MRTPI, MPlan, BA (Hons)

IEMA Quality Mark Registered		
Construction and Demolition	Bruntwood Sci Tech	
Townscape and Visual Impact	Layer Studios	Chartered Member of Landscape Institute
Heritage	SLHA	BA (Hons), MA (Hons), MSc, IHBC
Air Quality	Buro Happold	MMet AMIAQM, BSc MIAQM
Noise and Vibration	Sol Acoustics	BEng (Hons), MSc (Res), MIOA
Daylight/Sunlight/Overshadowing	GIA	LLB (Hons)
Solar Glare	GIA	MBSoc
Wind	GIA	Meng, PHD
Ground Conditions	Civic Earth	BEngm CSci, CEnv, MEnvSc, Mscxm MSci (Hons), CGeol, FGS, ARSM, ROGEP
Climate Change	Buro Happold	BSc Environmental Geoscience, MSc Water Resource Management, MSc Climate Change, MSc Environmental Management
Human Health	Buro Happold	BSc Urban Sociology, MSc Local Economic Development
Socio Economic	Ekosgen	BA (Hons) Geography, Member of the Institute of Economic Development
Traffic and Transport	Civic	MEng

Phasing

1.20. It is understood the Proposed Development will be phased. It is anticipated that the first phase of development will include the demolition and enabling works across the Site and continue into the delivery of the first commercial building (Building C1).

1.21. The Proposed Development has been split into 3 phases, consisting of the following:

Phase A

- Demolition of all existing buildings and structures located on Site (Barnes Wallis and Wright Robinson Building, MMP, Moffat Building, Morton Laboratory, Butterfly Stairs);
- Erection of the basement for C1 Building and C2 Building and podium across lower ground and upper ground floors comprising flexible commercial and community uses (Use Class E / Sui Generis);
- Erection of the office C1 Building (Use Class E);
- Landscaping works including the creation of a new civic square and the introduction of new stairs and ramp access; and
- Access and servicing arrangements, including the creation of a service tunnel, and other associated works.

Phase B

- Erection of the office C2 Building (Use Class E) with flexible commercial floorspace (Use Class E and/or Sui Generis);
- Interventions to the Grade II Listed Hollaway Wall, to be encapsulated within C2 Building;
- Restoration and relocation of existing artwork on Site; and
- Associated landscaping, access and servicing works.

Phase C

- Change of use and associated works the Grade II Listed Viaduct arches to form flexible commercial units (Use Class E, and/ or Sui Generis); and
- Associated landscaping, access and servicing works.

- 1.22. The Phasing Plan as shown in Figure 1.2, prepared by Allies and Morrison ('AAM'), visually demonstrates the proposed phasing across various levels.
- 1.23. Phase B may be delivered sequentially or overlapping with Phase A. In all cases Phase A will begin first.
- 1.24. It is anticipated that Phase C could come forward at any point in the development, independent of delivery of Phases A and B.

EIA Scenarios

Scenarios

- 1.25. The scenarios to be tested within the EIA take into the account the anticipated phasing of development and the range of committed or reasonably foreseeable developments anticipated to come forward within the study area. With regards to EIA scenarios, the Sister Masterplan has been referred to as 'IDM Masterplan' in lieu of the IDM (Sister) SRF.
- 1.26. The scenarios are as follows:

Table 1.4: Scenarios

Scenario 1	Baseline Conditions (existing Site as of February 2025 including developments defined within the Baseline section of the committed development schedule in Appendix 2.3)
Scenario 2	Baseline + Phase A + Phase C
Scenario 3	Baseline + Phase A + Phase C + Cumulative
Scenario 4	Baseline + Phase A + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative
Scenario 5	Baseline + Phase A + Phase B + Phase C
Scenario 6	Baseline + Phase A + Phase B + Phase C + Cumulative
Scenario 7	Baseline + Phase A + Phase B + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative
Scenario 8	Baseline + Phase C

Table 1.5 EIA Scenarios to be assessed

Topic	Scenarios Assessed
Townscape and Visual Impact	1,5,6,7
Wind	1, 2, 3, 5, 5a, 6, 6a
Daylight, Sunlight and Overshadowing	1, 2, 5
Solar Glare	5
Socio-Economic	1, 2, 3,5,6,7
Climate Change	1, 5
Traffic and Transport	1, 5, 6, 7
Air Quality	1, 6, 7
Noise and Vibration	1,2,3,5,6,7,8
Ground Conditions	1,2,5
Built Heritage	1,2,3,4,5,6,7,8
Human Health	1,5,6,7

Organisation of the Environmental Statement

- 1.27. This ES comprises 19 Chapters and is supported by figures (located at the back for each Chapter within Volume 1) and technical appendices (within a separate Volume 2). A non-technical summary (NTS) of the full ES is provided as a separate standalone document.
- 1.28. Figures have been referenced using the Chapter number as a prefix followed by the number of the figure within a given Chapter. Appendices have been referenced in the same way but due to their size they are contained separately in Volume 2. Table 1.3 sets out the structure of the ES.

Table 1.6: Structure of this Environmental Statement

Chapter No.	Chapter Title	Description
VOLUME 1		
1.	Introduction	Introduction to the ES, EIA requirements, details of the project team, ES organisation and availability.
2.	EIA Methodology	Methods used to prepare each Chapter, description of ES structure and content, generic significance criteria, scoping and consultation.
3.	Alternatives and Design Evolution	Outline of the main alternatives considered by the Applicants.
4.	Site and Description of Development	Site description and details of the Proposed Development.
5.	Construction Management – Programme and Methodology	Details of anticipated programme for development and construction methodology.

Chapter No.	Chapter Title	Description
6.	Built Heritage	To assess the likely significant effects of the Proposed Development in relation to on and off-site heritage assets, both in terms of physical and visual impact.
7.	Townscape and Visual Impact	To assess the likely significant effects of the Proposed Development in relation to townscape and visual impact.
8.	Air Quality	To assess the potential air quality impacts associated with the Proposed Development due to changes in traffic flows, construction etc. It also includes a cumulative assessment of impacts.
9.	Climate Change	To assess the nature and magnitude of Greenhouse Gas Emissions, which are likely to arise from the Proposed Development during construction and operation, and the impact of this contribution towards climate change, in addition to mitigation measures required to minimise this contribution.
10.	Wind	To assess the likely significant effects of the Proposed Development in relation to environmental wind.
11.	Solar Glare	To assess the impacts on identified receptors (e.g. rail, road and light rail users) in relation to reflections of sunlight off the building in key locations.
12.	Human Health	To assess the likely significant effects of the Proposed Development on human health.
13.	Socio Economic	To assess the likely socio-economic impacts of the Proposed Development upon the Site and surrounding area.
14.	Traffic and Transport	To consider the level of traffic to be generated and its potential impact on existing highways, accessibility to public transport and access / servicing requirements.
15.	Daylight, Sunlight and Overshadowing	To assess the impacts of the Proposed Development in relation to daylight and sunlight for nearby residential properties and overshadowing in relation to relevant public spaces.
16.	Noise and Vibration	To assess the likely significant effects of the Proposed Development in relation to noise and vibration.
17.	Ground Conditions	To assess potential ground contamination or landfill gas migration, including the previous uses of the Site.
18.	Summary of Residual Effects	Summary of residual effects of the Proposed Development (including cumulative impacts alongside other committed developments).
19.	Type 1 Cumulative Effects	An assessment of the combined effects arising from the Proposed Development upon a set of defined sensitive receptors.

Chapter No.	Chapter Title	Description
VOLUME 2	Technical Appendices	Technical data and reports to support the Chapters in Volume 1.
	Non-Technical Summary	A short concise document written in a non-technical language, necessary to meet the requirements of the EIA Regulations, to make the ES accessible to a non-technical audience.

Other Documents

- 1.29. Together with this ES and its appendices, the following documents will be submitted to MCC in support of the planning application:

Table 1.7: Planning Application Supporting Documents

Application Documentation	Author
Accommodation Schedule	AAM
Design and Access Statement (including landscaping statement, lighting strategy and landscaping management strategy)	AAM (and SLA)
Application Form	Deloitte
Covering letter	Deloitte
Site Location Plan	AAM
Existing Site Plans and Elevations	AAM
Proposed Plans, Elevation and Sections	AAM
Phasing Plan	AAM
Listed building drawings (Hollaway Wall and Viaduct)	AAM
Planning and Tall Building Statement (incl. Public Benefits Statement)	Deloitte
Statement of Consultation	Deloitte
Flood Risk Assessment	Civic
Drainage Strategy Report	Civic

Application Documentation	Author
Aviation Safeguarding Technical Note	G-Tech
Archaeological Assessment	BWB
Framework Travel Plan	Civic
Operational Waste Strategy (and completed Waste Pro-Forma)	Civic
Environmental Standards Statement (including Energy Statement and BREEAM Pre-assessment) <ul style="list-style-type: none"> Energy and Carbon ProForma 	Buro Happold
Ventilation Statement	Buro Happold
Crime Impact Statement	GMP
Terrestrial Television Baseline Survey Report	Pager Power
Desk-Based Satellite Television Interference Assessment	Pager Power
Broadband Connectivity Survey	Pager Power
Green and Blue Infrastructure	Deloitte
Placemaking Strategy	ID Manchester Limited
Hollaway Wall Structural Appraisal & Outline Methodology Report	Civic
Circular Economy Statement	Buro Happold
Outline Operational Management Strategy	ID Manchester Limited
Detailed Unexploded Ordnance (UXO) Risk Assessment	1st Line Defence
Local Labour Agreement	ID Manchester Limited
Ecological Impact Assessment	Tyler Grange
Habitat Features Plan	Tyler Grange
Arboriculture Impact Assessment	Tyler Grange

Application Documentation		Author
Statutory Biodiversity Metric		Tyler Grange
Public Art Strategy		Bruntwood Sci-Tech
<ul style="list-style-type: none"> Appendix 1 – Sister Manchester: Public Art Approach Appendix 2 – Conservation Report Appendix 3 Exploratory Study Report 		<ul style="list-style-type: none"> SLA Lowri Morris M&G
Topographic Survey		Survey and Engineering Projects
Event Strategy		Bruntwood Sci-Tech
Environmental Statement		
Volume 1: Environmental Statement including:		EIA team
<ul style="list-style-type: none"> Introduction Methodology Alternatives and Design Evolution Site and Description of Development Construction Management – Programme and Methodology Built Heritage Townscape and Visual Impact Air Quality Climate Change Wind Solar Glare Human Health Socio Economic Traffic and Transport Daylight, Sunlight and Overshadowing Noise and Vibration Ground Conditions Summary of Residual Effects Type 1 Cumulative Effects 		
Volume 2: Technical Appendices		EIA team
Volume 3: Non-Technical Summary		EIA team

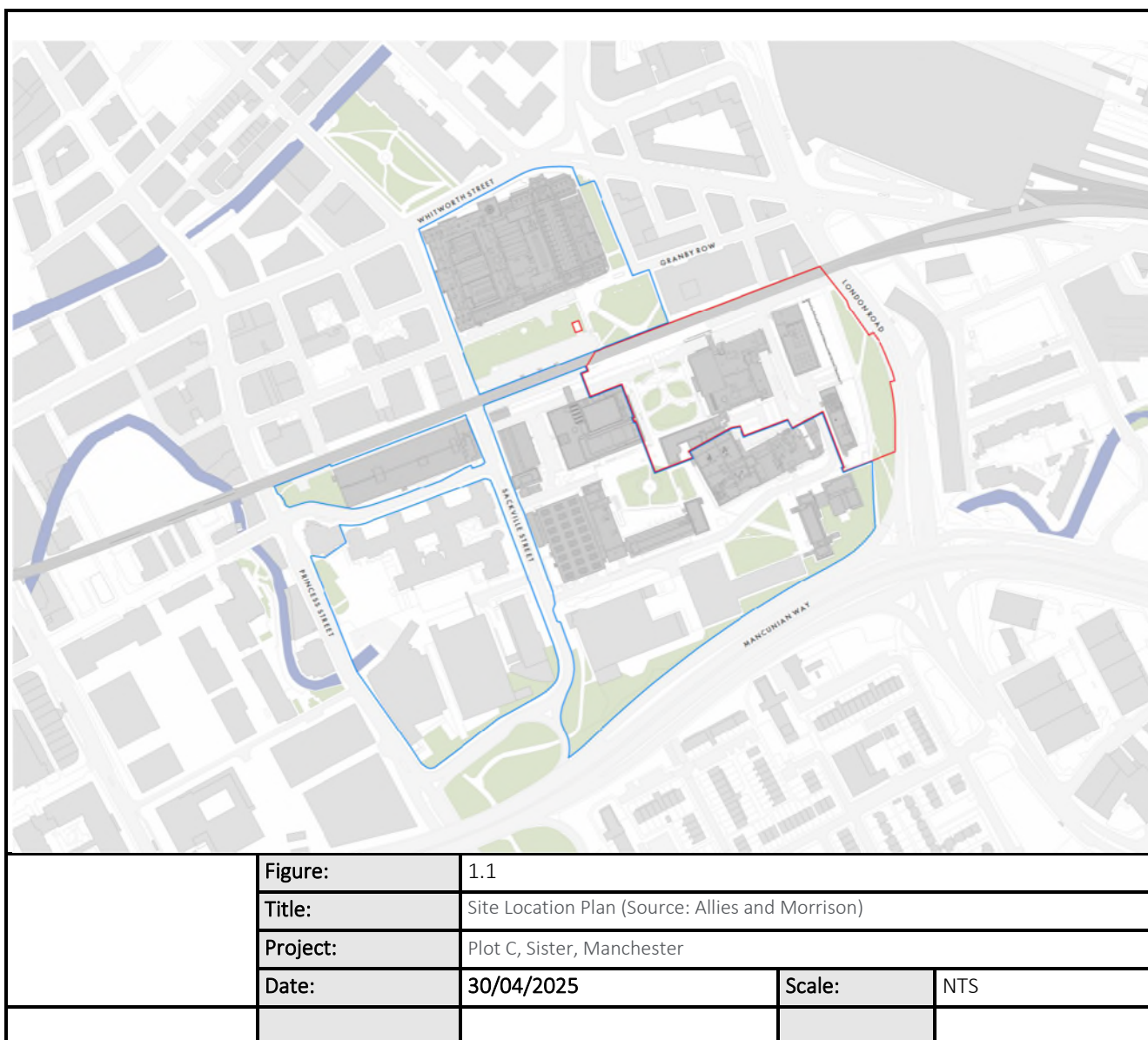
1.30. The ES is available for public viewing on MCC's Public Access website at the following address:
<http://pa.manchester.gov.uk/online-applications/> once the application has been submitted and validated.

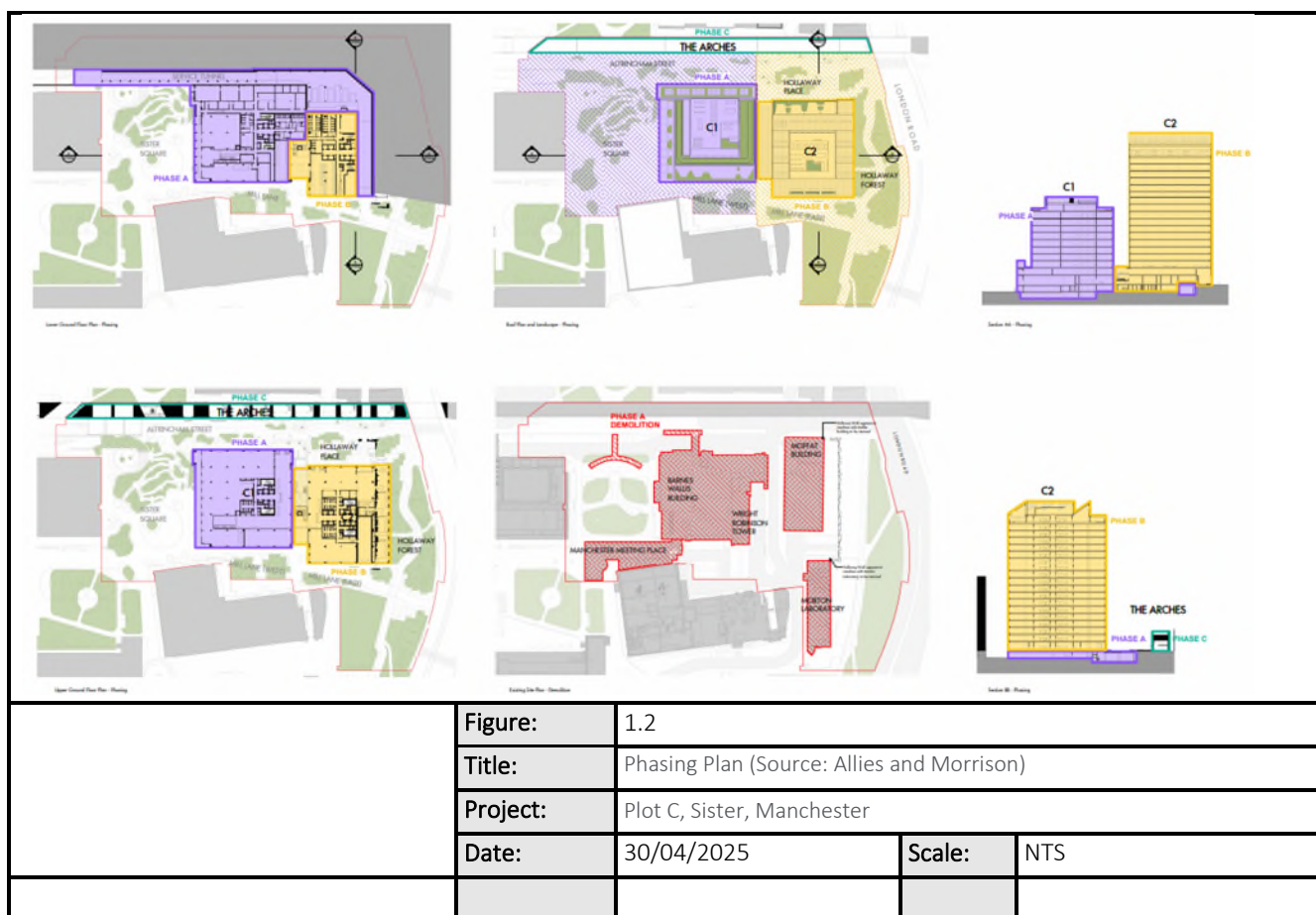
1.31. The ES may be purchased in volumes, the costs for which are set out below:

- Volume 1: ES Main Text and Figures - £150;
- Volume 2: ES Appendices - £150;
- Volume 3: Non-Technical Summary (NTS) - £15;
- Full Copy (Volumes 1 and 2, and NTS) of the ES on CD - £15.

1.32. For copies of any the above, please contact the Manchester Planning Team at Deloitte:

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2. EIA Methodology

Introduction

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

Legislation and Guidance

- 2.2. The ES has been prepared to comply with EIA Regulations, which implement European Council Directive No. 85/337/EEC as amended by Directive 2014/52/EU and entered into force on 17 May 2017. The EU legislation as it applied to the UK on 31 December 2020 is now a part of UK domestic legislation, under the control of the UK's Parliaments and Assemblies. The European Union (Withdrawal) Act 2018 introduced "retained EU law" which provides that EU-derived domestic legislation continues to have effect.
- 2.3. Reference has also been made to currently available good practice guidance in EIA including:
- Circular 02/99: Environmental Impact Assessment
 - The European Commission's numerous EIA guidance documents available here: <http://ec.europa.eu/environment/eia/eia-support.html>
 - Guidance on EIA Scoping, European Commission, June 2001
 - Guidance on Transport Assessment, DCLG and DfT, March 2007
 - National Planning Practice Guidance – Department for Communities and Local Government (March 2014 and continuously updated as a 'live' resource)
 - Reference has been made to the Institute of Environmental Management and Assessment (IEMA) publications, including:
 - IEMA ES Review Criteria
 - IEMA Guidelines for Environmental Impact Assessment (2004)
 - IEMA Special Report into the State of Environmental Impact Assessment Practice in the UK (2011)
 - IEMA Shaping Quality Development (2015)
 - IEMA Delivering Quality Development (2016)
 - IEMA Delivering a Proportionate EIA (2017)
- 2.4. The ES has also had regard to the National Planning Policy Framework 2024 (NPPF). The NPPF sets out the Government's economic, environmental and social planning policies for England, articulating the Government's aspiration for sustainable development. The NPPF has been considered where it is relevant to EIA.
- 2.5. As relevant to the ES technical chapter's scope, methodology and assessment of effects, key local planning policy and guidance documents have been considered. These include:
- Places for Everyone (PfE) (2024)
 - Manchester City Council Core Strategy (2012)
 - Saved Unitary Development Plan Policies (1995)

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

Screening and Scoping

- 2.7. A formal EIA Screening and Scoping request was submitted to MCC on 20 February 2025 (Appendix 2.1) requesting a formal opinion and confirmation as to the proposed scope of the Environmental Impact Assessment required in respect of the Proposed Development. A formal scoping opinion was received on 7 April 2025 (Appendix 2.2), which confirmed agreement to the scope and contents of the EIA. The results of the scoping exercise have determined the subject areas of the EIA and any comments received as part of this Scoping response from the LPA have been factored into this ES.
- 2.8. Based on the contents of Appendix 2.1 and 2.2, the following Chapters have been scoped into the EIA:
- Heritage
 - Townscape and Visual Impact
 - Air Quality
 - Climate Change
 - Wind
 - Solar Glare
 - Human Health
 - Socio Economic
 - Traffic and Transport
 - Daylight, Sunlight and Overshadowing
 - Noise and Vibration
 - Ground Conditions
- 2.9. The Scoping Opinion was broadly in agreement with the Scoping Report. Please refer to **Appendix 2.4** which provides a Summary of EIA Scoping Opinion comments, responses and updates; this includes identifying where scenarios to be assessed has been amended since the EIA Screening and Scoping stage (in comparison to those assessed as part of this EIA, including supporting rationale).
- 2.10. For completeness, two specific items to flag are the comments received in relation to Noise and Vibration and Traffic and Transport noted in green below, with responses in black italic text:

Noise and Vibration - The comments within your Scoping Report are noted. Comments have been raised on the methodology by Environmental Health. This includes commentary on the baseline noise data from attended and unattended monitoring. It is not clear how the typical background has been calculated. This would need to be provided in the ES and should be in line with MCC guidelines.

The representative background noise levels have been determined by a statistical analysis. The graphs to support this were not included in the survey report included with the Scoping Opinion but are included within the Chapter.

Traffic and Transport - The comments within your Scoping Report are noted and are broadly acceptable in terms of their consideration in the ES. There would need to assessment peak-period road network, road safety, public transport, walking and cycling provisions/capacities, and provide information on measures to promote sustainable travel, parking justification/design (including disabled provisions), taxi provision, servicing/deliveries operations/management and mitigation measures. A number of comments have been raised by TfGM regarding operational assessment and assessment of surrounding/proposed infrastructure. These should all be incorporated into the finalised ES.

Reading the highways comments in detail it is understood the peak-period assessment is requested for the TA, not the ES. This is standard practice and is the approach Civic have undertaken. This is also the same for the operational

assessment and assessment of surrounding/proposed infrastructure. In summary the assessments have been undertaken and reported within the TA.

Details on any proposed highways modifications and integration with future MCC Highways schemes would also need to be fully assessed. There are also detailed comments on the site layout and highway works as set out in the Highway note.

It is considered there isn't enough information about future MCC schemes to be assessed, and therefore detailed traffic assessments are not considered to be required as the trip impact so low. In response to comments on the Site layout and highway works, these are acknowledged and accepted and confirm the understanding of the project team of avoiding works on London Road.

Consultation

- 2.11. The Proposed Development has been prepared in consultation with MCC and a range of technical statutory stakeholders (refer to Table 2.1), which were also consulted upon as part of the EIA Scoping exercise.

Table 2.1: Scope of Stakeholder Consultation

Planning Application Stakeholder Consultation
MCC Planning Authority
MCC Highways
Greater Manchester Police
MCC Environmental Health Officers
Greater Manchester Ecology Unit (GMEU)
Historic England
National Air Traffic Control
Manchester Airport Group
Greater Manchester Archaeological Advisory Service (GMAAS)
Transport for Greater Manchester
Network Rail

- 2.12. In addition to the stakeholder consultation noted above, the Proposed Development has benefited from public consultation. Further details are provided in the Statement of Consultation that accompanies the application. Considerations of any legitimate alternative proposals are set out in Chapter 4 of this ES.

Non-Significant Effects

- 2.13. It has been confirmed via the Scoping opinion that the following disciplines will not give rise to likely significant effects on the environment and therefore do not require inclusion in the Environmental Statement. An explanation for scoping out each discipline set out below is provided in the EIA Scoping Report in Appendix 2.1:

- Agricultural Circumstances.
- Aviation.

- Archaeology.
- Broadband Connectivity.
- Ecology.
- TV Reception.
- Water resources, flood risk and drainage.

Approach to Technical Studies

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

Structure of Technical Chapters

- 2.19. Each technical Chapter of the ES has been set out broadly in line with Table 2.2. Where chapters differ from the structure set out below, the reasons for that have been clearly articulated within the chapter introduction.

Table 2.2: Structure of the ES Technical Chapters

Technical Chapter Subheading	Summary of information
Introduction	Each of the technical Chapters begins with an introduction providing context to the EIA completed.
Policy Context	This section includes a summary of legislation and of national and local policies relevant to the environmental discipline and explains its purpose in the context of the Proposed Development and the ES.
Assessment Methodology and Significance Criteria	This section describes the method or approach employed in the assessment of impacts, the criteria against which the significance of effects has been evaluated, the sources of information used and any technical difficulties encountered. Relevant legislation is also identified.
Baseline Conditions	This section describes and evaluates the baseline environmental conditions i.e. the current situation and anticipated changes over time assuming the Site remains unchanged. This is a critical part of the EIA process as it provides a measure against which potential environmental effects can be assessed.

Technical Chapter Subheading	Summary of information
Identification and Evaluation of Key Impacts	<p>This section identifies the likely significant effects on the environment resulting from the Proposed Development. A description of the likely effects of the Proposed Development and an assessment of their predicted significance is provided.</p> <p>The assessment of effect significance has been undertaken using appropriate national and international quality standards. Where no such standards exist, the judgments that underpin the attribution of significance are described. The guidelines, methods and techniques used in the process of determining significance of effects are contained within each of the technical Chapters presented.</p>
Mitigation Measures	<p>One of the main aims of the EIA process is to develop suitable mitigation measures to avoid, reduce or compensate for any significant adverse effects of a project.</p> <p>This section of each technical Chapter describes the measures which would be implemented to mitigate potential adverse effects. Where possible, enhancement measures have also been proposed.</p>
Cumulative Effects	<p>This section considers the cumulative effects of the Proposed Development identified within the vicinity of the Site. Any likely significant effects on the environment arising in this respect are set out in this section.</p> <p>There are two distinct types of cumulative effects:</p> <ul style="list-style-type: none"> • Type 1 - Cumulative effects are the interactions between effects of the Proposed Development on a single receptor. • Type 2 - Cumulative effects are those that arise from incremental changes caused by other consented or reasonably foreseeable activities ('committed developments') together with the Proposed Development.
Residual Effects	<p>The residual effects, i.e. the remaining effects of the Proposed Development assuming implementation of the proposed mitigation measures, have been estimated and presented.</p> <p>The methods used to make these estimates are described and proposed methods of treatment for any residual effects have been identified and quantified where possible.</p>
Summary	Each technical Chapter concludes with a brief summary outlining the potential residual effects of the Proposed Development.

- 2.20. Chapter 5 provides information to allow the construction phase of the Proposed Development to be assessed by the disciplines set out in Chapter 1.

Magnitude

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

Table 2.3 Methodology for Assessing Magnitude

Magnitude of Impact	Criteria for Assessing Effect
Major	Total loss or major/substantial alteration to key elements/features of the baseline conditions such that the post development character/composition/attributes will be fundamentally changed.
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Minor	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character / composition / attributes of the baseline condition will be similar to the pre-development circumstances/situation.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

Sensitivity

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

Table 2.4: Methodology for Assessing Sensitivity

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

Significance

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

Table 2.5: Methodology for Assessing Significance

Magnitude	Sensitivity		
	High	Medium	Low
Major	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate or Minor Adverse/Beneficial
Moderate	Major - Moderate Adverse/Beneficial	Moderate Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate or Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial - Negligible
Negligible	Negligible	Negligible	Negligible

- 2.24. The above magnitude and significance criteria have been provided as a guide for technical specialists to assess impact significance. Where discipline specific methodology has been applied that differs from the generic criteria above, this has been clearly explained within the given Chapter under the heading of 'Assessment Methodology and Significance Criteria'.
- 2.25. For the purposes of this Environmental Statement, an effect will be potentially 'significant' if it is classed as either 'moderate' or 'major' (bold text in Table 2.5).

Baseline Conditions

- 2.26. Each technical Chapter includes a section which describes and evaluates the baseline environmental conditions (i.e. the current situation and anticipated changes over time assuming the Site remains unchanged). Baseline data has been obtained from a variety of sources, including published documents, maps, historical information and Site survey data. Given the complex nature of the Site and surroundings, each technical Chapter (Chapters 6 to 17) includes a clear description of what is assumed as the baseline against which the assessment is being made.
- 2.27. The method used to obtain baseline information, where relevant and possible, has been clearly identified within each technical Chapter and agreed in advance with statutory consultees.

Mitigation

- 2.28. Any adverse environmental effects have been considered for mitigation at the design stage and, where practicable, specific measures have been put forward. Measures have been considered based on the following hierarchy of mitigation:
- Avoidance;
 - Reduction;
 - Compensation;
 - Remediation; and
 - Enhancement.
- 2.29. Where the effectiveness of the mitigation proposed has been considered uncertain, or where it depends upon assumptions of operating procedures, data and/or professional judgement has been introduced to support these assumptions.
- 2.30. Mitigation recommended during the construction phase would be set out in the Construction Management Plan (CMP) to be agreed with MCC prior to the commencement of work and implemented throughout the duration of

the works. Outline mitigation measures to be included in a future CMP are set out in Chapter 5: Construction Methodology and Programme and are cross referred to in the relevant chapters. It is anticipated that a condition be attached to any subsequent consent that requires submission and approval of a CMP.

- 2.31. Mitigation to be implemented during the operational phase would be secured through planning conditions and obligations, which are explicitly referenced in each chapter.

Residual Effects

- 2.32. The likely significant effects on the environment, assuming the successful implementation of mitigation measures proposed, have been estimated within each Chapter. These are termed 'residual effects' and are considered in Chapter 18 of this Statement.

Cumulative Effects

- 2.33. A search of MCC's planning applications database and knowledge of the area has identified schemes for which cumulative effects are considered more likely, this includes other reasonably foreseeable schemes, i.e those contained within the Development Plan or other material considerations. A full list, as of February 2025 is contained within the Scoping Report at Appendix 2.1, to which agreement has been provided from the Local Planning Authority as part of the Scoping Opinion process.
- 2.34. The ES considers the potential for likely significant effects on the environment resulting from consented or reasonably foreseeable activities or developments in the area, which could lead to potentially significant cumulative effects in conjunction with the Proposed Development ('Committed Developments'). Each technical Chapter (Chapters 6-17) has assessed the potential for likely significant effects on the environment, as a result of the above committed developments, together with the Proposed Development, which are known as Type 2 cumulative effects.
- 2.35. In addition, Chapter 19 assesses the Type 1 Cumulative effects. Type 1 cumulative effects are also known as 'inter-project' effects, which are the combined effects arising from the development upon a set of defined sensitive receptors.

Assumptions and Limitations

- 2.36. The principal assumptions that have been made and any limitations that have been identified in preparing the ES are set out in each technical Chapter. General assumptions include the following:
- All of the principal land uses adjoining the Site remain. Where redevelopment proposals have been granted planning permission, the effect of those proposals are considered as part of the Cumulative Impacts;
 - Information received from third parties is complete and up to date;
 - The various stages of the Proposed Development will satisfy minimum environmental standards, consistent with contemporary legislation, practice and knowledge;
 - Assessments are based upon, and conclude, the 'worst case' effects that would arise from the application as defined by the description of development set out in Chapter 4, Site Surroundings and Description of the Proposals;
 - Construction and demolition methods and phasing will follow the timetable and methods set out in Chapter 5, Construction Management;
 - Conditions will be attached to the planning permission that will control disturbance during the Proposed Development; and
 - Necessary off-site services infrastructures for the Proposed Development will be provided by statutory undertakers.

Objectivity

- 2.37. The technical studies undertaken with the ES have been progressed in a transparent, impartial, and unbiased way with equal weight attached, as appropriate, to beneficial and adverse effects. Where possible, this has been based upon quantitative and accepted criteria together with the use of value judgements and expert interpretations.

- 2.38. The assessment has been explicit in recognising areas of limitation within the ES and any difficulties that have been encountered, including assumptions upon which the assessments are based. Where appropriate, the assessment of significance has been given confidence levels.

3. Alternatives and Design Evolution

Introduction

- 3.1. Regulation 18(3) and Paragraph 2 of Schedule 4 of the EIA Regulations requires the Applicants to provide an outline of the main alternatives studied and an indication of the main reasons for the choice made, considering the environmental effects.
- 3.2. Additionally, Schedule 4, Paragraph 2 of the EIA Regulations¹ states that an ES should include: “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”. In considering the evolution of the Proposed Development, all aspects have been evaluated in response to several longstanding strategic objectives and established principles, embedded in local planning policy and guidance, as well as within the suite of planning applications and major development proposals that have come forward within the Site overall to date. This Chapter considers the following four options in the context of these requirements and the existing Development Brief: The ‘do nothing’ alternative where the Proposed Development is not progressed.
 - Alternative Locations for the Proposed Developments.
 - Alternative Technologies.
 - Alternative Designs (including size and scale) for the Proposed Development.
- 3.3. The Proposed Development has been detailed out in Chapter 5 of the Planning Statement and the submitted Design and Access Statement, which also sets out the iterative design process undertaken over the past 12-18 months to develop the submitted proposals. The design team has engaged closely with MCC, Historic England and other key stakeholders throughout this period to ensure that the optimum development proposal was produced on Site.

The “do nothing” Alternative

- 3.4. The “do nothing” scenario refers to the option of leaving the Site in its current use. The Site is brownfield land in Manchester City Centre. The Site currently contains four vacant buildings associated with the former UMIST Campus of the University of Manchester, along with the former Bowling Green, Butterfly Stairs and public art, detailed below in Chapter 4 of this Statement. The Site also contains Grade II listed Manchester South Junction and Altrincham Railway Viaduct and Hollaway Wall.
- 3.5. The buildings within the Site, and across the broader SRF Area, are no longer needed for their originally intended use. The University of Manchester decanted their education and research facilities to the newly developed Engineering Campus and wider estate in 2022. The buildings have lain vacant since and are falling into a state of disrepair as well as attracting anti-social behaviour. The Applicants are investing heavily in the estate to maintain security and bring early activity to the area through the repurposing of the Renold Building adjacent to Plot C, which is now open and operational; however, the further degradation of the buildings is inevitable where they continue to lie vacant.
- 3.6. The SRF Area has been identified as a development opportunity for almost ten years. MCC endorsed the North Campus SRF in 2017, which envisaged wholesale redevelopment of the Site for a commercially-led mixed-use development.
- 3.7. The vision and objectives for the SRF Area were updated within the ID Manchester SRF, endorsed in December 2023. This SRF recognises that Sister presents a significant strategic opportunity to transform a currently

underutilised and underperforming area of the City Centre into the flagship commercial innovation hub for the city region. It supports development opportunities to increase densities across the SRF area, whilst delivering against essential placemaking objectives. The SRF describes Sister as the *'final piece in the regeneration jigsaw'* within the southern arc of Manchester that stretches from Great Jackson Street in the west through to Mayfield.

- 3.8. Given that the buildings are currently lying vacant with no prospect of their previous use being re-activated and that the Site forms part of an area identified as a strategic priority for regeneration and redevelopment, the "do nothing" alternative has been discounted.

Alternative Locations

- 3.9. The introduction to the SRF states that:

"The relocation of the teaching and research functions from the former UMIST campus presents a rare opportunity to deliver comprehensive place-based regeneration and renewal of a 9-hectare city centre site in a single ownership to support the next phase of Manchester's growth and success. These factors have created a unique opportunity in time and place to deliver IDM: a world-class innovation district in the heart of the city, where clusters of companies can grow around the Masdar Building (home to the Graphene Engineering Innovation Centre, "GEIC") and the Manchester Institute of Biotechnology ("MIB"). Adding to these existing facilities, Sister is anticipated to generate further hubs of innovation exploring the practical and commercial application of the University's research specialisms. These could be companies and organisations from the public or private sector with a focus on areas such as health innovation and digital technology."

- 3.10. The SRF also establishes opportunities to enhance linkages beyond the Framework Area's boundaries in all directions: fully integrating the SRF Area into the city centre core to the north; repairing the entry sequence to the Oxford Road Corridor from Piccadilly Station and seamlessly knitting into Mayfield to the east; reducing physical and perceptual barriers to the residential neighbourhoods of Brunswick and Ardwick to the south; and creating legible and permeable routes through to the university campuses to the south west.
- 3.11. Within the SRF Area, the Site is identified as the first visual signifier of Sister and the gateway to the Oxford Road Corridor when arriving from Piccadilly, and therefore being an opportunity to deliver tall, landmark buildings. A range of the key placemaking interventions envisaged in the SRF are captured within the Site, including the eastern portion of the new east-west routes along Altrincham Street and Mill Lane, repairing and enhancing the public realm along London Road, a new civic square in the heart of the SRF Area, and creating a critical mass of commercial space to support the success of the innovation district.
- 3.12. Therefore, this Chapter does not consider alternative sites either outside of the SRF Area or elsewhere in the masterplan for the Proposed Development. Therefore, the "alternative location" scenario has been discounted.

Alternative Uses

- 3.1. Places for Everyone notes that Manchester is a key economic driver for the city region. The Site sits within the Manchester's regional centre (Policy EC3) and city centre (Policy CC1), as defined within the Manchester Core Strategy, which is the focus for economic growth within the city. The Core Strategy policies support high density, mixed-use development in the city centre.

- 3.2. The SRF notes that:

"A common theme of successful innovation districts across the world is a concentration of organisations and people brought together in an environment where they can meet and collaborate. Innovation districts are formed around anchor institutions and occupiers, who act as a magnet around which ecosystems of start-ups, entrepreneurs and supply-chain organisations form. The University will act as a strong institutional anchor for [Sister] but others are anticipated to be needed if the vision is to be realised. A critical mass and wide range of accommodation types that can support a diverse innovation community is therefore envisaged at [Sister]. Development density In order for [Sister] to achieve its potential and maximise the benefits to the people of Manchester, it is envisaged that over 4 million sq ft of floorspace can be accommodated within the Framework Area. This is expected to include over 2 million sq ft innovation, commercial and research space...." (page 73)

- 3.3. Large format, Grade A commercial space is therefore considered to be a foundational component of the innovation district envisaged to be created within the Framework Area. The “human collider” place-based principle defined within the SRF envisages that innovation and collaboration space would be centred around the new civic square at the heart of the masterplan (and delivered as part of the Proposed Development). The SRF notes that, *“to support this diverse ecosystem of occupiers, at different stages in their growth and with often very specific requirements, a wide range of commercial floorspace should be provided in new and refurbished buildings that allow for growth and adaptation over time. This is anticipated to range from low-cost drop-down space, through specialist facilities such as laboratories, to large-footprint Grade A office space capable of accommodating corporate global HQ buildings”* (page 48). The proposed use is therefore considered to wholly align with this objective.
- 3.4. As noted above, the Site is located at the north-eastern gateway to the SRF Area and the Oxford Road Corridor beyond and is therefore considered the optimum location for the use proposed.
- 3.5. Alternative uses are supported by planning policy and are envisaged to form part of the SRF, including residential, PBSA, hotel, and retail. The SRF identifies an opportunity deliver over 1,500 homes to be delivered as part of the Sister masterplan, which may include PBSA; however, these are envisaged to be located in the outer concentric rings of the human collider, specifically on Plots F and H to the south and west of the Site respectively. (“The “Human Collider” concept is that IDM will be a place that brings people together to encourage the chance and planned meetings that spark new ideas and collaborations. This can be achieved through careful consideration of both the physical structure of the place and the occupiers that populate the spaces. Uses within the Human Collider are arranged concentrically around a central space, with key routes overlaid, and catalyst clusters interspersed throughout.”) It is anticipated that proposals will come forward for residential and/or PBSA on these plots, which will better deliver on the overarching objectives and place-based principles of the SRF.
- 3.6. The existing buildings on-site generally do not lend themselves to residential, PBSA, or hotel development and it is considered that these uses would still necessitate demolition of the existing buildings on-site. The exception is the Wright Robinson Building, which was previously PBSA; however, this building does not meet with modern standards of PBSA and so is not readily able to be returned to that use.
- 3.7. Flexible commercial and retail uses are envisaged lower and upper ground floors of the Proposed Development.
- 3.8. For the reasons above, alternative uses were discounted as the Proposed Development is considered the most appropriate in the context of this location and responds to both identified regeneration priorities as well as office/commercial need in this part of the City Centre.

Alternative Designs

- 3.9. The Site is complex and affected by a multitude of physical, logistical, and regulatory constraints. This includes very significant level differences across the Site, underground utilities, adjacent railway lines and arterial roads, and a variety of uses (existing and emerging). The Site contains two listed structures and four non-designated heritage assets, is partially located within a conservation area, and is within the setting of further designated and non-designated heritage assets and the Renold Building, which is currently being considered for spot listing by Historic England.
- 3.10. Consequently, a dynamic, iterative design process has been required to develop proposals that represent the optimum form of development on-site that is deliverable and capable of meeting the Applicants’ and Council’s aspirations for the area. A wide range of specialist consultants and other stakeholders have therefore provided valuable input into the evolving scheme which has served to inform the design process and assist the team in arriving at an appropriate solution.
- 3.11. This process commenced through preparation of the SRF, which was informed by detailed site analysis. The SRF sets out the vision and strategic objectives for Sister. It does not seek to prescribe the development that comes forward on the Site, but provides a series of Place-Based Principles to achieve its objectives, and an illustrative masterplan of how the place might look once complete. The SRF notes that, *“developments that successfully adopt these principles should contribute positively to a successful place that realises the partners’ vision for [Sister].”* (page 46). These principles have accordingly guided the iterative design process undertaken. The key components of the place-based principles are summarised as follows:

- **Human Collider:** The vision is to create an ecosystem of innovation with diverse commercial spaces, including large-scale, high-quality office spaces suitable for global corporate headquarters.
- **Connected, Open, Accessible:** This focuses on accessibility for all, proposing: a widened pathway along Altrincham Street; step-free access via landscaped slopes and steps within a new civic square (replacing the former bowling green); a concealed service tunnel under Altrincham Street; defined east-west routes (Altrincham Street), north-south shared spaces, and welcoming entry points, especially at the north-east corner connecting to London Road and Mayfield; and improved pedestrian and cyclist access to the Oxford Road Corridor (ORC) from Piccadilly.
- **A Living Landscape:** Key public realm areas are the civic square, Altrincham Street, railway arches, and London Road. The design should consider microclimates, access to nature, improved biodiversity, and blue-green infrastructure. Tree replacement should be at a 3:1 ratio with 70% native species.
- **A flexible Framework for Flexible Buildings:** Development should be adaptable to market demands while maintaining a coherent design, largely reflecting the existing campus layout. Obstacles to key routes and spaces, such as the MMP and Morton Laboratory, are expected to be removed. New buildings should respect the existing campus's character through their design, materials, and public realm integration.
- **Platform for the Future Built on Foundations of the Past:** This principle aims to balance future development with the area's history. Redevelopment is anticipated to meet the space and flexibility needs of IDM. The Hollaway Wall's current location and form are recognised as conflicting with placemaking goals, particularly integration with Mayfield and access to the ORC. Options for the Hollaway Wall include reducing its length, relocation, or incorporation into a building. The Renold Building is identified as a key asset south of the Viaduct arches.
- **Curated Commons:** A mix of internal and external spaces should encourage activity, with active frontages on ground and upper ground levels along main routes. The civic square is envisioned as a hub for leisure, food, and drink, while Hollaway Place would host exhibition and gathering spaces. London Road and Mill Lane would accommodate local amenities.
- **Critical Mass:** Over 4 million sq. ft. of floorspace is targeted, including over 2 million sq. ft. for innovation, commercial, and research activities. Attracting anchor tenants is key, requiring large floorplate offices. Building scale should decrease from the centre towards the civic square and Renold Building, with landmark buildings at the thresholds, particularly the north-east corner leading from Piccadilly.
- **An Identity that Expresses Purpose and Place:** The design should reflect the innovation district's purpose and the area's character, potentially drawing inspiration from Manchester's materials and the modernist past of the former UMIST campus. Buildings should be inviting, interact with the streetscape, and integrate seamlessly with the City.
- **Sustainable and Regenerative:** Decisions about building removal, redevelopment, or adaptation should consider embodied and operational carbon, historical significance, building condition, repurposing feasibility, placemaking priorities, and the ability to support the required floorspace. Designs should promote physical, mental, and social well-being and biodiversity.
- **Creative Meanwhile Uses:** The created spaces should support temporary and creative uses of buildings and spaces.

- 3.12. The design team, continuously led by Allies and Morrison, has considered a multitude of different development options, and has undertaken detailed analysis to design an appropriate response to the Site's context. This has been informed by expert townscape, heritage, and microclimate advice and assessments.
- 3.13. The options tested have been informed by a detailed understanding and appreciation of the existing Site, including the historic and cultural significance of the buildings and structures on-Site and their collective "essence" as a cohesive former educational campus. That appreciation has fed through into the SRF place-based principles and into the detailed design proposals for Plot C.
- 3.14. This has informed decision-making with respect to retention or removal of buildings within the Site. At a masterplan level, the most important heritage assets are identified to be the grade II listed Sackville Building, the Viaduct arches, and Hollaway Wall; the Whitworth Street Conservation Area; and the most important non-designated heritage asset – the Renold Building. Each of these assets is to be retained within the SRF Area and wherever possible re-invigorated and given a new long-term purpose. The Renold Building has already been re-purposed as the innovation hub at the heart of the masterplan.
- 3.15. The designs considered therefore need to take into account these three important heritage assets defining its northern (the Viaduct arches), eastern (the Hollaway Wall), and western boundaries (the Renold building). The

Proposed Development also needs to deliver the civic square envisaged at the heart of the masterplan. These assets have shaped the parameters of the detailed options appraisal undertaken to develop the design proposition and deliver on the client brief for the Site. This process is summarised in the submitted Design & Access Statement.

- 3.16. Different scales and massing options have been considered for the Proposed Development during design development. The aim has been to develop proposals in the context of the SRF that will create a viable scheme that provides a wide range of public benefits and addresses strategic policy aims whilst minimising negative impacts on adjacent land uses and the environment.
- 3.17. With specific respect to the Holloway Wall, the SRF notes that, *“in its current form and location, the Wall directly conflicts with the place-making priorities of successfully knitting IDM into the wider city, seamlessly integrating with Mayfield, and creating a better gateway to the ORC from Piccadilly Station... As detailed proposals come forward, there is an opportunity to consider a range of options for the Holloway Wall to determine the optimum design solution that delivers the placemaking priorities set out within this SRF. This could include opportunities to reduce the length of the Wall, relocate it, encapsulate it within a building, or other options to break down the visual and physical barrier it presents. As with all components of this SRF, ultimately any proposals for this site will be determined in accordance with MCC’s Development Plan, national policy and other material considerations.”* (page 65)
- 3.18. Accordingly, the proposals for the Holloway Wall have been developed through an iterative design process undertaken in close consultation with the LPA, MCC Conservation Officer, Historic England, Twentieth Century Society, and other heritage stakeholders. This has been based on a detailed understanding of the Holloway Wall, including how it was originally constructed, its structural characteristics, its original intention and purpose, and its condition and setting today. A detailed options appraisal has been undertaken to determine the optimum design solution that seeks to minimise harm to this important heritage asset, whilst delivering the public benefits and place making principles associated with the Proposed Development. Specifically, the SRF place based principle *‘platform for the future, built on foundations of the past’* with the Proposed Development addressing the conflict the Holloway Wall has in its current form with the placemaking priorities of the SRF, including knitting Sister into the wider City and creating a better gateway from Piccadilly. Including responding to the condition and setting of the Holloway Wall which is currently poor, as acknowledged by Historic England (including at SRF stage). The design has evolved in considering a range of options for the Holloway Wall to determine the optimum design solution that delivers the placemaking objectives set out within the SRF, to help overcome the current visual and physical barrier challenges. This options analysis and the effects of the resultant design solution are summarised in the Design & Access Statement and discussed in detail in the Heritage Chapter of this ES and associated technical appendices, and in the Planning Supporting Statement.
- 3.19. Landmark buildings such as C2 Building form markers in the city point of entry. The Proposed Development comprises a considered approach to scale and massing, creating a balanced composition of two distinct yet RD to interconnected buildings. C1 Building and C2 Building are designed to establish a ‘big sister, little sister’ relationship, with C2 Building taking a prominent landmark roles while C1 Building maintains a more contextual scale. Manchester Piccadilly Station with the C1 Building then stepping down towards Sister Square.

Summary

- 3.20. Where possible, alternative options have been considered throughout the design process. The above has set out why the Site is considered suitable for the Proposed Development.
- 3.21. Where possible, alternative options have been considered throughout the design process and the above summary has set out why the Site is considered suitable for the Proposed Development. This process has been informed by the SRF, site constraints and opportunities, and the desire to create a landmark building that has positive relationship with the surrounding developments.
- 3.22. The Proposed Development has been influenced by pre-application consultation with key stakeholders including local landowners, residents, businesses, statutory consultees, as well as with MCC. On this basis, Regulation 18(3) and Paragraph 2 of Schedule 4 of the EIA Regulations has been considered.

4. Site Surroundings and Description of Proposals

Site Location

- 4.1. The Site is located in Manchester City Centre. It forms the north-eastern corner of the Sister masterplan as defined in the SRF. The Site is bound by Vimto Park and the rear of buildings fronting onto Granby Row to the north, London Road to the east, Jackson's Mill and the MSS Tower to the south, and the Renold Building to the west. Please refer to Figure 1.1 for the Site Location Plan.

Surrounding Land Uses

- 4.2. Land to north and northwest, beyond the Viaduct arches, comprises green public space at Vimto Park and the now vacant Sackville Building, which also forms part of Sister; existing and under construction purpose built student accommodation ('PBSA'); commercial uses; and residential accommodation.
- 4.3. To the north-east lies Piccadilly Station, Manchester's primary rail hub, and to the east, beyond London Road, lies hotel accommodation and PBSA beyond. Further east is located Mayfield Park.
- 4.4. Land to the south and west of the Site comprises the former UMIST Campus, an educational facility which now lies vacant. Work is now complete to re-activate the Renold Building, immediately west of the Site, for commercial uses and collaboration spaces also related to Sister.
- 4.5. The southern boundary of the SRF Area is the Mancunian Way, beyond which lies the predominantly residential areas of Ardwick, Brunswick, and Hulme.

Site Description

Site Area

- 4.6. The Site extends to circa 2.2 ha. It principally comprises made ground, existing buildings and structures. Areas of landscaping and grass are located in the eastern and western parts of the Site.

Existing Buildings, Structures and Spaces

- 4.7. Four vacant buildings associated with the former UMIST Campus are located within the Site, which range from two to 15-storeys in height (Please refer to Figure 4.1). The existing vacant buildings on the Site are:
- Barnes Wallis and Wright Robinson Building (A) – vacant former student union and halls of residence, comprising 15-storey tower (84.6m AOD) (Wright Robinson), with a three storey podium (Barnes Wallis).
 - Moffat Building (B) – vacant former education and research space within a part three, part two storey building.
 - Morton Laboratory (C) – vacant former university chemical engineering laboratory comprising a five storey building.
 - Manchester Meeting Place (MMP) (D) – vacant former university staff building, four storeys in height.
- 4.8. The Site also comprises the former Bowling Green, a landscaped area that formed the centre of the former campus. The Butterfly Stairs (E) are located within the Bowling Green, providing stepped access between the significant level changes between Altrincham Street and the Bowling Green.
- 4.9. The following pieces of public art are located within the Site:
- Archimedes statue (H) – located beneath Viaduct, along Altrincham Street;
 - Generations of Possibilities (Magnets) (I) – located along Altrincham Street;
 - Large Urns (J) – located along Altrincham Street;
 - Stone Monument (K) – located at entrance to Renold Building; and

- Havelock Mill Structure (L)– located on the Bowling Green.
- UMIST Cube (M)- located northeast to Renold Building

Trees

- 4.10. There are 54 trees located within the Site, including: a grouping of mature trees along London Road adjacent to Morton Laboratory and Moffat Building; mature and semi-mature trees located within the Bowling Green, particularly to the north; and a smaller grouping of mature trees within an area of hardstanding to the south of Barnes Wallis and Wright Robinson Building.

Access and Topography

- 4.11. The Site is currently accessed via London Road, at the junction with Altrincham Street, between the Viaduct arches and Moffat Building. Access to the Site is also via Lower Albion Street from the south, adjacent to Morton Laboratory, which runs to the south of The Mill.
- 4.12. The Site has significant level changes between the upper level to the north and lower levels to the south. The north-eastern corner represents the highest point within the Site, which gradually falls away towards the south -western corner, marking the lowest point of the Site. This natural fall is approximately 7 meters across the entire Site.
- 4.13. The level changes are addressed by the Butterfly Stairs located to the west of Barnes Wallis and Wright Robinson Building leading from Altrincham Street to the Bowling Green. There is also the existing route along Lower Albion Street which cuts through the Site north to south (with Moffat Building to east and Wright Robinson to the west).
- 4.14. It should be noted that there is an existing servicing access route which serves Barnes Wallis and Wright Robinson Building (Figure 4.2), providing a route off Lower Albion Street, into the northeastern corner of the building.

Connectivity

- 4.15. The Site is in a highly accessible location in Manchester City Centre and enjoys a range of excellent transport links and proximity to similar and necessary establishments. Numerous bus and tram stops are located along the Oxford Road Corridor, as well as railway stations, providing further sustainable transport options, all conveniently close to the Site. Access to the inner ring road by private car is immediately south of the Site. See below for accessibility breakdown by sustainable transport modes.

Rail

- 4.16. Manchester Piccadilly is located just over 131m away from the Site, meaning access to the wider city region and major cities such as London and Birmingham are situated only a seven-minute walk away. 727m to the west of the Site is Manchester Oxford Road, another key transport link offering commuters access to the wider city region, and UK towns and cities such as Liverpool, Leeds, and Birmingham. There are several pedestrian routes connecting commuters from Oxford Road Station to the Site, all of which are between 13 to 15 minutes.

Metrolink

- 4.17. Piccadilly Tram Stop, a seven-minute walk away from the Site offers multiple services taking commuters from the centre of Manchester to a variety of towns and neighbourhoods across the City Region, including Eccles, Ashton-under-Lyne, Altrincham and Bury.

Bus

- 4.18. Bus routes also run along Whitworth Street, London Road and Oxford Road. There is a BeeWay off-road cycleway on London Road, and bus stops adjacent to the Site with 25 services per hour in both directions. The Site has a GMAL (measure of public transport accessibility) of 8, which is the highest possible score.
- 4.19. Manchester's Free Bus is a free of charge bus service linking all the main destinations across Manchester City Centre. Free Bus buses are accessible by disabled users and run on a 10-minute daytime frequency. The Free Bus service covers most of the City Centre and provides convenient access to major activity centres in the City. In particular, it completes the City's integrated public transport service and gives the Site quick and convenient public transport connections to all mainline railway stations, principal car parks and retail centres.
- 4.20. Manchester Coach station is an eight-minute walk away from the Site, offering national and regional services at affordable prices.

Walking

- 4.21. The Site benefits from excellent pedestrian connectivity, with readily accessible transport infrastructure and a range of amenities within comfortable walking distance, and residential accommodation both within the City Centre and surrounding neighbourhoods to the south.
- 4.22. This prime location facilitates convenient commutes for employees and visitors. The Site's proximity to multiple hotels caters to the needs of both domestic and international commuters, who may also use the Proposed Development.
- 4.23. The Site's adjacency to academic institutions fosters a synergistic relationship between employment and education, establishing a thriving knowledge hub. The presence of numerous green spaces, including Sackville Gardens and Vimto Park, contributes to a pleasant and healthy work environment.
- 4.24. London Road immediately to the east of the Site is currently a source of severance to pedestrian and cycle movements.

Site Specific Environmental Designations

Air Quality

- 4.25. The Site is located within the Greater Manchester Air Quality Management Area (AQMA), referring to an area where air pollution levels are, or are likely to, exceed national air quality objectives. This means that the NO₂ is monitored, and the local authority has a strategy in place to manage and improve air quality in these areas.

Ecology

- 4.26. There are no Sites of Special Scientific interest or Special Areas of Conservation ('SAC') located on or immediately adjacent to the Site. The closest, the Rochdale Canal SAC designation is 5.12km to the north-east of the Site. The closest site of Special Biological Interest ('SBI') is the Ashton Canal SBI, which is located 465m north-east of the Site.
- 4.27. Although there are protected and notable flora and fauna and other species within Central Manchester (where the Site is located), however there are no records of such species on the Site.

Flood Risk and Drainage

- 4.28. According to The UK Governments Flood Map (Figure 4.3), the Site is located within Flood Zone 1, defined as having a low probability of flooding, meaning there is a less than 1 in 1,000 annual probability of river or sea flooding. In addition, the Flood Risk Assessment prepared by Civic sets out the flood risk for the Site associated with all types of flooding, which is summarised as follows:
- Rivers and Sea – Very Low Risk.
 - Reservoir – Very Low Risk.
 - Groundwater – Low Risk. To be confirmed by site investigation.
 - Surface Water – Low Risk (whilst areas of higher risk are present, these affect only a small portion of the development and thus the overall risk is deemed to be low).
 - Public Sewers – To be confirmed by UU, presumed low.
- 4.29. As with the majority of the Regional Centre, the Site is located within the Conurbation Core Critical Drainage Area, as defined in the Manchester, Salford, Trafford Strategic Flood Risk Assessment (SFRA).

Heritage

- 4.30. The Site is partially located within the Whitworth Street Conservation Area, with the north aspect of the Plot C boundary (Viaduct) forming the Conservation Area boundary (see Figure 4.4). The Site therefore forms part of the designated area. The Castlefield Conservation area is located 1.12km east of the Site and the George Street Conservation Area is located 516m north of the Site.
- 4.31. The Site contains the following designated heritage assets:
- Manchester South Junction and Altrincham Viaduct (Grade II Listed, List Entry Number: 1200837) – *partially located within the Site boundary; and*
 - Sculptural Wall (Hollaway Wall) (Grade II Listed, List Entry Number: 1400857) – *located wholly within the Site boundary.*

- 4.32. MCC does not maintain a local list; however, the following buildings and structures within the Site are considered to be non-designated heritage assets ('NDHAs') – *all wholly located within the Site boundary*:
- 1) Barnes Wallis and Wright Robinson Building;
 - 2) Morton Laboratory;
 - 3) MMP (Staff House);
 - 4) Butterfly Stairs; and
 - 5) Public art (These include only Archimedes Statue, Generations of Possibilities sculpture, Havelock Mill Structure and UMIST Cube from the full list of public art shown in para 4.9).
- 4.33. Certificates of Immunity from Listing were granted by Historic England with respect to the four non-designated heritage asset ('NDHA') buildings and structures (1-4) listed above, together with the Moffat Building, on 10 October 2024. The only other building or structure in the SRF Area that is listed is the Grade II Listed Sackville Building (Institute of Science and Technology).
- 4.34. The Renold Building, immediately west of the Site, is considered to be an NDHA and is currently subject to consideration by Historic England for spot listing. The MSS Tower, Pariser Building, Jackson's Mill, Ferranti Building, and Faraday Building (all south and southwest of the Site) are considered to be NDHAs.
- 4.35. There are 60 Listed Buildings located within 500m of the Site (see Figure 4.5), with the following in the immediate vicinity in order of distance from the Site:

Table 4.1: Historic England Listed Asset List

Map No.	Location	Grade	List Entry Number
1	Police and Fire Station	II*	1197918
2	Former Goods Offices to Piccadilly	II	1197919
3	Train Shed and Undercroft at Manchester Piccadilly	II	1283014
4	Institute of Science and Technology (Sackville Building)	II	1247609
5	Granby House	II	1218253
6	Star and Garter Public House	II	1200827
7	Orient House	II	1200838

Planning History

- 4.36. A search of the Site's planning history has been undertaken using MCC's Public Access system and those of relevance to the Site have been summarised below:

Table 4.2: Planning History

Reference	Description of Development	Status
068277/OO/2003/C2	Erection of 6 storey laboratory building, with basement parking for 118 vehicles and surface level parking for 22 vehicles	Approved 24 July 2003. Lapsed.

Proposed Development

- 4.37. The Proposed Development comprises the following elements:
- Demolition of Barnes Wallis and Wright Robinson Building, MMP, Morton Laboratory, and Moffat Building, and the Butterfly Stairs.
 - Erection of two buildings (C1 Building and C2 Building) comprising of 72,928 sq. m. of office space (Use Class E). At the base the buildings will be connected via an open shared lobby space, which shall comprise up to 4,453 sq. m. of a variety of uses including social amenity spaces, as well as food and beverage establishments (Use Class E and Sui Generis – drinking establishment), 1,888 sq. m. of flexible commercial floorspace at level 18 in C2 Building (Use Class E and Sui Generis – drinking establishment), 860 sq. m. of community space, with associated amenity space and cycle parking.
 - Interventions to the Hollaway Wall, to be partially encapsulated within a new community space in C2 Building.
 - Restoration and relocation of existing art work on Site.
 - Change of Use of the Viaduct arches and associated works to deliver approximately 924 sqm of flexible commercial/retail floorspace (Use Class E and Sui Generis – drinking establishment),
 - Creation of a significant provision of new public realm - including a generous new pedestrian boulevard along Altrincham Street a new civic square in the heart of Sister- and landscaping, access and other associated works, including works to the public highway.
- 4.38. The Proposed Development's design and materiality have been carefully considered to ensure a sensitive response to the surrounding context, complementing the existing character of Manchester City Centre. The project will deliver a wide range of benefits, aligning with the economic, social, and environmental dimensions of sustainable development as defined by the NPPF and local planning policy.
- 4.39. The proposed quantum of development is set out below:

Table 1.1- Proposed Quantum of Development

Measurement / Detail		Proposed Development	
Site Area		2.2 ha	
		C1 Building	C2 Building
Proposed new build height		87.60 AOD / 12 storeys (plus ground)	123.75 AOD / 20 floors (plus ground and roof)
Proposed new build floorspace for Office (Use Class E)		27,058 sq. m.	45,870 sq. m.
		Total: 72,928 sq. m.	
Proposed new build community floorspace (Use Class E, F2)		n/a	860 sq. m.
Proposed floorspace for Flexible Commercial (Use Class E, Sui Generis – bar/restaurant)	New Build (Building C1, Building C2)	3,822 sq. m.	2,519 sq. m.
		Total: 6,341 sq. m.	
	Arches	924 sq. m.	
	New Build & Arches	Total: 7,265 sq. m.	

Measurement / Detail	Proposed Development	
Cycle Parking	148 secure cycle spaces (126 two-tiered racks, 15 Sheffield stands and 7 for accessible/ larger cycles)	269 secure cycle spaces (229 two-tiered racks, 27 Sheffield stands and 13 for accessible/ larger cycles).
	35 cycle spaces in the public realm (for visitors).	
Car Parking (DDA / disabled spaces only)	<ul style="list-style-type: none"> • 2 bays at the east end of Mill Lane before the service tunnel. • 1 bay at the end of Echo Street under the arches. 	
Public Realm	<p>Flexible public realm that can host a wide range of events (2,524 sq. m). These comprise of:</p> <ul style="list-style-type: none"> • <u>Sister Square</u>- serving as a major masterplan link and north-south axis. It is designed to be a dynamic and flexible events space ranging from large-scale music concerts to intimate community gatherings. • <u>Altrincham Street</u>—widened east west pedestrian connection through Sister. • <u>Mill Lane</u>- This alley will have a vibrant, incubator-like atmosphere that caters to Sister's creative and start-up community. • <u>Hollaway Place</u>- Dynamic public space which is also an iconic gateway to Sister. It will provide a key nature buffer from London Road. • <u>Hollaway Forest</u>- This is a lush ecological connection running north-south along London Road. This is designed as an engaging art walk in an urban woodland. • 28 trees will be removed as part of the Proposed Development. These are located along London Road, Mill Lane and the Bowling Green. Of these 21 are Category B and 7 are Category C trees. A total of 270 new trees will be introduced, a net-gain of 242 trees and representing just under a 10:1 replacement ratio. Overall, there will be 296 trees within Plot C once complete. 	

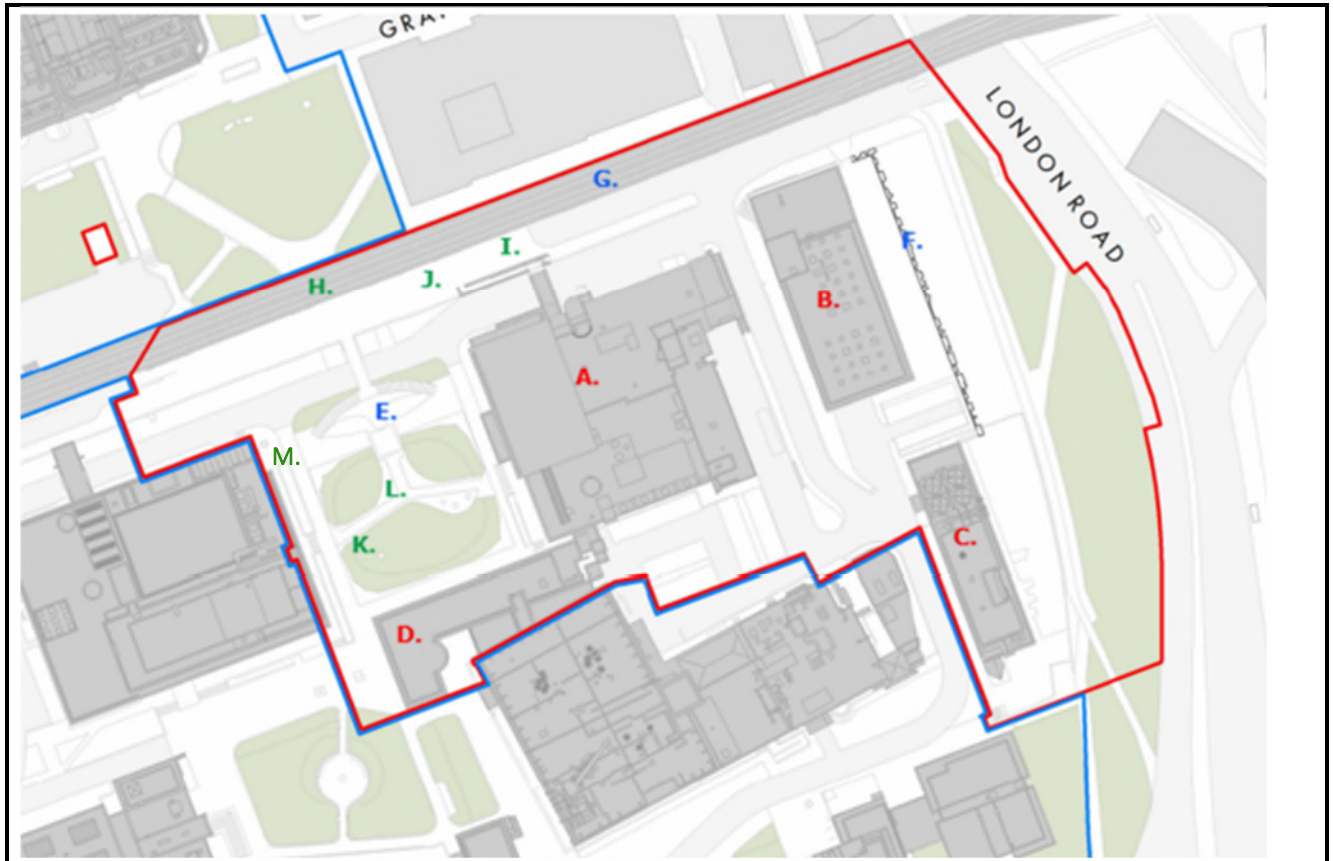


	Figure:	4.1		
	Title:	Site Plan with existing buildings and structures annotated (source: Allies and Morrison)		
	Project:	Plot C, Sister, Manchester		
	Date:	30/04/2025	Scale:	Not To Scale



	Figure:	4.2		
	Title:	Image looking west along Altrincham Street, showing level changes and part of the existing service access route serving Barnes Wallis and Wright Robinson Building (at lower level) (source: ID Manchester SRF)		
	Project:	Plot C, Sister, Manchester		
	Date:	30/04/2025	Scale:	Not To Scale

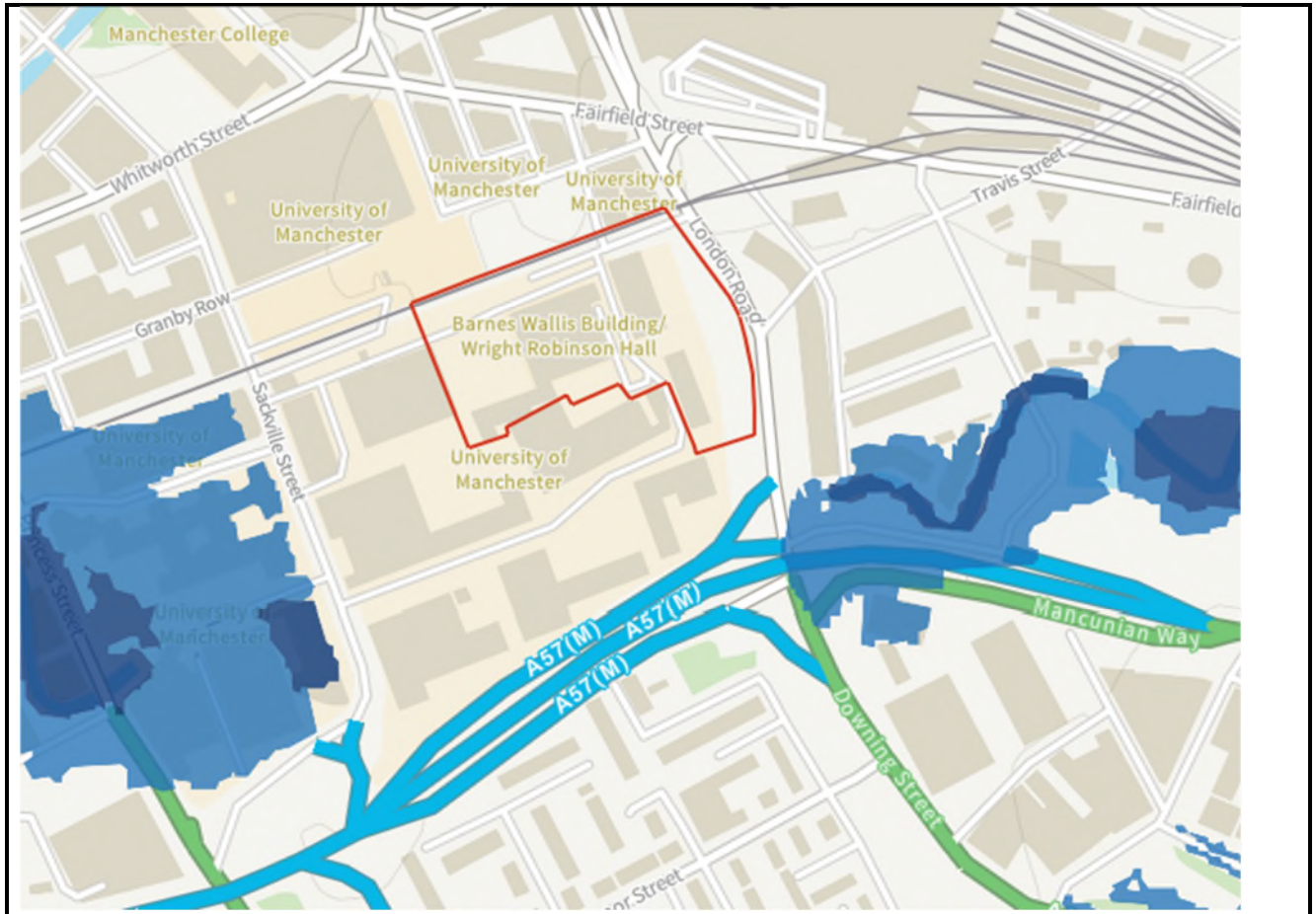


	Figure:	4.3		
	Title:	UK Government Flood Map		
	Project:	Plot C, Sister, Manchester		
	Date:	30/04/2025	Scale:	Not To Scale

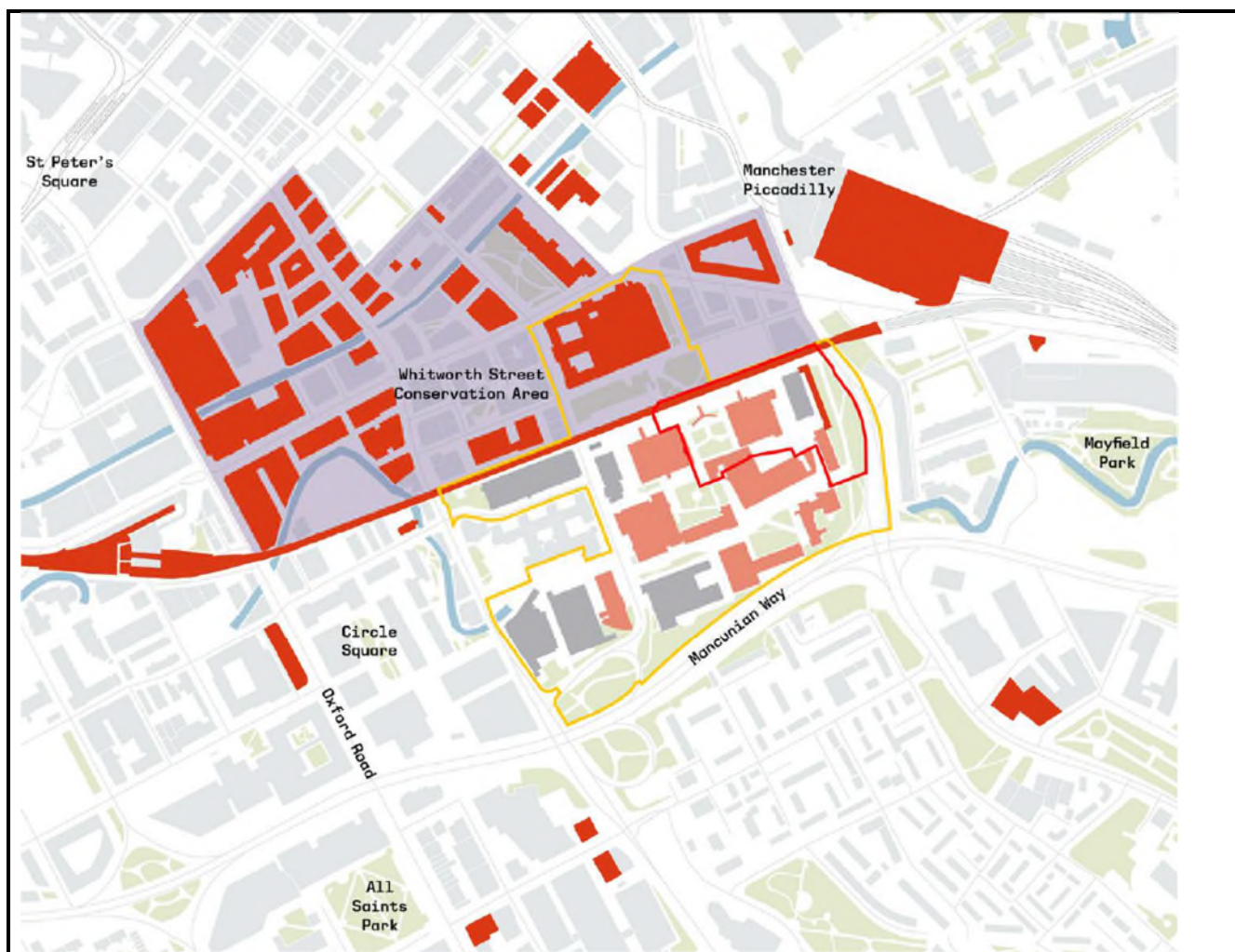


	Figure:	4.4		
	Title:	Conservation Area and Listed Buildings Map		
	Project:	Plot C, Sister, Manchester		
	Date:	30/04/2025	Scale:	Not To Scale

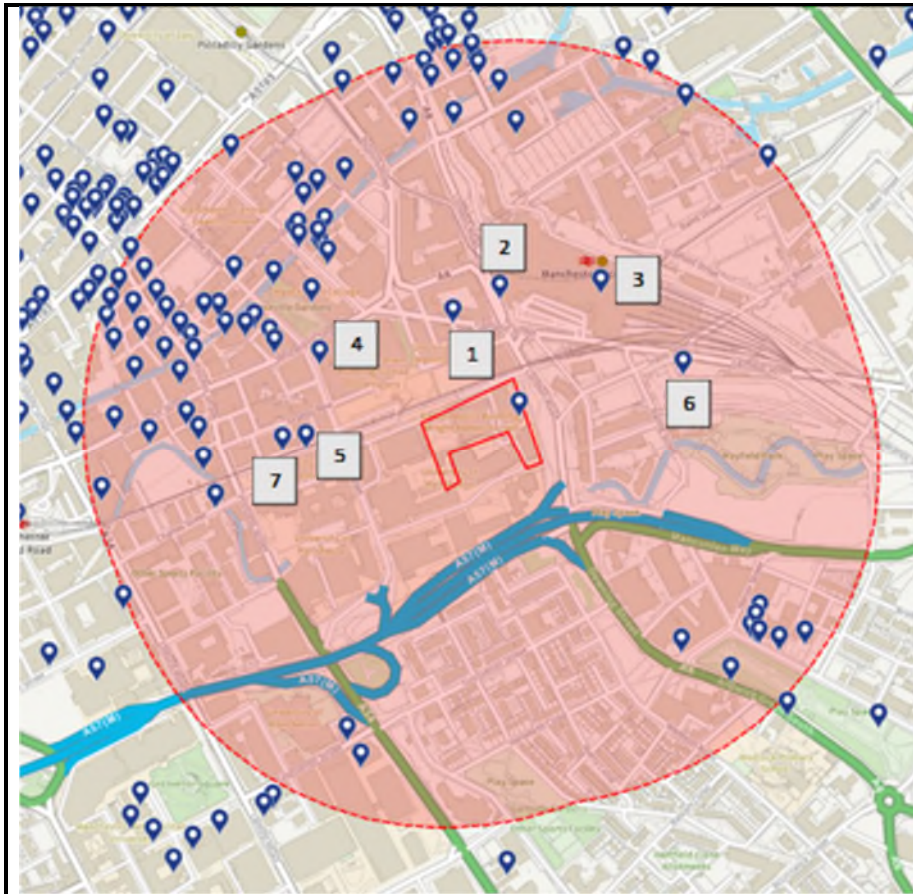


	Figure:	4.5		
	Title:	Historic England Listed Asset Map		
	Project:	Plot C, Sister, Manchester		
	Date:	30/04/2025	Scale:	Not To Scale

5. Construction Methodology and Programme

This Chapter of the ES has been prepared by Bruntwood SciTech and describes the proposed construction programme and the likely key activities that will be undertaken. Detailed consideration of potential impacts during the construction process and any necessary mitigation measures are provided in each relevant chapter of the ES. It should be read in conjunction with Figure 5.1 (Site Logistics Plan)

- 5.1. The main aim throughout the construction period is to minimise the impact on the surrounding properties and roadways for the duration of the work. Close collaboration with all project teams of all construction projects will be maintained at all times to achieve this aim.
- 5.2. The following narrative explains this methodology and timescales envisaged at the time of the planning application. More detailed proposals will be developed prior to commencement on Site. This will include preparation of detailed plans to incorporate Construction Management, Construction Phase Health and Safety, Environmental Management as well as Site Waste Management, Logistics and Traffic Management.

Programme

- 5.3. Subject to planning permission, the total construction programme will span a period of approximately 8 years incorporating the main works (c430 weeks). Within this period there will be elements of demolition, piling, ground works and foundations, frame construction, façade cladding, internal fit-out, landscaping and works to the existing Arches. Whilst there are several points that will determine the final programme and sequencing at the Proposed Development, the target plan is to split the development into phases subject to Planning Permission being granted the proposed key dates and durations are shown below.

Demolition

- 5.4. Demolition includes careful deconstruction of buildings located on C-plot namely: Morton, Moffat, Wright Robinson, Manchester Meeting Place, Barnes Wallis and The Butterfly Stairs. The works are estimated to progress between September 2025 and July 2026.
- 5.5. Demolition works will be phased to limit disruption to the site and surrounding areas. Following demolition of buildings, works continue with removal of ground/basement slabs along with grubbing up of existing foundations and any substructures including existing services tunnels.

Ground Remediation

- 5.6. On completion of removal of substructures, remediation will be carried out in accordance with the Regulatory Approved Site Remediation Strategy and will be implemented to ensure that all ground will be turned over to remove any contamination and clear the ground of any obstructions.
- 5.7. The plot will be formed to an agreed ground formation level to hand over the plot to the main works contractor to construct the new build.
- 5.8. The works for ground remediation and formation are estimated between July 2026 and December 2026.

New Build Construction

- 5.9. Following demolition and ground remediation, the whole of the plot will be handed over to the main contractor to construct the new C1 and C2 buildings. From this stage, the new build construction is split into two phases.

Phase A

- 5.10. Phase A consists of the delivery of a 12 storey plus ground commercial office building with ancillary amenities. Included within this phase of development is the creation of a servicing tunnel to allow service vehicles and personnel to access C1 via London Road and Altrincham Street. Landscaping and the delivery of the new public square will be included in this phase.
- 5.11. The overall estimated timescale to deliver phase A, the service tunnel and the new square is between January 2027 and October 2029, with landscaping and the new square continuing to December 2029.
- 5.12. The outline construction methods and timescales is as follows:
- Substructure: January 2027 – November 2027, comprising:
 - Installation of piling mat
 - Installation of CFA piles (assuming 1no. piling rig to install all piles)
 - Creation of ground floor slab and associated retaining structures
 - Formation of service tunnel
 - Superstructure: November 2027 – July 2028
 - Insitu concrete core that will either be built using a jump form method that will be constructed on a level by level basis ahead of the main concrete frame or, the alternative method is slipform with the core constructed to full height prior to the main frame commencing.
 - Insitu concrete frame, constructed on a level by level basis using table framework to install reinforcement and pour the concrete for each floor level. One or two tower cranes (luffer or saddle jib) will be utilised to lift all materials in place and move table form to various levels during construction. A concrete pumper will be used to pump concrete from ground level to the required pour level.
 - Façade and Roofing: April 2028 – October 2028
 - The façade is pre-cast concrete unitized system. The façade will be pre-fabricated off site in a quality controlled environment and delivered to site as a complete panel, a series of panels will make up the façade per level. On completion of the frame, each unitized panel will be lifted into place via the tower cranes, this is a single lift operation and the unitized system minimises deliverables to site and the number of operatives on site. The façade will be installed level by level working bottom to top.
 - The roofing is a hot melt applied system to be installed following completion of the insitu concrete roof slab once cured and moisture content at the appropriate level.
 - Internal Fit Out: May 2028 – June 2029

- Internal fit out is a mix of Shell and Core, CAT A office space and CAT B office space. All core spaces will be complete including lift lobbies, lifts and toilets, fit out will also include lower ground floor servicing and lobby areas. Food and beverage uses will be included in upper ground areas with reception spaces.
- Commissioning: June 2029 – October 2029
 - Commissioning of all electrical, mechanical and plumbing systems including associated witness testing, QA compliance and compliance with third parties including fire officer, building control and facilities management. During this period, the O&Ms will be finalised, QA checked and issued.
- External Works and New Square: June 2029 - December 2029
 - Landscaping and external works will commence during the fit out stages following completion of the structure and façade. Externals will be phased to allow continual access for material delivery and working around welfare arrangements.
 - Landscaping will be limited around Plot C1 and the new square with site hoarding removed with access for the public. Site hoardings will remain around Plot C2 in readiness for construction, access will be provided to allow servicing vehicles to use the servicing road.

Phase B

- 5.13. Phase B consists of delivery of a 20 storey commercial office building with associated amenities. This phase of work also includes the removal of hoarding and landscaping works.
- 5.14. The overall estimated timescale to delivery phase B is between January 2030 and December 2032.
- 5.15. The construction methodology is the same as phase A, however the programme for the phase B works is set out below:
- Substructure: January 2030 – May 2030
 - Superstructure: May 2030 – July 2031
 - Façade and Roofing: October 2030 – October 2031
 - Internal Fit Out: November 2030 – September 2032
 - Commissioning: September 2032 – December 2032
 - Landscaping: February 2032 – December 2032
- 5.16. Phase CO Details of the extent of the works are to be determined, however the programme allows for time to create space for future use for commercial and leisure facilities (Use Class E).
- 5.17. The current estimated construction periods for the phase C is between January 2033 and December 2033.
- 5.18. This is an indicative construction programme and the Applicant highlights that there are multiple risks involved in the development process. The Applicant note that this programme may ultimately be extended in the event of delays caused by sustained periods of poor weather, unexpected ground conditions or other abnormals, economic volatility and political uncertainty.

Hours

- 5.19. The programme has been developed based upon normal working hours in line with Manchester City Council guidance of 0730hrs to 1800hrs Monday to Friday and 0800hrs to 1400hrs on Saturday. Outside of these hours, any works that take place will have been agreed in advance with the Council. Access to Site will be permitted 30 minutes prior to the working day commencing with noise kept to a minimum for the first hour of each shift. Any further out of hours working will be generally limited to internal fit out operations.
- 5.20. The close proximity of the neighbouring residents is noted and as such this methodology will be followed ensuring that the programme and working hours are adhered to in order to protect residential amenity.

Construction Methodology

- 5.21. The following is a brief overview of the methodology to be adopted for the demolition, construction and fit out of the Proposed Development. This section also considers general logistics as well as traffic management for the movement of material for the disposal of waste.

Demolition Methodology

- 5.22. To allow the safe demolition of all structures on site, various demolition methods will be adopted to allow the works to be carried out safely within a busy city centre environment. Mechanical demolition methods using conventional demolition high reach machines, excavators and attachments will be used to carry out the low-level structures where it is safe to do so, and 'top down' floor by floor methods will be adopted to remove the taller and more high-risk areas of the structures on site.
- 5.23. Top down, floor by floor demolition is the preferred method when carrying out the demolition of high-rise structures within busy city centres and where space is limited. The building will be wrapped in a fully Mono-flexed scaffold system around its perimeter. Once erected, small 1t excavators and BROKKS will be lifted onto the roof using a mobile crane. The structure is then demolished floor by floor, with the generated demolition arisings being ditched down the existing lift shafts once they have been removed. The arisings are then collected from the lift shaft base with small plant and disposed off-site, as and when required. This process is then repeated until the building is down to ground floor level, or stops at a safe height where it can then be demolished mechanically using excavators.
- 5.24. During the delivery and collection of demolition plant and equipment, all loading and unloading activities will be carried out within the footprint of the site, and away from the public highway to minimise disruption to the road users and local residents. In circumstances when abnormal loads are required to site, these vehicle movements will be planned and agreed with effected parties in advance of the work.

Site Logistics

- 5.25. For the duration of the project, site offices and welfare will be located within the red line boundary. The offices and welfare are in close proximity to site and provide ample accommodation for site staff, operatives, and visitors. Access to site will be through a secure gate to enter the site or access the welfare accommodation.
- 5.26. Access to the Site will be controlled by electronic facial recognition through a secure metal turnstile. This will not only monitor operatives' movements but also prevent unauthorised public access during and out of working hours. The main gates will be locked secure at all times with the exception of when a delivery is being made. The gates will be manned by a qualified banksman who will co-ordinate traffic, bank deliveries as well as ensure the road and associated pavement areas are kept clear from debris and materials.
- 5.27. It is envisaged that construction vehicle access will utilise a one-way delivery system for access and egress on the Site. Accessing the site via Altrincham Street and exiting via Sackville Street.
- 5.28. Material storage will be contained within the Site boundary. All supply chain members will co-ordinate their respective needs with the site gateway and deliveries team. All deliveries will need to be booked in on an

online delivery system. This will help alleviate construction traffic in the surrounding area. Materials will be offloaded from the vehicle directly to the point of use wherever possible.

- 5.29. A permanent solid hoarding around the full perimeter of the Site will be erected prior to the start of the construction works proper. Please see Appendix 5.1.
- 5.30. The Site will operate a one way system with traffic exiting in the same direction as they entered.
- 5.31. A detailed traffic plan will be agreed with the Highways Authority in advance of starting works on the site.
- 5.32. It is envisaged that the temporary site establishment and welfare space will be located within the red line boundary. The welfare facilities will be suitably sized to suit the anticipated number of operatives.
- 5.33. Any temporary public road or footpath closures associated with the construction phase will be agreed with Manchester City Council highways department and relevant diversion signage will be put in place.
- 5.34. Where required, appropriate wheel and vehicle wash facilities will be in place to ensure delivery wagons leave the Site clean and tidy with regular cleaning of adjacent roads using road sweepers.
- 5.35. Loading and unloading of material deliveries will occur within the site boundary unless exceptional circumstances require special measures to be instigated.
- 5.36. The Site will employ security guards as appropriate to prevent and discourage nuisance. Regular patrols will take place throughout the shift. As an additional measure, CCTV will be installed to elements of the Site and compound to aid early identification of potential issues.

Demolition and Construction

- 5.37. The works generally comprise the following:
 - Site establishment including site hoardings and site welfare
 - Service diversions and isolations
 - Soft strip and asbestos removal will be complete prior to this phase
 - Temporary retaining structures
 - Scaffold installation
 - Demolition
 - Removal of foundations
 - Ground remediation and ground formation
 - Creating of piling mat substrate and formation of tower crane bases
 - Substructure
 - CFA & bored piling to the site perimeter with associated temporary propping
 - Creation of retaining structures
 - Bearing pad construction, ring beams and basement slab and drainage

- Superstructure
- Installation of tower crane(s)
- Construction of in-situ concrete core, by jumpform or slipform construction
- Insitu concrete superstructure to roof level
- Pre-cast concrete Façade
- Roof covering
- Installation of roof plant façade cladding
- Fit out to various scope, S&C, CATA and CATB
- Installation of internal mechanical and electrical systems including main lifts
- Fit out of landlord including walls, floors, ceilings, toilets and final finishes
- Installation of BMU
- Remove of tower crane(s)
- Completion of internal finishes to communal space
- Removal of permanent hoardings and temporary gates
- Landscaping
- Completion of public realm and creation new square
- Decant from site and opening of the development

Traffic Management Plan

5.38. It is envisaged that construction vehicles will approach site via London road and egress via Sackville street during the demolition phase. The construction phase access is via London road and will egress via Sackville St or London Road.

5.39. A full traffic management plan will be developed to address the following issues:

- Integration of traffic management scheme with surrounding construction developments and calming measures
- Access, egress, drop off and turning areas
- Temporary and/or permanent alterations to local traffic routes (both vehicular and pedestrian). It is currently assumed that the installation/dismantle of tower cranes will require some limited weekend local road closures and the Applicant is consulting MCC Highways to ensure any local highways impacts can be mitigated so far as is practical. It is anticipated that further details will be required to be submitted for approval via a planning condition, which will also be subject to wider consultation. The local community will be notified well in advance of any required road closures and a management strategy will be in place to minimise disruption as far as is practical.

- Additions, alterations and positions of any temporary signage, road markings or protection barriers.
- Pedestrian access around site and relevant protection, lighting and signage schemes.
- Temporary suspension / relocation of any parking bay or bus stops.
- Segregation of plant, materials and pedestrians on site and safe access routes between welfare and site areas.
- The provision of car parking, off and on site, and public transport strategy for staff and operatives.
- Loading bays, hoist positions and tower crane areas.
- Any other measures to ensure the safe integration of pedestrians, cyclists and road users both on, off and surrounding the development.

5.40. In preparation of the above document, the contractor will incorporate a policy of timed and booked deliveries, off peak deliveries and prefabrication to minimise local disruption and normal workings of the surrounds properties.

5.41. The Applicant will continue to consult with MCC Highways to identify opportunities to minimise any temporary highways disruption during the construction period.

Deliveries

5.42. Delivery routes for the major materials and items of plant will be as per the above section. Deliveries will endeavour to be delivered outside of peak traffic hours to minimise local disruption and the normal workings of the surrounding properties. Construction traffic routes will be specified and agreed with MCC as part of a Construction Management Plan to be prepared ahead of commencement of development. As set out above, deliveries will be undertaken via the Site access and within the Site boundary.

Parking

5.43. Parking will be provided on land adjacent to the Site and within the Applicant's control. Notwithstanding, site personnel will be encouraged to utilise the extensive public transport options available to them and will be asked to avoid parking in nearby residential areas.

Health and Safety

5.44. The project will be carried out in accordance with the Construction (Design and Management) Regulations 2015 and all other relevant legislation and guidance.

5.45. The Principal Contractor has not yet been tendered. Notwithstanding, the appointed Principal Contractor will have the appropriately trained management resource and procedures in place to oversee the activities of a complex, city centre construction project.

5.46. The Principal Contractor will produce a Construction Phase Health and Safety Plan prior to works commencing on site that will be reviewed and signed off by the client and their Principal Designer. This document will form the basis of the procedure for managing health and safety during the construction phase and will be periodically reviewed as the work progresses. This will address, amongst other things, flood risk, control of pollution, any required oversailing licences and relevant permits / consents required to complete the works.

Construction Materials

5.47. The materials selected at this stage of the design process do not generate a risk to construction personnel using the appropriate PPE and following manufacturer's guidance.

Site Security and Safety

- 5.48. Protecting the public from risks to their health and safety arising from the construction work is a high priority. Every care will be exercised to prevent risk to members of the public and appropriate action, including dust and noise control and the erection of perimeter fencing to a specified standard, will be taken.
- 5.49. Site securement will be achieved through a combination of secure fencing, barriers or hoarding, depending on the exact requirements and proximity to specific works. In addition, the principal contractor will be responsible for the provision of construction staff at key interfaces between the Site (and working areas) and retained accesses to public areas at key stages of demolition and construction activities.
- 5.50. Vandalism and theft of plant, equipment, materials and fuel is possible throughout the duration of the development. The Contractor will take appropriate action, as described in previous sections, to ensure the site is always secure from unauthorised access. As described previously, the Site will have metal turnstiles access system controlled by an individual facial recognition system.
- 5.51. The provision of CCTV would be considered if required to main site points and compound areas to assist in the prevention of unauthorised activities.

Environmental Management

- 5.52. An Environmental Plan will be developed to address and monitor the following issues on site and to the surrounding area:
- Applicable environmental legislation
 - Pollution
 - Nuisance (noise, vibration, dusk, emission and light)
 - Public relations

Environmental Legislation

- 5.53. Applicable environmental legislation will be identified in a register, to ensure that appropriate systems are put in place in order to comply with the legal requirements in question.

Pollution

- 5.54. Procedures will be established to ensure the prevention of water and ground pollution relating to the following risk activities:
- De-watering of the site (if required)
 - Soil contamination remediation
 - Earthworks (including piling, spoil movement and removal, and movement of contaminated soils)
 - Concrete works (including washing out of concrete delivery vehicles and pumps)
 - Storage and movement of fuels, oils, chemicals and other such fluids
 - Cleaning (including plant, machinery and wheel washing)

Nuisance (Noise, Vibration & Dust)

Noise & Vibration

- 5.55. The principal concerns relating to the nuisances of noise and vibration come from construction activities such as demolition, excavation, cutting, breaking out and plant movements. Mitigation measures will be considered to include low noise options, noise attenuation techniques and carrying out certain activities during agreed hours of the day.
- 5.56. In order to minimise the noise, the Contractor will likely provide the following:
- Any compressors brought on to the Site to be silenced or sound reduced models fitted with acoustic enclosures.
 - All pneumatic tools to be fitted with silencers or mufflers where available.
 - Care to be taken when unloading vehicles to minimise noise. Delivery vehicles to be routed to minimise disturbance to local residents. Delivery vehicles to be prohibited from waiting within or in the vicinity of the Site with their engines running.
 - All plant items to be properly maintained and operated according to manufacturers' recommendations in such a manner as to avoid causing excessive noise.
 - Where possible, all plant to be sited so that the noise impact at nearby noise sensitive properties is minimised.
 - Local hoarding, screens or barriers to be erected as necessary to shield particularly noisy activities.
 - Project is utilising pre-fabricated façade panels that will equate to minimising deliveries to Site, crane operated installation and reduced site labour.
- 5.57. In order to minimise the vibration, the Contractor will likely provide the following:
- Adoption of low vibration working methods. Consideration should be given to use of the most suitable plant.
 - Where processes could potentially give rise to significant levels of vibration, on-site vibration levels should be monitored regularly by a suitably qualified person.
 - Where piling is to take place, any obstructions should first be removed.
 - Application of piling techniques aimed at reducing resistance to penetration e.g. pre-boring for driven piles and adding water to the hole for impact bored piles.
 - Off-site manufacture of façade panels and crane lift install

Dust

- 5.58. The principal concerns relating to air quality and emissions from construction activities are in the form of dust and fumes. The degree of dust deposition is usually dependent on the nature of the works. Increased levels of dust are most likely to occur during site activities related to demolition, piling, moving construction traffic and ground works.
- 5.59. In order to minimise the dust and fumes, the Contractor will likely provide the following:
- Providing a hard surface where vehicle movements occur

- Control measures and dust suppression techniques.
- Minimising stock piling and positioning in a manner that reduces risk of dust arising through wind action.
- Measures such as screening and covering.
- Installation of appropriate wheel and body wash facilities.
- Keeping of adjacent roads and pavements clean.
- Ensure plant is turned off and not left running when not in use.
- Selection of electrically powered plant where possible in lieu of diesel or petrol plant.
- Off-site manufacture of façade panels

Public Relations

- 5.60. To align with the strategic regeneration framework objectives, the Contractor will ensure that regular contact is made with local residents and community groups to ensure they are kept up to date with general progress on the Site. This is especially important for major work elements such as piling and tower crane erection due to the close proximity of adjacent residential schemes. The Contractor will display a contact number on hoardings which will be operational 24/7.
- 5.61. The Contractor acknowledges the existing Sister Community Panel, comprising of key lead members of the local community, and will meet regularly to discuss upcoming significant activities on Site which would impact on traffic management and cause any other significant nuisance works with a view to reducing the affects to a minimum.
- 5.62. The Contractor will be obliged to follow the Considerate Constructor's Scheme.

Waste Management Strategy

- 5.63. In line with the "Site Waste Management Plan Regulations 2013", a Site Waste Management Plan (SWMP) will be developed by the principal contractor and agreed with Manchester City Council.

Operational Waste Removal

- 5.64. All waste generated during the construction phase will be disposed of using skips that have been supplied by reputable suppliers. Waste management licences and waste carrier's licences will be obtained from all suppliers prior to removing the waste from site thus ensuring that all waste has been dealt with in accordance with the regulations.
- 5.65. Any hazardous waste i.e. empty spray paint cans, oil rags etc. will be disposed of in the site hazardous waste drums. Once these are full, they will be collected and disposed of by the Contractor's designated waste management contractor.
- 5.66. Some of the waste produced during the construction phase will be recyclable and the waste collection contractor will segregate (off site) all the waste that can be recycled. All spoil arisings from the groundworks will either be removed from site or used as capping material where permitted. Designated skips will be used to recycle other waste.
- 5.67. Effective management of waste will consist of the following measures:
- Closed skip container (food waste etc.)

- Regular clean-up of the site
- Careful handling and transportation to avoid damage
- Efficient ordering
- Off-site manufacturing (where possible)
- Skips will be located in the site storage compound.

5.68. To reduce the volume of waste sent to landfill, waste from site will be segregated at the waste transfer station into the following categories.

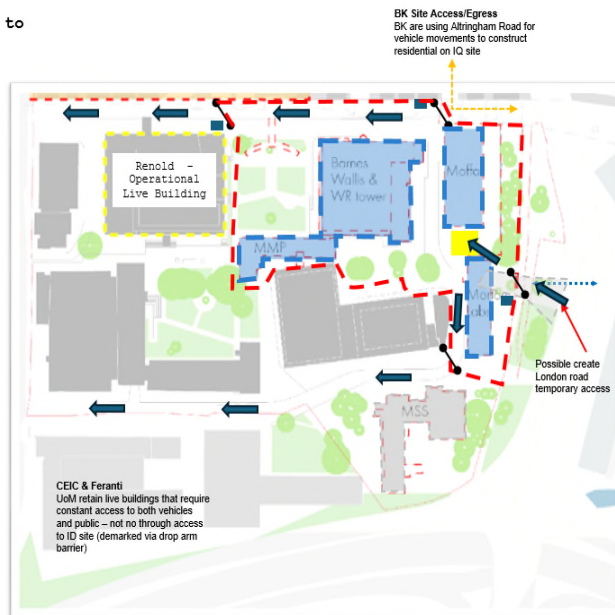
- CAT A: Hazardous waste – paint tins, mastic etc
- CAT B: Metal
- CAT C: Timber
- CAT D: Plasterboard
- CAT E: General Waste

5.69. All carriers of waste will hold a valid waste transfer licence and provide certification to the main contractor for all elements of the process.

5.70. Utilisation of prefabricated construction materials, such as reinforcement cages, pre-cast stairs, façade panels, MEP modules.

Phase 1a - Demolition

Period - September 2025 to August 2026



C-Plot Building Demolition

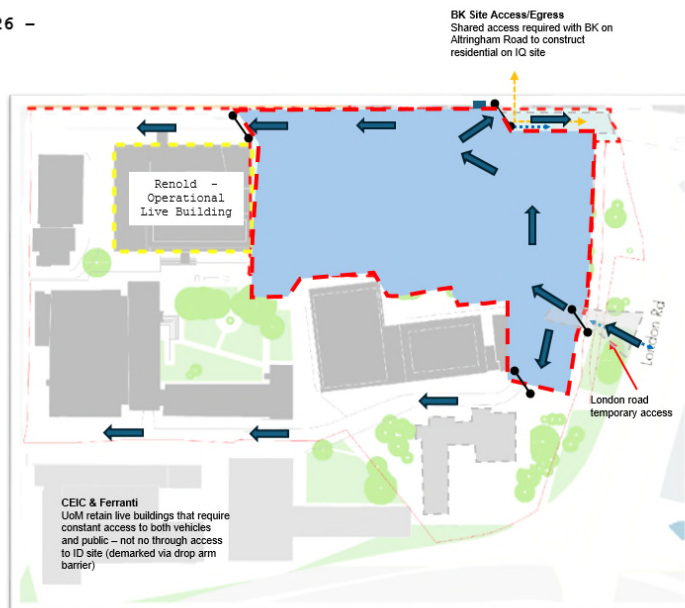
- Moffat Building (MB)
- Morton Lab (ML)
- Barnes Wallis (BW)
- Wright Robinson Tower (WR)
- Manchester Meeting Place (MMP)
- Butterfly Steps ??
- Mill (TBC)

Demolition Phase Key

- Hoarding / site boundary
- Indicative Construction Traffic
- Demolition Buildings
- Indicative Site Gates (4nd)

Phase 1b - Ground Remediation

Period - August 2026 - December 2026

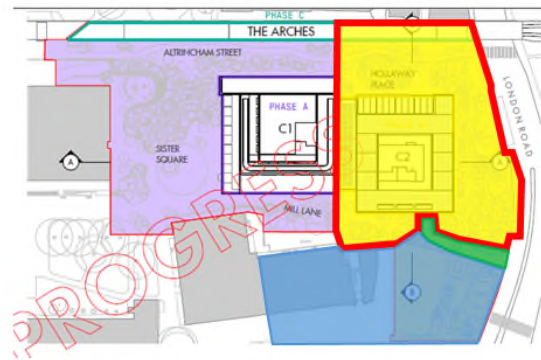


Remediation Phase Key

- Hoarding / site boundary
- Indicative Construction Traffic
- Remediation Plot
- Indicative Site Gates (4nd)

C1 Operational From January 2030

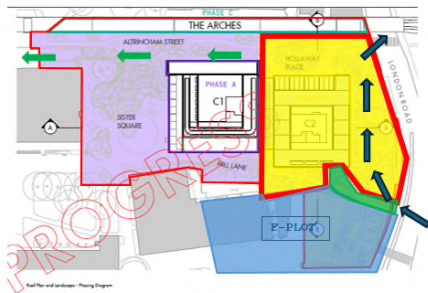
- Hoarding / site boundary
- Phase 2 - C1 Operational Inc Sister Sq
- Phase 3 - C2 Hoarded awaiting construction
- F-Plot - potentially under construction
- Public Service Access Route



Phase 3 - C2 Construction

Period - January 2030 to December 2032

C1 Construction Phase



Construction Phase Key

- Hoarding / site boundary
- Indicative Construction Traffic
- Indicative Servicing Traffic
- C1 Operational
- C2 Construction
- Public Servicing Access
- F-Plot - potentially under construction

Construction traffic
off London Road, one
way then out via
Altringham St West
(London Road)
(Assume F-plot under
construction)

Servicing operational
C1
Via London road,
under C2 construction
via service road,
under operational C1
(loading bays TBC)
egress via Altringham
St (one way)

	Figure:		5.1	
	Title:		Site Logistics	
	Project:		Plot C, Sister, Manchester	
	Date:	April 2025	Scale:	Not To Scale

6. Built Heritage

Introduction

- 6.1. This Chapter of the ES has been prepared by Stephen Levrant Heritage Architecture ('SLHA') and assesses the impact of the Proposed Development upon Built Heritage. The Chapter is accompanied by the following appendices:
- 6.2. Appendix 6.1 – Heritage Statement
- 6.3. The authors of this Chapter are Sarah Stirling (BA (Hons), MA) and Kirsten McKnight (BA (Hons), MA, MSc, IHBC) who, collectively, have c.20 years' experience in the preparation of ES Chapters in the historic built environment.

Table 6.0- Authorship Information.

	Lead Author	Reviewer
Name	Sarah Stirling	Kirsten McKnight
Company	Stephen Levrant Heritage Architecture	Stephen Levrant Heritage Architecture
Qualifications/Accreditations relevant to technical area inc. IEMA	BA (hons), MA (hons)	BA (Hons), MA, MSc, IHBC
Years technical experience (in technical area)	6	15
Number of EIA's delivered to date	15+	30+

Assumptions and Limitations

- 6.4. Survey of the identified heritage assets within the study area was undertaken from publicly accessible areas. As such the study is limited to assessment from ground level. An assessment of below ground archaeology does not form part of this assessment.

Relevant Legislation, Policy and Guidance

Legislation

- 6.5. The Heritage Statement (Appendix 7.1) has been prepared in accordance with or with reference to the following legislation, policy, and guidance:
- 6.6. Section 66 of the Planning (Listed Building and Conservation Areas) Act 1990 requires the Local Planning Authority to "have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses" when considering whether to grant planning permission. This section is of relevance as there are listed buildings within the Planning boundary and within the setting of the Site.
- 6.7. Section 72 of the Act is also of relevance given the presence of conservation areas in the setting of the Site, and because it embodies the "general duty as respects conservation areas in exercise of planning functions" and stipulates that "special attention shall be paid to the desirability of preserving or enhancing the character

or appearance of that area”. As the Site is partly contained within the Whitworth Street Conservation Area, the duties outlined in Section 72 are of relevance.

Policy

National Planning Policy

National Planning Policy Framework (Dec, 2024)

- 6.8. Chapter 12 (Design) of the NPPF establishes the Government’s framework and approach towards design. The NPPF states at **Paragraph 131** that *“good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities”*.
- 6.9. At **Paragraph 135**, the NPPF establishes a set of principles that Local Authorities should ensure are at the forefront when considering planning policies and development proposals. These principles stipulate that developments should: function well and contribute to the overall quality of the area; be visually attractive through the use of high quality architecture, successful layouts and effective landscaping; be sympathetic to local townscape character and history (including the built environment and landscape setting); reinforce and maintain sense of place through considered arrangement of streets, spaces, typologies and materiality; optimise the potential of sites and create a sustainable mix of developments; and create spaces that are safe, inclusive and accessible to all.
- 6.10. **Paragraph 139** states that developments that are that not well designed should be refused by Local Authorities (including and especially where proposals fail to reflect local design policies and government design guidance). Conversely, the NPPF states in the same paragraph that *“significant weight”* should be given to schemes that reflect local policy requirements and government guidance on design, and those that reflect *“innovative designs which promote high levels of sustainability”*.
- 6.11. Read together, Paragraphs 134 and 139 demonstrate the Government’s encouragement of Local Authorities to support schemes which embody high quality sustainable design.
- 6.12. Chapter 16 (Conserving and Enhancing the Historic Environment) of the NPPF sets out the Government’s planning policies on the conservation of the historic environment.
- 6.13. The policies in the NPPF constitute the Government’s view of what sustainable development in England means in practice. In these terms, development proposals which fail to give due weight to the conservation of heritage assets are deemed not to be sustainable development and consequently shall not be supported. This is because one of the key dimensions of sustainability is protecting and enhancing our historic environment.
- 6.14. The NPPF stresses that *“great weight”* should be given to the conservation of designated heritage assets (paragraph 212), emphasising the need to avoid substantial harm, in terms of demolition, alteration or the compromise of its setting. The fundamental objective is to ensure that the balance of the impact on the heritage assets is demonstrably beneficial, minimising any negative impact on their significance.
- 6.15. The NPPF establishes a clear hierarchy of significance for heritage assets, derived from their designated status. The fundamental objective is to avoid compromising designated heritage assets, such that any potential ‘harm’ from a development must be balanced against the potential advantages of the public benefits that may outweigh any harm.
- 6.16. Degrees of harm to designated heritage assets are categorised within the NPPF as 'substantial' and 'less than substantial'. Paragraph 214 states that *“where a Proposed Development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss”*. Four subsequent tests apply to mitigate such harm.

- 6.17. Paragraph 215 relates to 'less than substantial harm', stating that "Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use".
- 6.18. The 'designated heritage asset' status of the identified listed buildings and conservation areas within and in the setting of any Site requires that any potential 'harm' must be weighed and balanced against the potential advantages of the particular development proposal. It is thus necessary to establish whether the benefits of the proposals outweigh any perceived harm, in the context of the statutory duties set out above.
- 6.19. Paragraph 216 outlines that effects of a Proposed Development on non-designated heritage assets as follows: "The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset". This paragraph is of relevance, as the Site contains four buildings and structures that are considered to be non-designated heritage assets.

Local Planning Policy

Manchester Core Strategy (MCC, 2012) (as amended, 2024)

- 6.20. The relevant, local heritage planning policy maintains the same focus as the NPPF. The City Council's heritage policies focus on the fundamental importance of "preserving or, where possible, enhancing the historic environment". The following policies from Manchester's Core Strategy are of relevance.
- 6.21. Policy CC9 (Design and Heritage) states that development in Manchester City Centre should preserve or enhance the heritage assets that have been identified, including listed buildings, conservation areas and scheduled monuments. The policy also establishes that new development must support the range of uses the Council expects in the City Centre and contribute to a coherent and integrated physical environment.
- 6.22. Policy EN3 (Heritage) states that MCC will encourage development that complements and takes advantage of the distinct historic and heritage features of its districts and neighbourhoods. Development options must be designed to support the Council in preserving or, where possible, enhancing the historic environment, the character, setting and accessibility of areas and buildings of acknowledged importance.

Places For Everyone ('PfE') (Greater Manchester Combined Authority (GMCA), 2024)

- 6.23. PfE is the long-term plan of nine Greater Manchester districts for jobs, new homes and sustainable growth. The plan sets out a strategic policy framework for the nine boroughs and helps these areas to meet their local housing and employment needs by identifying land and infrastructure to support growth.
- 6.24. Objective 4 of the PfE seeks to: "Enhance our cultural, heritage and educational assets; - Improve sustainable transport and active travel access to these locations; - Improve access for local people to jobs in these locations."
- 6.25. Policy JP-P 2 addressing 'Heritage', states: "Through this Plan we will proactively manage and work with partners to positively conserve, sustain and "enhance its historic environment and heritage assets and their settings. Opportunities will be pursued to aid the promotion, enjoyment, understanding and interpretation of heritage assets, as a means of maximising wider public benefits and reinforcing Greater Manchester's distinct identity and sense of place. Local Plans will set out the key elements which contribute to the district's identity, character and distinctiveness and which should be the priority for safeguarding and enhancing in the future, and demonstrate a clear understanding of the historic environment and the heritage values of sites, buildings or areas and their relationship with their surroundings. This knowledge should be used to inform the positive integration of our heritage by:

1. Setting out a clear vision that recognises and embeds the role of heritage in place-making;

2. Utilising the heritage significance of a site or area in the planning and design process, providing opportunities for interpretation and local engagement;
3. Integrating the conservation and enhancement of heritage assets and their settings, with creative contextual architectural responses that contribute to their significance and sense of place;
4. Delivering positive benefits that sustain and enhance the historic environment, as well as contributing to the economic viability, accessibility and environmental quality of a place, and to social wellbeing; and
5. Exploring opportunities to reduce greenhouse gas emissions that restoration of historic buildings offer.”

- 6.26. Particular consideration will be given to ensure that the significance of key elements of the historic environment which contribute to Greater Manchester's distinctive identity and sense of place are protected from harm. These include historic town centres, places of worship, historic transport routes including the canal network, industrial buildings and structures including textile mills, farmsteads and other sites, buildings and areas of identified archaeological, architectural, artistic and historic value.
- 6.27. Development proposals affecting a designated heritage asset (or an archaeological site of national importance) and a conservation area should conserve those elements which contribute to its significance including those identified in any conservation area appraisal as making a positive contribution to the area. Harm to such elements will only be permitted where this is clearly justified and outweighed by the public benefits of the proposal.
- 6.28. Proposals should be informed, as necessary, by the findings and recommendations of the appropriate heritage assessment(s) in the development plan evidence base and/or any updated heritage assessment submitted as part of the planning application process.

Unitary Development Plan for the City of Manchester, 1995

- 6.29. The Unitary Development Plan (the ‘UDP’) for Manchester was adopted by the Council in 1995. The Core Strategy, adopted in 2011 and referred to above, replaced significant elements of the UDP, though there are saved policies which are extant, and which are relevant to a consideration of the impact of development proposals on heritage assets.
- 6.30. Development Control Policies 18.1 and 19.1 are saved from the UDP and address conservation areas and listed buildings respectively. The policies stipulate the careful consideration is given to development proposals which affect the respective heritage assets, providing a series of provisions to consider such as relationships between new and old buildings, and promote their preservation and enhancement.

Guidance

Planning Practice Guidance (‘PPG’) (2014 and as subsequently amended)

- 6.31. The PPG is an online document which is amended as required by the Government. It provides current advice to assist with the interpretation of the NPPF. The section “conserving and enhancing the historic environment” of the current iteration of the PPG has been reviewed and referenced in the course of producing this Heritage Statement. As evidenced in recent case law, the PPG is considered to carry considerable weight in Planning decisions, in line with that of the NPPF (see recent judgement in *Mead Realisations Ltd v Secretary of State for Housing Communities and Local Government* [2025] EWCA Civ 32).

Historic England Guidance

- 6.32. In 2015 Historic England (‘HE’) released three Good Practice Advice notes supporting the implementation of national policy and the related guidance provided within the PPG. Good Practice Advice Note 2 - Managing Significance in Decision-Taking in the Historic Environment (2015) (‘GPA2’) and Good Practice Advice Note 3 - The Setting of Heritage Assets (amended December 2017) (‘GPA3’) and Tall Buildings Advice Note 4 (March, 2022) were both utilised as part of this assessment in order to gain a full understanding of the relevant issues.

- 6.33. In particular, this Chapter and the accompanying Heritage Statement (Appendix 7.1) take account of the advice contained within the revised version of GPA3 on understanding what constitutes the setting of a listed building, Conservation Area, or other heritage asset. Furthermore, this Chapter relies on the guidance provided on the identification of assets and their settings which have the potential to be affected by development proposals, as well as the approach to the selection of indicative key views of a Proposed Development in a context which includes heritage assets and heritage sensitivities.
- 6.34. In terms of assessing the impacts of development proposals, this Chapter takes account of the advice in GPA3 which states that, “setting and views are matters of qualitative and expert judgement [...] technical analyses [and] should be seen primarily as material supporting a clearly expressed and non-technical narrative argument that sets out ‘what matters and why’ in terms of the heritage significance and setting of the assets affected, together with the effects of the development upon them.”
- 6.35. This Chapter also accords with the guidance and approach established in Historic England Advice Note 12 - Statements of Heritage Significance: Analysing Significance in Heritage Assets (2019) and Conservation Principles, Policies and Guidance (2008).

Assessment Methodology and Significance Criteria

Scenarios Tested

- 6.36. Proposed Development to be phased (C1 to come forward prior to C2), as such the proposed Phases are set out below.
- o Phase A: C1 and demolition of existing structures,
 - o Phase B: C2 and
 - o Phase C: Viaduct.
- 6.37. Potential effects associated with the construction and operational phases of the Proposed Development will relate to indirect temporary visual/setting impacts and indirect permanent visual/setting impacts. Given the sensitivity and complexity of the Site with regards to both designed and non-designated heritage assets, all eight scenarios have been considered. The scenarios which will be used to assess the Proposed Development in both the construction and operational phases will be:
- **Scenario 1:** Baseline Conditions (existing Site as of February 2025 including developments defined within the Baseline section of the committed development schedule in Appendix 2.3)
 - **Scenario 2:** Baseline + Phase A + Phase C
 - **Scenario 3:** Baseline + Phase A + Phase C + Cumulative
 - **Scenario 4:** Baseline + Phase A + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative
 - **Scenario 5:** Baseline + Phase A + Phase B + Phase C
 - **Scenario 6:** Baseline + Phase A + Phase B + Phase C + Cumulative
 - **Scenario 7:** Baseline + Phase A + Phase B + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative
 - **Scenario 8:** Baseline + Phase C

The Study Area

- 6.38. A study area of 500m from the Site boundary has been determined by SLHA as being appropriate for the consideration of potential significant effects of the Proposed Development on the setting of heritage assets in the local area. The determination of the study area has been based on an understanding of the existing nature of the Site and its surroundings, heritage sensitivities in the locality of the Site, the form and character of the Proposed Development, a Zone of Theoretical Visibility ('ZTV') (refer to TVIA Appendix 7.2) and has been further informed by professional judgement and experience in similar assessments. It is acknowledged that there are heritage assets outside of the study area and in the wider setting of the Site.
- 6.39. Within the 500m radius (beyond the Site boundary), there are approximately 60 Listed Buildings, these are listed in full at Table 8, Appendix I of the Heritage Statement. Following consideration of the Zone of Visual Influence Study only 8 of these Listed Buildings have been scoped in for further assessment.
- 6.40. Notwithstanding this, any heritage assets outside of the study area will still be considered with regard to any potential material impact to their setting or an appreciation of their significance in the forthcoming built heritage assessment and any effects identified; this will be informed by the verified views prepared (by Our Studio).

Surveys and Data Sources

- 6.41. Baseline data of the study area was collected utilising Historic England's Online Mapping tool (plotting structures identified on the National Heritage List for England) and MCC's available conservation-focused resources. Google Earth was also utilised as part of the baseline data collection.
- 6.42. Please refer to Figure 6.1 for heritage asset map (Listed Buildings), Figure 6.2 for heritage asset map (Conservation Areas) and Figure 6.3 heritage asset map (NDHAs)

Source of Effect

- 6.43. The built heritage chapter will identify and evaluate the nature and likelihood of the impacts of the Proposed Development, both permanent and temporary, in both the short term and long term, on built heritage receptors against clearly defined criteria. Indirect effects relate to changes to a heritage receptor's setting, i.e. changing the ability to appreciate the significance of a heritage receptor in the view, or other experiential effects which might change the setting of a heritage asset, such as increased levels of public activity in their locality. Direct effects relate to physical change to a heritage receptor through intervention to its fabric.

Significance Criteria

- o Criteria has been established to appraise a heritage asset's significance. Statutory criteria, as set out in the 'Principles of Selection for Listing Buildings', DCMS (2018), provides a list of principles of assessing significance based on architectural and historic interest, age and rarity, aesthetic merits, selectivity and national interest. Historic England's criteria outlined in 'Conservation Principles, Policies and Guidance' (2008), are also considered in this assessment.
- o Evaluation of significance has been informed primarily by the designation of the assets at an international, national, regional or local level as well as their ability to contribute to an understanding of the past. This value rating has also been applied when considering sensitivity of views containing heritage assets. Indicative definitions for each of these ratings are outlined in **Table 6.1** below:

Table 6.1- Significance Criterion for Determining the Value of Heritage Assets

Table 6.1: Significance Criterion for Determining the Value of Heritage Assets	
Significance / Sensitivity	Definition of Receptor
Very High	<ul style="list-style-type: none"> • Grade I listed buildings / Grade I registered parks and gardens • World Heritage Sites
High	<ul style="list-style-type: none"> • Grade I and Grade II* listed buildings. • Other buildings that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in the listing grade. • Conservation Areas containing very important buildings.
Medium	<ul style="list-style-type: none"> • Grade II listed buildings. • Historic buildings that can be shown to have exceptional qualities in their fabric or historical associations. • Conservation areas containing buildings that contribute significantly to its historic character.
Low	<ul style="list-style-type: none"> • Locally listed buildings / identified non-designated heritage assets • Historic buildings of modest quality in their fabric or historical association.
Negligible	<ul style="list-style-type: none"> • Recorded on the HER in record form or as 'Find Sites' • buildings, structures, or designed landscape features, which detract from the architectural design, historic, communal, or townscape interest of the principal heritage asset.
Unknown / none	<ul style="list-style-type: none"> • Buildings/sites where the potential importance interest requires determination • Or sites determined to be of no heritage interest

Baseline Conditions

Brief History of the Site

- 6.44. The land within and around the Site began to develop around the River Medlock during the early 19th century. Most of the area covering the Site had already been largely developed with linear blocks of warehousing and dwellings. Historic mapping from 1836 illustrates that London Road had been laid out by this date, with a bridge crossing over the River Medlock. Temple street ran parallel to the west, cutting through the centre of the area which would come to be the UMIST Campus, many years later. By the 1850s, the townscape fabric was radically altered with the construction of London Road Station (now Piccadilly Station) to the east of the Site. A substantial new Viaduct, named the Manchester South Junction & Altrincham Railway Viaduct, was also constructed, running east to west.

- 6.45. By 1900, Altrincham Street had been laid out, running parallel to the mid-19th century Viaduct. The most prominent change within the townscape was however the construction of the new 'Technical School' (hereafter referred to as the 'Sackville Building' to the north of Altrincham Street, c.1895, opened 1902. The building was extended in the 1930s, but not actually completed until the mid-1950s.
- 6.46. After the Second World War, the awarding of university status to a small number of technical colleges, including Manchester, was proposed. In 1953 the college's strategic importance in the national development of technology was underlined by Manchester's receipt of the highest proportion of central funding for technical further education of any city outside London, and the appointment of the eminent former radar researcher Dr Bertram Vivian Bowden as the college's Principal.
- 6.47. Bowden appointed Sir Hubert Worthington (1886-1963) to undertake a masterplan for the campus: Worthington had previously collaborated with the Council to draw up the City of Manchester Plan of 1945, which envisaged an expansion of the educational centre of the University of Manchester on Oxford Road and its integration with a new road system. Worthington prepared a masterplan for the campus which was delivered in unison with two architectural practices: Cruickshank and Seward and H. Fairhurst. Throughout the 1960s and 1970s, the UMIST campus was developed, featuring a number of modernist buildings arranged around open greenspaces and interconnected spaces with raised walkways. The campus was designed to be 'car free' and pedestrian only, with the heart of the campus enclosed by Sackville Street and London Road.
- 6.48. The Staff House (1959-1961, extended 1968) was one of the first buildings to be developed, built to the design of Hubert Worthington and extended shortly after construction. This building was closely followed by the Barnes Wallis + Wright Robinson Building (1963-1964), which formed a landmark asset within the campus site, built to the design of Cruickshank and Seward, finished in their signature white concrete. The Barnes Wallis + Wright Robinson building was designed to be read alongside the Renold Building (outside Plot C boundary) to the west, and Chandos Hall (now demolished), to the north of the Viaduct. The concept for a main staircase leading from Altrincham Street and onto the sunken campus is evident in the early stages of the campus masterplan (Hubert Worthington, 1950s), with the finalised design being the butterfly stair, which was erected in the early 1960s, enabling distinctive views of each building around the central bowling green.
- 6.49. The outlier within the Site is the Moffat building, which comprises an earlier 1950s confectionary warehouse structure which was substantially redeveloped in the 1960s (Fairhurst's) order to accommodate the estates department. This was followed by the construction of the Morton Laboratory (also known as the Chemical Engineering building) and the Hollaway Wall, which was collectively devised by H. Fairhurst and Antony Hollaway, to enclose the campus and address the long-running issues with the interface with London Road.

Heritage Context

Listed Buildings

- 6.50. Within the Site boundary there are two listed buildings. These are identified as numbers 1 and 2 in the list of scoped in listed buildings below, the following heritage statement report will assess both indirect (setting) and direct (fabric) impacts upon these designated heritage assets. Within the 500m radius (beyond the Site boundary), there are approximately 60 Listed Buildings, these are listed in full at Table 8, Appendix I of the Heritage Statement report (Appendix 6.1). Following consideration of the Zone of Visual Influence Study, the Listed Buildings identified below have been scoped in for further assessment. Please refer to Figure 6.1 for detail.
1. Sculptural Wall (Hollaway Wall) (Grade II)
 2. Manchester South Junction and Altrincham Railway Viaduct (Grade II)
 3. Institute of Science and Technology (University of Manchester) (Grade II)
 4. Train Shed and Undercroft at Manchester Piccadilly Station (Grade II)
 5. Former Goods Offices to Manchester Piccadilly Station (Grade II)
 6. Police and Fire Station (Grade II*)
 7. Star and Garter Public House (Grade II)
 8. Ardwick Drill Hall (Grade II)

Conservation Areas

- 6.51. Conservation Areas are designated (at the jurisdiction of the LPA) areas that are deemed to have special architectural or historical interest, the character or appearance of which it is desirable to preserve or enhance. The north aspect of the Site boundary (Viaduct) runs parallel to the Whitworth Street Conservation Area boundary. The Site falls partly within the designated area.

Non-designated heritage assets

- 6.52. Local planning authorities may identify buildings, monuments, sites, places, areas or landscapes identifies as 'non-designated heritage assets' (NDHA). These sites are understood as having a degree of significance which merits consideration in planning decisions but which are not formally designated heritage assets (i.e. listed). In some areas, local authorities identify non-designated heritage assets as 'locally listed'.
- 6.53. Some non-designated heritage assets, such as buildings of good local character or sites of archaeological interest, are of heritage significance but not at a level that would pass the threshold for national designation (listing). Such assets can, singularly and collectively, make an important, positive contribution to the local environment. It is important to note that not all non-designated heritage assets will necessarily feature on a local list and may be identified by the Local Planning Authority at any time during the planning process.
- 6.54. At the time of writing, MCC do not retain a local list. In the absence of this, the identification of 'non-designated heritage assets' within and around the Site have been identified utilising the Greater Manchester Historic Environment Record (GM:HER) and other relevant sources, such as Historic England's NHLE.
- 6.55. Within the Site boundary, the following assets have been identified as 'non-designated heritage assets' (NDHAs), please refer to Figure 6.3 for location detail:
1. Barnes Wallis and Wright Robinson
 2. Butterfly Stairs
 3. Morton Laboratory
 4. Manchester Meeting Place (Staff House)
- 6.56. None of these buildings yield sufficient interest for statutory listing, and this is recognised by the recent Certificate of Immunity (COI) status granted on each building, together with the Moffat Building, in October 2024.
- 6.57. Further to this, there are four pieces of public art which are within the Site boundary. These are also considered non-designated heritage assets:
5. Archimedes statue
 6. Havelock mill structure
 7. Generations of Possibilities (Magnet)
 8. UMIST Cube
- 6.58. Within the immediate setting of the Site, the following assets have been identified as 'non-designated heritage assets' and it is therefore necessary to consider the impact of the Proposed Development upon their setting:
9. Renold Building
 10. The Mill
 11. Pariser
 12. MSS Tower
- 6.59. It should be noted that at the time of writing, the Renold Building is being considered for statutory listing by Historic England/ the DCMS.

Scenario 1 – Baseline Condition

- 6.60. This section of the Chapter outlines the baseline context relative to the Site and the Proposed Development, with particular focus on Built Heritage.
- 6.61. Scenario 1 (baseline) can thus be summarised as containing two listed buildings, the Whitworth Street Conservation Area, and seven non-designated heritage assets. The Site is also within the setting of additional heritage assets, identified in the heritage context section above.

Identification and Evaluation of Likely Significant Effects

- 6.62. The assessment methodology for the Historic Built Environment is a synthesis of established guidance, best practice and professional judgement. In accordance with an adapted form of the methodology set out in the ICOMOS Guidance on 'Heritage Impact Assessments' (January 2011), in which the value of heritage attributes is assessed in relation to statutory designations, and priorities or recommendations set out in national research agendas, and ascribed values. Professional judgement is then used to determine the importance of the resource. The heritage assets which might be affected by the Proposed Development are valued and the impact on them is assessed in order to give a significance of effect.
- 6.63. A Heritage Statement (Appendix 6.1) has been prepared to support the Built Heritage Chapter and accompany the Planning Application. The Heritage Statement provides a detailed and robust baseline assessment of the identified heritage assets surrounding the Site, considering their significance and to what extent their setting contributes to an appreciation of this.
- 6.64. The Heritage Statement considers the potential indirect impact of the Proposed Development on heritage assets (i.e. change to setting or through indirect visual impact) of sensitive receptors within the defined study area (and beyond it where necessary). The Heritage Impact Assessment ('HIA') utilises relevant key views (prepared as Accurate Verified Views, 'AVRs') to inform an understanding of the potential effects of the Proposed Development. The selection of viewpoint locations has been informed by ZTV Studies (produced by Our Studio). The views have been identified in consultation with the LPA. A total of 19 key views have been identified for the purposes of the EIA, 12 of which are relevant for the HIA, although the wider set is interrogated within the Heritage Statement to understand the overarching visual impact of the Proposed Development. The proposed representative viewpoint locations are provided at Figure 7.2. In order to assess the potential magnitude and significance of effect of the indirect impact of the Proposed Development on the setting of heritage assets, the following criteria is considered:
- The sensitivity and proximity of receptors (i.e. heritage assets);
 - The nature of the existing views;
 - The degree of change to existing views and the visibility of the Proposed Development;
 - The availability and amenity of alternative views;
 - Other experiential changes to the setting of receptors such as increased activity levels.
- 6.65. The assessment section of the Chapter will describe the potential impacts to the heritage assets as a result of the Proposed Development and outline suitable mitigation measures to deal with the potential effects of the Proposed Development on heritage assets.
- 6.66. **Tables 6.2-6.3** below set out the methodology for determining the magnitude of impact of Proposed Development, the sensitivity of a receptor, and the overarching 'Impact Significance', i.e. the overall effect of the Proposed Development on the receptor.

Table 6.2- Methodology for determining the magnitude of impact of Proposed Development

Magnitude of Impact	Criteria for Assessing Effect
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Major	Total loss or major/substantial alteration to key elements/features of the baseline conditions such that the post development character/composition/attributes will be fundamentally changed.
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Minor	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character / composition / attributes of the baseline condition will be similar to the pre-development circumstances/situation.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.
Neutral	This does not necessarily mean that there will be no physical or visual change, rather that the resultant difference will be imperceptible or appropriately balanced.

- 6.67. The significance of an environmental impact is determined by the interaction of magnitude and sensitivity, whereby the impacts can be positive, negative or neutral. The impact Significance Matrix is set out in Table 6.3 below. Areas highlighted in **bold** are representative of a 'significant' effect, in EIA terms.

Table 6.3- Sensitivity of Receptor

Magnitude	Sensitivity		
	High	Medium	Low
Major	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate or Minor Adverse/Beneficial
Moderate	Major - Moderate Adverse/Beneficial	Moderate Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate or Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial - Negligible
Negligible	Negligible	Negligible	Negligible
Neutral	Neutral	Neutral	Neutral

Construction Phase

- 6.68. During the demolition and construction phase, works related to the Proposed Development will trigger various construction impacts which in turn will temporarily and indirectly impact the heritage assets within the Site and within the setting of the Site. The following section addresses Scenarios 2, 5 and 8, with additional cumulative scenarios captured in the following section.
- 6.69. Particular regard will be made to construction impacts upon the Grade II listed Hollaway Wall, which is to be subject to direct impacts during the construction phase and thus a detailed Construction Management Plan (CMP) will be required. For the purposes of LBC, a Structural Appraisal & Methodology report (prepared by Civic Engineers) summarises the current understanding of the Hollaway Wall, including its original construction method and condition, which will further inform the understanding for the asset's capacity for intervention and risk mitigation. It is understood that the Hollaway Wall was cast in-situ, as opposed to pre-fabricated panels (as the list description suggests). The detailed survey report by Civic highlights the environmental changes proposed to the structure would incur limited impact to the longevity of the Hollaway Wall, with the proposed enclosure of the Hollaway Wall within C2 actually providing a more sustainable and manageable environment for the structure. Importantly, Civic notes that *'the new building will not rely upon the Hollaway wall for support. The wall will continue to be self supporting in terms of vertical and lateral load'*. This is an important measure for understanding the long-term impact of the Proposed Development on the structure, both during the construction stage and the operational stages. The fact the Hollaway Wall will remain a self-supporting structure, divorced from the C2 building, is considered positive.

- 6.70. The principal direct impact to the Hollaway Wall will derive from the sections which are to be cut and folded into the landscaping. The Proposed Development seek to make 'cuts' and 'folds' to five localised areas of the Hollaway Wall, with sections of concrete panels proposed to be folded and integrated into the new landscaping and public realm spaces within and around the C2 building. The southern return of the Hollaway Wall is to be relocated further west, retaining its external focus and original function as it will assist with addressing the level change between London Road and Mill Lane to make the Hollaway Wall more accessible to the public; it will continue to provide a retaining wall function around the servicing tunnel.
- 6.71. The existing timber gate within the Hollaway Wall to the north return is proposed to be retained in-situ, fixed in an open position. The north and southern returns of the Hollaway Wall are proposed to remain located externally, with the central portion being enclosed within the C2 building. The levels within the Manchester Room will seek to respond to the existing external topography around the Hollaway Wall, and proposed internal levels, to generate a subtle internal topography that allows interaction with the Hollaway Wall and creates a distinction between spaces/uses.
- 6.72. The direct impact to the Grade II listed structure is judged to be **moderate adverse (long-term, permanent)**, as it will be clear that the alterations to the Hollaway Wall directly affect sections of original fabric. The degree of alteration is not considered to give rise to substantial effects, due to the extent of original fabric which will remain appreciable in-situ, paired with the retention of the majority of the cut sections which will remain readable within the landscaping.
- 6.73. The assessment methodology and approach to the relative impact on heritage assets during the construction phase is based on evidence-based assumptions in relation to common indirect issues such as demolition, dust, noise, site hoarding, scaffolding, increased pressure on local road networks through presence of construction traffic and appearance of construction machinery in views which also take in heritage assets.
- 6.74. **Scenario 2:** Baseline + Phase A + Phase C – it will be evident that scenario 2 will give rise to a series of significant effects in relation to built heritage. The implementation of Phase A + Phase C (construction phase) would result in total loss (permanent) of four non-designated heritage assets (with the potential reuse of some elements of the Butterfly Stair subject to ongoing / further investigation works; however, in order to establish a 'worst case scenario, the current chapter will assess the impact of total loss). This would incur a moderate impact (long term, permanent) on these receptors, incurring an overall moderate adverse significance of effect (direct and indirect). The loss of these buildings would also incur a minor-to-moderate adverse impact on the settings of nearby NDHAs, incurring a minor adverse significance of effect (long term, permanent).
- 6.75. Scenario 2 (construction phase) would necessitate the temporary removal of two pieces of public art (NDHAs), which are proposed to be taken into storage (on-site, Pariser) until the implementation of Phase B, with the Archimedes Sculpture proposed to remain in situ. The latter would need to be adequately protected during these works via the construction management plan. This would give rise to a moderate adverse (temporary) effect, which would be mitigated in part during the operational phase through appropriate repair and relocation.
- 6.76. With regards to designated heritage assets, scenario 2 would incur minimal direct impact on the Hollaway Wall (Grade II), as the Moffatt building is directly connected to the heritage asset and this ancillary building is proposed to be demolished as part of the Phase A works. The direct impact on the Hollaway Wall would however be negligible, subject to the connecting areas being made good. Scenario 2 would also incur a moderate adverse impact upon its setting, through the loss of the non-designated heritage assets which have formed part of its original context since the Hollaway Wall was constructed (long term, permanent). Further to the above, scenario 2 is considered to give rise to a minor adverse impact on the setting of the Viaduct (Grade II) and to the character and appearance of the Whitworth Street Conservation Area during the construction phase (temporary, indirect effect). These effects will be mitigated in part during the operational phase through material benefits derived through enhancement to setting, with the exception of some permanent loss of fabric to the Viaduct (eastern arch infill) incurring an isolated minor adverse impact (long-term, permanent).

- 6.77. **Scenario 5:** Baseline + Phase A + Phase B + Phase C - it will be evident that scenario 5 will give rise to a series of significant effects in relation to built heritage, which are the same as those outlined in Scenario 2 (above). The implementation of Phase A + Phase B + Phase C (construction phase) would result in total loss (permanent) of four non-designated heritage assets. This would incur a major adverse impact (long term, permanent) on these receptors, incurring an overall moderate adverse significance of effect (direct and indirect). The loss of these buildings would also incur a minor-to-moderate adverse impact on the settings of nearby NDHAs, resulting in an overarching minor adverse significance of effect upon their setting (long term, permanent). Scenario 5 (construction phase) would necessitate the temporary removal of two pieces of public art (NDHAs), with the Archimedes Sculpture proposed to remain in situ. The latter would need to be adequately protected during these works. This would give rise to a moderate adverse (temporary) effect, which would be mitigated in part during the operational phase through appropriate repair and relocation.
- 6.78. With regards to designated heritage assets, scenario 5 would incur both direct and indirect impacts to the Hollaway Wall (Grade II). The direct impact is judged to be major adverse (temporary) during the construction phase, (temporary), principally through the combined loss of visibility of the Hollaway Wall due to hoarding and effects such as dust, noise etc. A further moderate adverse effect will be judged to occur to the setting of the listed building, through the loss of the non-designated heritage assets (Morton Laboratory and Barnes Wallis / Wright Robinson Tower) (long term, permanent). The identified adverse effects will be tempered in part during the operational phase of the development, in which the Grade II listed Hollaway Wall will be cleaned and integrated as a sculptural piece of art within the newly formed 'Manchester Room'.
- 6.79. Further to the above, scenario 5 is considered to give rise to a minor adverse impact on the setting of the Viaduct (Grade II) and to the character and appearance of the Whitworth Street Conservation Area during the construction phase (temporary, indirect effect). These effects will be mitigated in part during the operational phase, through material benefits derived through enhancement to setting, with the exception of some permanent loss of fabric to the Viaduct (eastern arch infill) incurring an isolated minor adverse impact (long-term, permanent).
- 6.80. **Scenario 8:** Baseline + Phase C – it will be evident that Scenario 8 (during the construction phase) would give rise to a minor adverse impact on the setting of the Viaduct (Grade II) and to the character and appearance of the Whitworth Street Conservation Area (temporary, indirect effect). These effects will be mitigated in part during the operational phase, with the exception of some permanent loss of fabric to the Viaduct (eastern arch infill) incurring an isolated minor adverse impact (long-term, permanent).

Operational Phase

- 6.81. The assessment methodology and approach to the relative impact on heritage assets during the completed / operational phase has been assessed utilising the suite of application plans and drawings, the Design and Access Statement ('DAS') prepared by the project architect (Allies and Morrison) and the verified views prepared by Our Studio, as well as the application of professional judgement.
- 6.82. A summary of the operational effects on scoped-in heritage assets is provided at Table 6.6 below. To align with scenarios assessed.
- 6.83. **Scenario 2:** Baseline + Phase A + Phase C. The implementation of Phase A + Phase C (operational phase) would result in total loss (permanent) of four non-designated heritage assets, which would be demolished during the construction phase. This would incur a major adverse impact (long term, permanent) on these receptors, incurring an overall moderate adverse significance of effect (direct). The loss of these buildings would also incur a minor-to-moderate adverse impact on the settings of nearby NDHAs, resulting in an overarching minor adverse significance of effect upon their setting (long term, permanent). Scenario 2 (operational phase) would also see the relocation of pieces of public art (NDHAs) to 'Hollaway Place', with the Archimedes Sculpture proposed to remain in situ. The UMIST cube is to be repaired and relocated to the same position during the operational phase. Each piece is proposed to be restored prior to relocation, incurring a minor beneficial (direct, long term) effect.

- 6.84. With regard to designated heritage assets, scenario 2 would incur a negligible adverse direct impact on the Hollaway Wall (Grade II) through the demolition of the Moffat building, which directly abuts the Hollaway Wall. Scenario 2 is judged to incur a moderate adverse impact upon its setting, through the loss of the non-designated heritage assets within its setting. Impact of the Proposed Development upon the setting of the Hollaway Wall would be mitigated in part through the benefits brought about by the scheme during the operational phase, through enhancements to the public realm and placemaking. These are to be weighed against the harm identified above. Scenario 2, during the operational phase, will also give rise to both beneficial (minor) and adverse (minor) impacts to the Viaduct (Grade II) (long term, direct and indirect), and a negligible beneficial impact on the character and appearance of the Whitworth Street Conservation Area. The minor adverse impact on the Viaduct primarily derives from the permanent loss of historic brickwork to the easternmost arch, which is proposed to be removed to allow for new commercial units during the operational phase. The overarching enhancements proposed to the arches derive from activation of the arches through new commercial units which will have a unified character – thereby incurring a beneficial effect on the setting of the Viaduct.
- 6.85. **Scenario 5:** Baseline + Phase A + Phase B + Phase C - it will be evident that scenario 5 will give rise to a series of significant effects in relation to built heritage. The relative impacts are the same as those outlined in Scenario 2 (operational) above.
- 6.86. With regards to designated heritage assets, scenario 5 would incur both direct and indirect impacts to the Hollaway Wall (Grade II). The direct impact is judged to be moderate adverse (permanent) during the operational phase, as the Proposed Development seek to make interventions to the Hollaway Wall, with portions of it proposed to be laid flat as a landscaping / public engagement feature and some aspects re-positioned (southern return). The impact upon the setting of this listed structure during the operational phase is judged to be moderate adverse, as it will be evident the Proposed Development will result in extensive change to the original setting of the Grade II listed asset, including loss of the NDHAs such as the Morton Labs and Wright Robinson Tower. However, this impact is considered to be tempered in part through the material enhancements the Proposed Development will bring about, including activation and public engagement and interaction with the Hollaway Wall. This would be further enhanced by the relocation of public art and new landscaping within the setting of the listed building around 'Hollaway Place'. The UMIST cube is to be repaired and relocated to the same position during the operational phase. On balance, the residual significance of effect to the setting of the Hollaway Wall after these embedded design mitigation measures is judged to be 'moderate adverse' overall.
- 6.87. Under scenario 5, the loss of the four NDHAs would incur a minor-to-moderate adverse impact on the settings of nearby NDHAs, resulting in an overarching minor adverse significance of effect upon their setting (long term, permanent).
- 6.88. The completion of Phase A + Phase B (operational) will bring about a number of public benefits and enhancements through placemaking, the public benefits discussion is expounded upon within the Planning Statement (Deloitte). These are to be weighted against the harm identified above. Further to the above, scenario 2, during the operational phase, is considered to give rise to a moderate beneficial impact on Viaduct (Grade II) (long term, direct and indirect), and a negligible beneficial impact on the character and appearance of the Whitworth Street Conservation Area.
- 6.89. **Scenario 8:** Baseline + Phase C – it will be evident that Scenario 8 (during the operational phase) would result in no harm to the built historic environment. The delivery of this scenario in isolation would give rise to a moderate beneficial impact on Viaduct (Grade II) (long term, direct and indirect) and a negligible beneficial impact on the character and appearance of the Whitworth Street Conservation Area.

Cumulative Effects

- 6.90. The cumulative assessment within this Chapter considers the cumulative effect of the Proposed Development in conjunction with other developments in the local and wider townscape which, when considered individually

might be insignificant, but when considered together could create a significant cumulative effect. The cumulative schemes which are a consideration of this assessment are identified at Appendix 2.3 of the ES.

- 6.91. Cumulative: upon assessment of the cumulative AVRs, it will be evident the only development of relevance to the assessment is the Echo Street development (under construction). It is not considered this will result in any material change to the proposed situation and will incur no further / greater impact.

Construction

- 6.92. **Scenario 3:** Baseline + Phase A + Phase C + Cumulative – the identified impacts / significance of effect on built heritage for scenario 3 (construction phase) will remain unchanged when compared with scenario 2 (discussed above). It is not considered that in any of the cumulative developments will result in any material change to the conclusions as set out in scenario 2.
- 6.93. **Scenario 4:** Baseline + Phase A + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative. The identified impacts / significance of effect on built heritage for scenario 4 (construction phase) will remain unchanged when compared with scenario 2 (discussed above). However, the implementation of the wider IDM Masterplan would incur some additional harm to the built historic environment through further, permanent loss of non-designated heritage assets within the SRF Area. Incurring further instances of minor adverse significance of effect (permanent) to the heritage assets within the Site. The loss of NDHAs such as Pariser and MSS tower, combined with the increase of height and scale within the setting of the Site, would result in a high degree of harm to the built historic environment. The degree of identified harm is to be weighted against the substantial public benefits the wider ID Manchester Masterplan will bring about, please refer to the Planning Statement (Deloitte) for relevant discussion on benefits / harm balance. As the wider IDM Masterplan comes forward separate assessments, and associated mitigation will be required and that this assessment is qualitative only.
- 6.94. **Scenario 6:** Baseline + Phase A + Phase B + Phase C + Cumulative - the identified impacts / significance of effect on built heritage for scenario 3 (construction phase) will remain unchanged when compared with scenario 5 (discussed above). It is not considered that in any of the cumulative developments will result in any material change to the conclusions as set out for scenario 5.
- 6.95. **Scenario 7:** Baseline + Phase A + Phase B + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative. The identified impacts / significance of effect on built heritage for scenario 7 (construction phase) will remain unchanged when compared with scenario 5 (discussed above). However, the implementation of the wider IDM Masterplan would incur some additional harm to the built historic environment through further, permanent loss of non-designated heritage assets within the wider SRF Area. Incurring further instances of minor adverse significance of effect (permanent) to the heritage assets within Site. The loss of NDHAs such as Pariser and MSS tower, combined with the increase of height and scale within the setting of the Site, would result in a high degree of harm to the built historic environment, due to the combined loss of NDHAs and cumulative change to the character of the area. As stipulated above, as the wider IDM Masterplan comes forward separate assessments, and associated mitigation will be required and that this assessment is qualitative only.

Operation

- 6.96. **Scenario 3:** Baseline + Phase A + Phase C + Cumulative – the identified impacts / significance of effect on built heritage for scenario 3 (operational phase) will remain unchanged when compared with scenario 2 (discussed above). It is not considered that in any of the cumulative developments will result in any material change to the conclusions as set out in scenario 2.
- 6.97. **Scenario 4:** Baseline + Phase A + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative. The identified impacts / significance of effect on built heritage for scenario 4 (operational phase) will remain unchanged when compared with scenario 2 (discussed above). However, the implementation of the wider ID Masterplan would incur instances of additional harm to the built historic environment through further, permanent loss of non-designated heritage assets within the wider ID Masterplan Site. Incurring additional

minor adverse significance of effect to the Site. The loss of NDHAs such as Pariser and MSS tower, combined with the increase of height and scale within the setting of the site, would result in a high degree of harm to the built historic environment. As the wider IDM Masterplan comes forward separate assessments, and associated mitigation will be required and that this assessment is qualitative only. The degree of identified harm is to be weighted against the substantial public benefits the wider ID Manchester Masterplan will bring about, please refer to the Planning Statement (Deloitte) for relevant discussion on benefits / harm balance.

- 6.98. **Scenario 6:** Baseline + Phase A + Phase B + Phase C + Cumulative - the identified impacts / significance of effect on built heritage for scenario 3 (operational phase) will remain unchanged when compared with scenario 5 (discussed above). It is not considered that in any of the cumulative developments will result in any material change to the conclusions as set out for scenario 5. As above, the degree of identified harm is to be weighted against the substantial public benefits the wider ID Manchester Masterplan will bring about, please refer to the Planning Statement (Deloitte) for relevant discussion on benefits / harm balance.
- 6.99. **Scenario 7:** Baseline + Phase A + Phase B + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative. The identified impacts / significance of effect on built heritage for scenario 7 (operational phase) will remain unchanged when compared with scenario 5 (discussed above). However, the implementation of the wider ID Masterplan would incur some additional instances of harm to the built historic environment through further, permanent loss of non-designated heritage assets within the wider ID Masterplan Site. Incurring additional minor adverse significance of effect (permanent) to the Site. The loss of NDHAs such as Pariser and MSS tower, combined with the increase of height and scale within the setting of the site, would result in a high degree of harm to the built historic environment. As the wider IDM Masterplan comes forward separate assessments, and associated mitigation will be required and that this assessment is qualitative only.

Mitigation Measures

Construction Phase

- 6.100. During the construction phase, works related to the Proposed Development will trigger various construction impacts which in turn will directly and indirectly affect heritage assets within and within the setting of the Site (temporary and permanent effects).
- 6.101. The assessment methodology and approach to the relative impact on heritage assets during the construction phase is based on evidence-based assumptions in relation to common indirect issues such as dust, noise, site hoarding, scaffolding, increased pressure on local road networks through presence of construction traffic and appearance of construction machinery in views which also take in heritage assets. For the purposes of LBC, a Structural Appraisal & Methodology report (prepared by Civic Engineers) will further inform the understanding for the asset's capacity for intervention and risk mitigation.
- 6.102. Prior to any demolition, a method statement by a suitably trained contractor should be submitted to the council. This should include relevant protection measures to avoid unnecessary dust, noise and debris impacting upon the surrounding built environment.
- 6.103. Recommended measures, to be included within a Construction Environmental Management Plan ('CEMP'), traditionally secured via condition, include:
- Use of high quality hoardings;
 - Dust management;
 - Regular cleaning of roads and the public realm surrounding the site;
 - Edge protection to be affixed whilst concreting operations are in place;
 - Implementation of a traffic management plan; and
 - Vibration monitoring.

Operational Phase

- 6.104. Mitigation for the impacts derived from the Proposed Development on heritage assets in the operational phase is embedded in the high-quality architecture and design of the buildings, and the regeneration of a complex site to bring forwards the Innovation District. This includes the choice of high-quality materials and detailed design elements which respond and are complementary to the surrounding townscape, the provision of high-quality public realm with hard and soft landscaping, the activation of frontages across the Site, and enhanced connections with neighbouring developments and to Piccadilly Station.
- 6.105. The assessment methodology and approach to the relative impact on heritage assets during the operational phase has been assessed utilising the suite of application plans and drawings, the 'DAS by Allies and Morrison, the AVRs prepared by Our Studio, structural reports by Civic Engineers and professional judgement. During the operational phase, it is anticipated that a management plan to manage ongoing protection / cleaning works may be required to ensure the fabric and character of the Hollaway Wall is preserved (post-planning, secured via condition). A summary of the operational effects on scoped-in heritage assets is provided at Table 6.6 below.

Residual Effects

- 6.106. The residual impacts, i.e. the remaining impacts of the Proposed Development following implementation of proposed mitigation, are summarised in the Construction and Operational phases in Table 6.4 below.

Table 6.4- Residual Impacts

Receptor	Sensitivity / significance value	Scale of Impact	Mitigation Measure	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Sculptural Wall (Hollaway Wall) (Grade II)	Medium	Major adverse	Planning conditions requiring CEMP and detailed method statements for works to listed assets addressing recommendations of heritage strategy to be submitted and agreed prior to works taking place. To be implemented and adhered to thereafter.	Moderate adverse (temporary)
Manchester South Junction and Altrincham Railway Viaduct (Grade II)	Medium	Minor adverse		Minor adverse (temporary)
Institute of Science and Technology (University of Manchester) (Grade II)	Medium	Negligible adverse		Negligible adverse (temporary)
Train Shed and Undercroft at Manchester Piccadilly Station (Grade II)	Medium	Negligible adverse		Negligible adverse (temporary)
Former Goods Offices to Manchester Piccadilly Station (Grade II)	Medium	Negligible adverse		Negligible adverse (temporary)
Police and Fire Station (Grade II*)	High	Minor adverse		Minor adverse (temporary)
Star and Garter Public House (Grade II)	Medium	Negligible adverse		Negligible adverse (temporary)
Ardwick Drill Hall (Grade II)	Medium	Negligible adverse		Negligible adverse (temporary)

Receptor	Sensitivity / significance value	Scale of Impact	Mitigation Measure	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
			n/a	
Whitworth Street Conservation Area	High	Minor adverse		Minor adverse (temporary)
Barnes Wallis and Wright Robinson	Low	Major adverse		Moderate adverse (permanent)
Butterfly Stairs	Low	Major adverse		Moderate adverse (permanent)
Morton Laboratory	Low	Major adverse		Moderate adverse (permanent)
Manchester Meeting Place (Staff House)	Low	Major adverse		Moderate adverse (permanent)
Archimedes statue	Low	Moderate adverse	Planning conditions requiring CEMP and detailed method statements for works to listed assets addressing recommendations of heritage strategy to be submitted and agreed prior to works taking place. To be implemented and adhered to thereafter.	Minor adverse (temporary)
Havelock mill structure	Low	Moderate adverse		Minor adverse (temporary)
Generations of Possibilities (Magnet)	Low	Moderate adverse		Minor adverse (temporary)
Renold Building (setting)	Low	Moderate adverse		Minor-to-moderate adverse (temporary)
The Mill (setting)	Low	Moderate (neutral)		Minor (neutral)
Pariser	Low	Moderate adverse		Minor-to moderate adverse (temporary)
MSS Tower	Low	Moderate adverse		Minor-to-moderate adverse (temporary)
Operational Phase				
Sculptural Wall (Hollaway Wall) (Grade II)	Medium	Moderate adverse	Embedded design quality and optioneering process Appropriate protection measures for the Hollaway Wall.	Moderate adverse (permanent)
Manchester South Junction and Altrincham Railway Viaduct (Grade II)	Medium	Minor (beneficial and adverse)	Embedded design quality	Minor (beneficial and adverse) (permanent)
Institute of Science and Technology (University of Manchester) (Grade II)	Medium	Negligible (neutral)	Embedded design quality	Neutral (permanent)
Train Shed and Undercroft at Manchester Piccadilly Station (Grade II)	Medium	Minor (neutral)	Embedded design quality	Neutral (permanent)
Former Goods Offices to Manchester Piccadilly Station (Grade II)	Medium	Minor (neutral)	Embedded design quality	Neutral (permanent)
Police and Fire Station (Grade II*)	High	Minor adverse	Embedded design quality	Minor adverse (permanent)
Star and Garter Public House (Grade II)	Medium	Negligible (neutral)	Embedded design quality	Neutral

Receptor	Sensitivity / significance value	Scale of Impact	Mitigation Measure	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Ardwick Drill Hall (Grade II)	Medium	Negligible adverse	Embedded design quality	Negligible adverse
Whitworth Street Conservation Area	High	Negligible (neutral)	Embedded design quality	Neutral
Archimedes statue	Low	Minor beneficial	Appropriate restoration / cleaning measures	Minor beneficial (permanent)
Havelock mill structure	Low	Minor beneficial	Appropriate restoration / cleaning measures	Minor beneficial (permanent)
Generations of Possibilities (Magnet)	Low	Minor beneficial	Appropriate restoration / cleaning measures	Minor beneficial (permanent)
UMIST Cube	Low	Minor beneficial	Appropriate restoration / cleaning measures	Minor beneficial (permanent)
Renold Building	Low	Minor-to-Moderate adverse	Embedded design quality	Minor adverse (permanent)
The Mill	Low	Minor-to-Moderate (neutral)	Embedded design quality	Minor (neutral)
Pariser	Low	Minor-to-Moderate adverse	Embedded design quality	Minor adverse (permanent)
MSS Tower	Low	Minor-to-Moderate adverse	Embedded design quality	Minor adverse (permanent)

Monitoring

6.107. As stated above, a suitable CEMP should be produced in order to ensure appropriate monitoring during the construction stage.

Reference List

- DCMS's Principles of Selection for Listing Buildings (2018);
- Historic England's Conservation Principles, Policies and Guidance (2008);
- Historic England's Good Practice Advice Note 2: Managing Significance in Decision-Taking in the Historic Environment (March 2015);
- Historic England's Good Practice Advice Note 3: The Setting of Heritage Assets (2017);
- Historic England's Understanding Place: Conservation Area Designation, Appraisal and Management (2019).
- Historic England, Education Buildings Listing Selection Guide (December 2017)
- Historic England, Local Heritage Listing: Identifying and Conserving Local Heritage (January 2021).

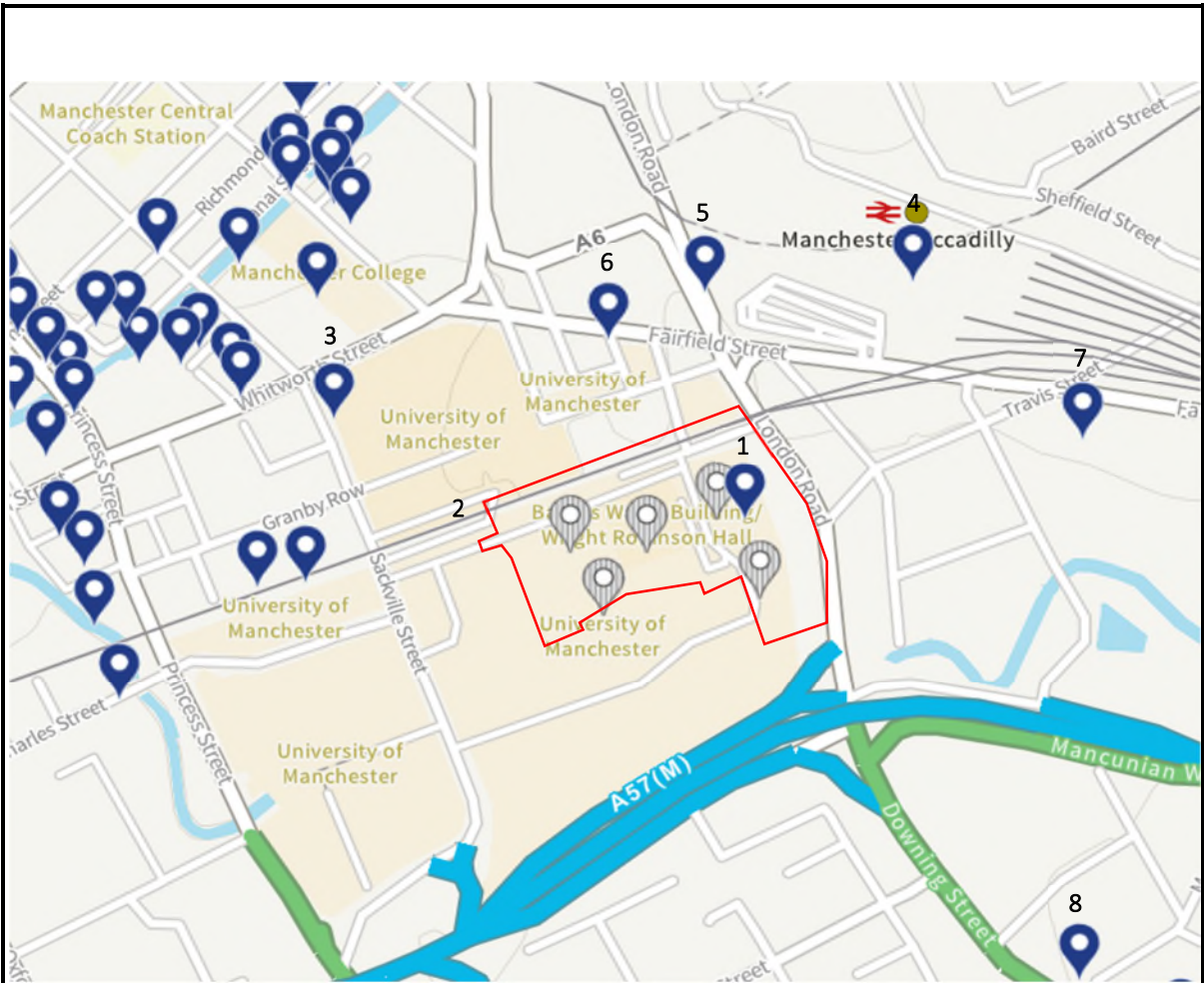


	Figure:	6.1		
	Title:	Heritage Asset Map – Listed Buildings		
	Project:	Plot C – ID Manchester		
	Date:	02.05.2025	Scale:	Not to Scale

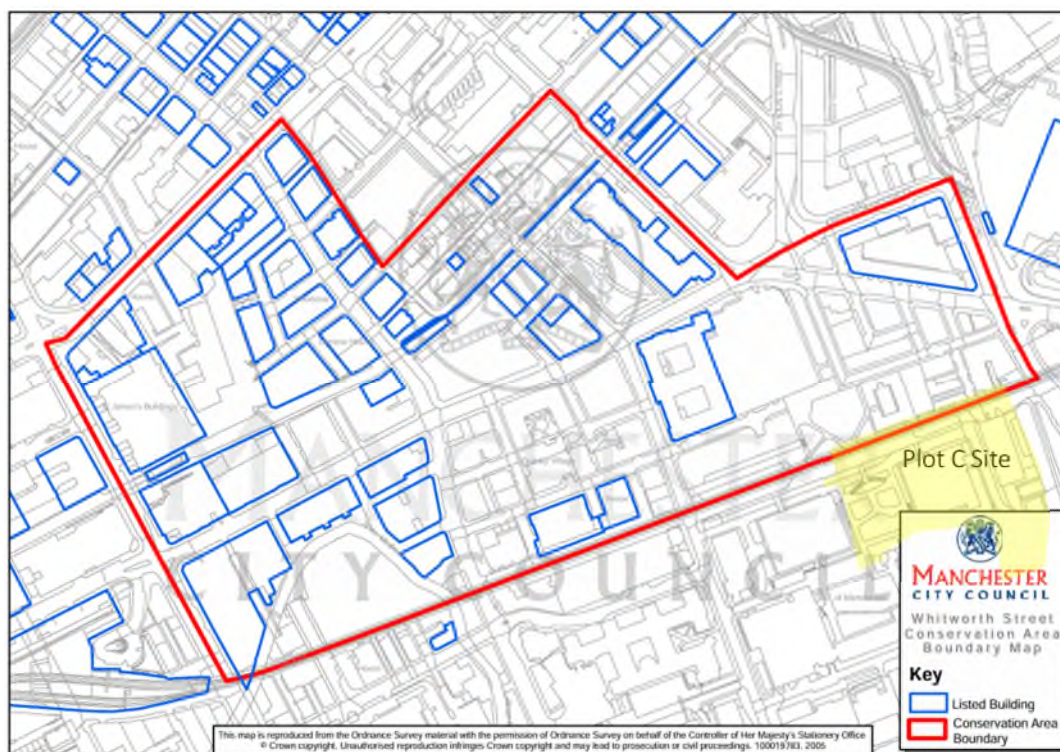


	Figure:	6.2		
	Title:	Heritage Asset Map – Conservation Area		
	Project:	Plot C – ID Manchester		
	Date:	02.05.2025	Scale:	Not to Scale

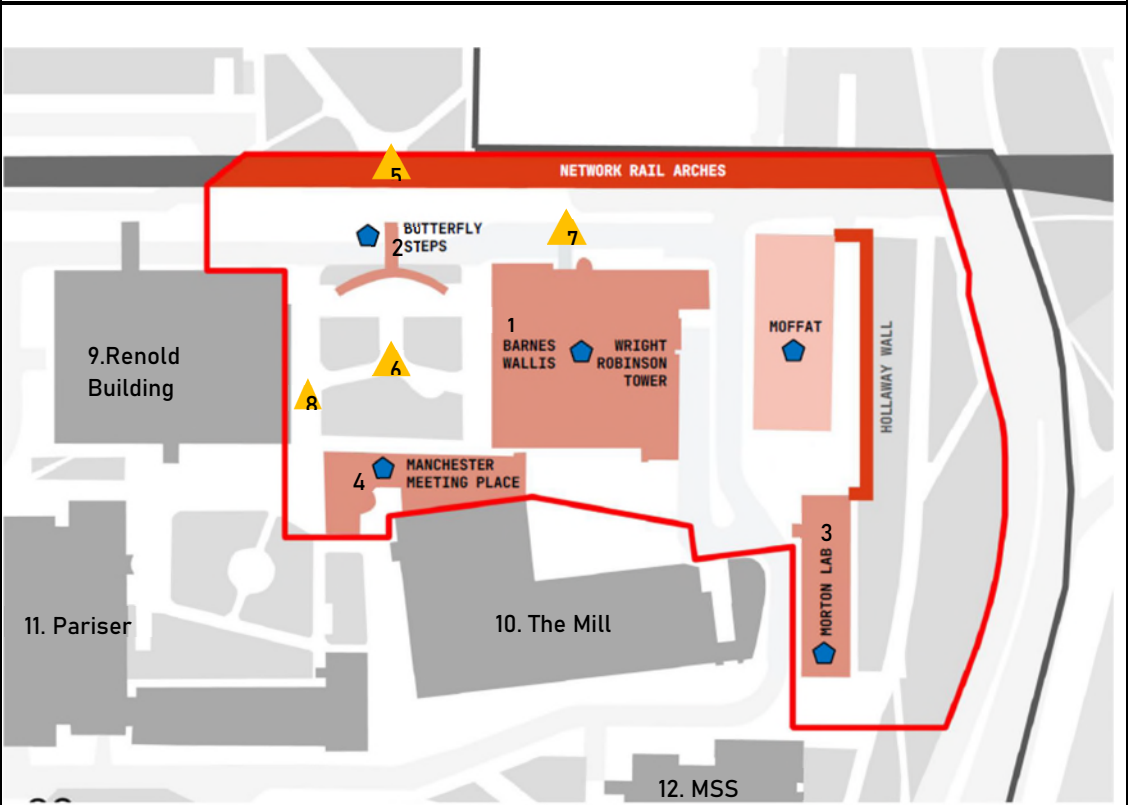


Figure 6.3: Site plan of Plot C at ID Manchester, indicative boundary outlined in red. Listed buildings shaded red.

Non-designated heritage assets within the boundary shaded dark pink (all covered by COI, denoted by blue pentagon). Moffat building is not considered to be an NDHA. (shaded light pink).

	Figure:	6.3		
	Title:	Heritage Asset Map – NDHAs		
	Project:	Plot C – ID Manchester		
	Date:	02.05.2025	Scale:	Not to Scale

7. Townscape & Visual Impact

Introduction

- 7.1. This chapter of the ES has been prepared by Layer.studio to assess the likely townscape and visual impacts of The Proposed Development upon The Site and surrounding area. This chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.
- 7.2. This Chapter is accompanied by the following appendices:
- 7.1 Methodology and Criteria Tables
 - 7.2 Visual Baseline and Assessment
 - 7.3 Townscape Baseline and Assessment
 - 7.4 Visualisation Methodology
- 7.3. The authors of this chapter having the following qualifications and experience.

Table 7.1: Technical competence of chapter authors

	Lead Author	Reviewer
Name	Cath Lester	Matt Warner
Company	Layer.studio	Layer.studio
Qualifications/Accreditations relevant to technical area incl. IEMA	BA (Hons), PgDip Landscape Architecture. Chartered Member of the Landscape Institute	BA (Hons), PgDip Landscape Architecture
Years technical experience (in technical area)	20+ years	20+ years
Number of EIA's delivered to date	30+ TVIA/LVIAs, of which 5% were part of EIA	10+

Assumptions and Limitations

- 7.4. Viewpoint visualisations are verified and generated using a robust methodology (Appendix 7.4) but photos are taken from publicly accessible locations.
- 7.5. Viewpoints are representative. They have been selected to represent the experience of different types of visual receptor as documenting every viewpoint in a built up urban area is unfeasible.
- 7.6. Photography is taken in winter when trees are out of leaf. The assessment commentary therefore describes how views may change when vegetation gains foliage during summer.
- 7.7. As noted in the "Guidance" section below, the assessment follows industry best practice guidance. Where subjective judgments are required, they are discussed between the author and other qualified professionals to cross check approach and outcome. This prevents working in isolation and makes for well-considered, robust reporting.
- 1.1. Scenario 7 is assessed qualitatively based on information and material available in the ID Manchester Strategic Regeneration Framework (SRF). The Illustrative Masterplan on page 23 of the SRF informs commentary on possible scale, mass and height of proposed buildings.

- 7.8. The baseline position assumes iQ student accommodation at Echo Street to be complete.
- 7.9. Construction of new public realm will be delivered in phases to tie in with the building programme. It is assumed that during the construction period, some pedestrian through routes may be temporarily stopped off.

Relevant Legislation, Policy and Guidance

- 7.10. Relevant legislation, policies and guidance have been reviewed to understand the context for development and establish the baseline townscape. An understanding of policy requirements supports the iterative design process and can feed into the evolution of strategies for mitigation, if required. Extracts from key documents are listed below along with a reflection on the relevance to this application.

European

The European Landscape Convention

- 7.11. The European Landscape Convention provides a foundation for closer co-operation on landscape issues across Europe and was ratified in the UK on the 21st November 2006, and became binding on 1st 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.
- 7.12. The ELC defines landscape as ‘an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors’. It recognises that landscape has important cultural, ecological, environmental and social dimensions and is a key element of achieving sustainable development. In paragraph 2.5 GLVIA3 notes that the definition above applies to “the landscape of villages, towns and cities (townscapes)”.

National Planning Policy

National Planning Policy Framework (2024)

- 7.13. The National Planning Policy Framework sets out the Government’s planning policies for England and how these should be applied. In ensuring the planning system contributes to achieving sustainable development paragraph 9 of the Framework states that “Planning policies and decisions should play an active role in guiding development towards sustainable solutions but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area”.
- 7.14. Section 8 Promoting healthy and safe communities, paragraph 96 states that planning policies and decisions should ensure that developments should aim to achieve healthy, inclusive and safe places which “promote social interaction” and “are safe and accessible”.
- 7.15. Section 12 paragraph 137 refers to the need to consider “design quality” throughout the evolution and assessment of proposals and in paragraph 139 states that “Development that is not well designed should be refused, especially where it fails to reflect local design policies and government guidance on design”...”.In addition paragraph 132 states that plans should “set out a clear design vision and expectations.”
- 7.16. Furthermore, Section 12 paragraph 136 highlights the important contribution of trees “to the character and quality of urban environments, and can also help to mitigate and adapt to climate change”

National Planning Practice Guidance

- 7.17. Planning Practice Guidance (PPG) is provided by the Government under a number of categories including Design, Historic Environment, Light Pollution, Natural Environment and EIA. The National Design Guide sets out 10 characteristics of good design namely: context; identity; built form; movement; nature; public spaces; uses; homes and building; resources; and lifespan.

Regional Planning Policy

Places for Everyone (GMCA, 2024)

- 7.18. Places for Everyone is a long-term plan of nine Greater Manchester districts (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan) for jobs, new homes, and sustainable growth. It has been published by the GMCA on behalf of the nine districts. Policies of relevance are as follows:
- 7.19. Policy JP-Strat2: City Centre, references that "The City Centre will continue to provide the primary focus for business, retail, leisure, culture and tourism activity in Greater Manchester, but the increasingly important residential role of the City Centre will be expanded. Development will generally be high density [...] Improvements in the public realm, walking and cycling facilities, and green infrastructure will help to enhance the local character and environmental quality of the City Centre"
- 7.20. Policy JP-S1: Sustainable Development, notes that "development should aim to maximise its economic, social and environmental benefits simultaneously, minimise its adverse impacts, utilise sustainable construction techniques and actively seek opportunities to secure net gains across each of the different objectives".
- 7.21. Policy JP-S5: Clean Air, states that streets should be designed to "avoid trapping air pollution at ground level, including through the appropriate location and scale of buildings and trees".
- 7.22. Policy JP-G6: Urban Green Space, outlines the value of urban green spaces and infrastructure. "Existing urban green space will be protected and enhanced in balance with other considerations."
- 7.23. Policy JP-P1 Sustainable Places, promotes the aim to become one of the most liveable city regions in the world. The policy notes that places should be "visually stimulating, creating interesting and imaginative environments which raise the human spirit through the use of green space, public art and quality design", "socially inclusive", "resilient", "adaptable", "durable", "resource-efficient", "safe", "supported by critical infrastructure", "functional and convenient", "incorporating [of] inclusive design", "legible", "easy to move around for those of all mobility levels", "well-connected to other places", "comfortable and inviting", "incorporating [of] high quality and well managed green infrastructure and quality public realm", and "well-served by local shops, services and amenities".
- 7.24. Policy JP-P2 Heritage highlights the need to conserve, sustain and enhance the historic environment and promotes interpretation of heritage assets as beneficial to public health and sense of place.
- 7.25. Policy JP-C8: Transport Requirements of New Development, states that new development will be required to "be located and designed to enable and encourage walking, cycling and public transport use, to reduce the negative effects of car dependency, and help deliver high quality, attractive, liveable and sustainable environments", "ensuring that the layout, design and landscaping of development priorities the provision of safe, secure and attractive access to local services and facilities for pedestrians, cyclists and people with a disability".

Local Planning Policy

Manchester Core Strategy (MCC, 2024)

- 7.26. Manchester's Core Strategy was adopted on the 11 July 2012 and is the key document in the Manchester Local Plan. It was updated in March 2024, after the Places for Everyone joint development plan was adopted. It sets out the long-term strategic policies for Manchester's future development and will form the framework that planning applications will be assessed against. Relevant policies are:
- SP1 Spatial Principles
 - CC 9 Design and Heritage
 - CC 10 A Place for Everyone
 - EN1 Design Principles and Strategic Character Areas
 - EN2 Tall Buildings
 - EN3 Heritage

- EN8 Adaption to Climate Change
- EN9 Green Infrastructure

Guidance

Guide to Development in Manchester – Supplementary Planning Document and Planning Guidance (SPD)

- 7.27. The Supplementary Planning Document brings together development principles that assist with the creation of Manchester as the greenest, most inclusive, most accessible city in the UK.
- 7.28. The SPDs aims to ensure that developments taking place throughout Manchester enhance and contribute to this unique identity and that Manchester’s many neighbourhoods retain and develop their own sense of place.
- 7.29. Guidance, as outlined in section 2.2, sits under the following seven key principles, which together create successful places:
- Character and Context: A place with its own identity
 - Continuity and Enclosure: A place where public and private spaces are clearly distinguished
 - Legibility: A place that has a clear image and is easy to understand
 - Ease of Movement: A place that is easy to get to and move through
 - Quality of the Public Realm: A place with attractive and successful public areas
 - Diversity: A place with variety and choice
 - Adaptability: A place that can accommodate change and innovation
- 7.30. UDP Part 1 Policy E3.8, which is referred to in section 2.6, states that new developments should acknowledge the character of the 35 Conservation Areas in the City and will only be acceptable if they preserve or enhance the special nature of these varied parts of the City.
- 7.31. Section 2.36 references UDP Part 1 Policies E2.6 which states that the City Council wishes to prevent the loss of existing trees. Proposed development should retain mature trees and hedges wherever possible and where this is not possible, an appropriate replanting scheme should be agreed with Development Control Case Officers.
- 7.32. Section 11.45 notes that new development in conservation areas should not be designed in isolation and must be informed by wider context with local streets and spaces, building traditions, materials and ecology.
- 7.33. Importance is placed on the relationship between new and existing buildings (particularly historic) in section 12.7, with older buildings contributing to delivering a sense of place.

ID Manchester Strategic Regeneration Framework (2023)

- 7.34. The SRF sets out the ambition for a world-class innovation district with the aim to attract head-quarter anchor tenants in buildings that act as key gateways into Sister.
- 7.35. Proposals outlined in the SRF align with the outcomes of the Manchester Strategy including:
- A thriving and sustainable city: supporting a diverse and distinctive economy that creates jobs and opportunities
 - A highly skilled city: world class and home-grown talent sustaining the city’s economic success
 - A progressive and equitable city: making a positive contribution by unlocking the potential of our communities
 - A liveable and low carbon city: a destination of choice to live, visit, work
 - A connected city: world class infrastructure and connectivity to drive growth

Assessment Methodology and Significance Criteria

Scenarios Tested

- 7.36. The following scenarios are tested in this report and differs from what was anticipated at scoping stage. Further consideration deemed scenario 5 to be the “worst case scenario” and therefore scenarios 2, 3, 4 and 8 need not be assessed.

Table 7.2: Scenarios Tested

Scenario 1	Baseline Conditions (existing Site as of February 2025 including developments defined within the Baseline section of the committed development schedule in Appendix 7.2)
Scenario 5	Baseline + Phase A + Phase B + Phase C
Scenario 6	Baseline + Phase A + Phase B + Phase C + Cumulative
Scenario 7	Baseline + Phase A + Phase B + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative

The Study Area

- 7.37. The study area has been derived through data analysis involving:
- Review of existing townscape character studies and policy;
 - Review of planning designations around The Site;
 - Generation of a Zone of Theoretical Visibility (ZTV) using VUCITY software;
 - Identification of transit corridors, cycling routes and public rights of way;
 - Exploration into urban grain, land use and building heights.
- 7.38. A study area of 500m measured from the centre of the Site is deemed to be appropriate for this TVIA and is shown in the appendices. This decision is based on Layer.studio's experience writing TVIAs and their knowledge of Manchester. In accordance with guidance in GLVIA3 paragraph 5.2, the study area includes *“the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner.”*

Source of Effect

- 7.39. The Proposed Development is taller and has a larger footprint than existing. This may have an impact on visual receptors (people) who observe the change as a resident, person at work or visitor to the city as a pedestrian, cyclist or motorist.
- 7.40. Change of use and activation of the railway arches may impact the townscape character of Altrincham Street.
- 7.41. Comprehensive changes to the public realm may also impact the street network and the way people move around The Site and its vicinity.

Significance Criteria

- 7.42. As recognised by GLVIA3, the effects of The Proposed Development have been examined in terms of:
- Effects on the townscape: Meaning the assessment of the potential effects of development upon the physical nature and features of the townscape as well as townscape character and quality; and
 - Effects on visual amenity: Examined through a selection of representative viewpoints to demonstrate the experience of different types of visual receptor.

- 7.43. The assessment provides a series of tables setting out the criteria and definitions used to assist in assessing the landscape and visual effects and to make the process as transparent as possible. These can be found in Appendix 7.1 but for ease of reference, the Significance of Townscape or Visual Effects Matrix is extracted and included below as Table 7.3:

Table 7.3: Significance of Townscape or Visual Effects

		Sensitivity		
		Low	Medium	High
Magnitude	Negligible	Negligible/minor	Minor	Minor/moderate
	Minor	Minor	Minor/moderate	Moderate
	Moderate	Minor/moderate	Moderate	Moderate/major
	High	Moderate	Moderate/major	Major
	Substantial	Moderate/major	Major	Substantial

- 7.44. Ultimately, however, the assessment relies on professional judgement and the tables and matrices utilised are a tool to assist in this process. Through experience, Layer.studio have determined that the author should not consider the effects of a proposed development in isolation based solely on their own judgement, but instead debate the extent of effects as part of an open forum with colleagues. This promotes well rounded decision making in terms of assessing the impact on townscape character and visual receptors.
- 7.45. The main objectives of the TVIA are to:
- Identify and describe the current townscape of the study area;
 - Determine the sensitivity of the townscape and identify potential effects;
 - Identify potential visual receptors to The Proposed Development;
 - Evaluate the degree of change and the sensitivity to the type of changes proposed;
 - Identify likely adverse or beneficial townscape and visual effects;
 - Identify likely significant townscape and visual effects distinguishing between those that are temporary or permanent, short, medium or long term;
 - Consider how any adverse effects may be mitigated; and
 - Consider any remaining residual effects
- 7.46. To achieve these objectives, the assessment is undertaken in three key stages consisting of:
- A thorough desktop study covering an overview of the relevant planning policy context from European, national to local level, plus a more detailed review of the topography and surrounding features to determine the potential visibility of The Proposed Development. The establishment of baseline townscape and visual conditions including any changes likely to occur independently of The Proposed Development, as well as determining the value attached to the different resources.
 - Initial desktop findings are then tested in the field to further understand the receiving townscape and to reassess the effect upon visual receptors from viewpoints.
 - The assessment is then undertaken to determine the potential townscape and visual effects of The Proposed Development. The assessment considers impacts during construction and on completion, once operational. Residual effects consider the effects post completion with mitigation in place.
- 7.47. The TVIA has been completed as part of an iterative design process with a team of multi-disciplinary professionals. This has included the consideration of mitigation measures to avoid and reduce where possible, any adverse townscape or visual effects resulting from The Proposed Development.

7.48. A comprehensive methodology is set out within Appendix 7.1.

Baseline Conditions

7.49. This section describes receptors that could be impacted by the proposed development and should be read in conjunction with Appendix 7. 2 and 7.3, where judgements on value and susceptibility are also noted.

Urban Grain (refer to Appendix 7.3, figure 1.3)

7.50. In the vicinity of The Site, urban grain reflects the alignment of key vehicular corridors through the city centre with buildings arranged to make the most of the available space. The Site itself has a looser grain but orientation is still influenced by Mancunian way to the south of the site, London Road to the east, and Sackville Street to the west. This looser grain continues in a southerly direction in and around Mancunian Way and as well as to the east around Mayfield Park, however, the tight grain quickly returns following the break created by Mancunian Way and the rail line.

7.51. To the northeast of the site Manchester Piccadilly Railway Station serves as a notable building with a large footprint.

Land Use (refer to Appendix 7.3, figure 1.4)

7.52. Generally, this part of the city is focused around educational use, with some residential, transport and commercial uses, with key open space Mayfield Park serving as a key recreational space. All the buildings within the Plot C boundary are defined as being of educational use, though with the exception of Renold and Pariser buildings, the campus is now vacant.

7.53. Educational land use continues in a south-westerly direction, with residential use dominating a belt of land to the south of The Site. To the north of the Plot C Boundary land use is more patchwork with uses varying between public facilities, commercial, residential, industrial, transport and other.

7.54. The Sackville Building (Institute of Science and Technology (University of Manchester)) presents itself as a key educational building immediately to the north west of The Site, also serving as a key Grade II listed heritage feature.

7.55. To the north east is Piccadilly station which serves as a key strategic transport hub for the city.

Building Heights (refer to Appendix 7.3, figure 1.5)

7.56. There is much variety within this part of the city and within the immediate surrounds of the Plot C boundary. High rise development over the last decade has altered Manchester's skyline meaning that the historic, low rise built form of up to circa seven storeys, is now experienced with the backdrop of towers such as iQ Echo Street to the north of Plot C and Number 3 Circle Square (90-100m) which sits circa 1km west of The Site.

7.57. Building heights within the Plot C boundary are generally between 11 and 70m in height with some exceptions including the Maths and Social Sciences Building (71-80m) sitting just south of The Site.

Public Realm and Street Scape (refer to Appendix 7.3, figure 1.2 & 1.3)

7.58. In terms of connectivity, railway lines run immediately along the northern edge of the Plot C boundary on an east-west axis, as well as to the north-east of The Site in a number of directions to and from Manchester Piccadilly Station. These railway lines serve as primary public transport routes for people travelling into and out of the City Centre. Manchester Piccadilly Metrolink stop is also located within the train station, forming an additional point of arrival into the city and in close proximity to The Site.

7.59. Permeability through Plot C itself is possible, with a number of footways through The Site including routes from London Road to Sackville Street, and along Altrincham Street. Some areas of public realm can be accessed including the newly installed IDM Meanwhile Use scheme which features a number of trees, planting and street furniture.

7.60. Altrincham Street is recognised as a TFGM cycleway which has connections (albeit fragmented) across the city centre. These connections are better linked together in a southerly direction but The Site and its immediate surround would also benefit, at a strategic level, from the proposed Bee Network connections. The street is wide and generally

characterised by concrete pavers and the occasional street planter. Bounded on the north side by the existing Viaduct and balustrade fencing to the south. Direct connections through the arches can be made into Vimto Park, a large green space featuring a number of artistic installations and mature trees, where people may choose to dwell nearby.

- 7.61. The A57 (M), known as Mancunian Way runs horizontally from East to West Manchester and sits to the south of the site. Other strategic road networks can be reached by the A57 (M) across Greater Manchester and to neighbouring urban areas. A Roads (A685, A34 and A6) further connect the site across Greater Manchester and can be accessed within a 500m radius. The A6 abuts the Eastern boundary of the site, running in a north-south direction. These major vehicular routes that border The Site provide notable strategic vehicular transport links, although, could be seen as points of severance for the pedestrian user. Journeys to and from Manchester Piccadilly Station could be perceived as less enjoyable for pedestrians given the need to cross a major carriageway (London Road).

Site Character (refer to Appendix 7.3, figure 1.1)

- 7.62. The Site is in Manchester City Centre and is bound by the Deansgate-Castlefield Viaduct (Altrincham Street) to the north, London Road to the east, The Mill to the south and the Renold Building to the west.
- 7.63. The Site currently comprises the landscaped area known as the Bowling Green, the Barnes Wallis and Wright Robinson Building, Morton Labs, Butterfly Stairs and The Moffat Building all associated with the former UMIST Campus of the University of Manchester. Although not listed these buildings are of heritage interest. The Site also contains the Grade II Holloway Wall and the Deansgate-Castlefield Viaduct. The Moffat Building is also contained within the Plot C boundary, this building is not considered to yield any heritage interest, however it is physically connected to the Holloway Wall.
- 7.64. The northern boundary of Plot C is marked by the railway viaduct, which sits inside the Whitworth Street Conservation Area boundary.
- 7.65. The Site, sitting in the city centre, is surrounded by a number of key heritage assets, with circa 75 listed assets within a 500m radius from Grades II-I.
- 7.66. A number of conservation areas can be noted to the north of the Site each featuring a number of Listed buildings of Grades II – I, including: the Institute of Science and Technology (Grade II), Train shed and undercroft at Manchester (Grade II), Police and Fire Station (Grade II*). The Whitworth Street Conservation Area immediately abuts the northern boundary of Plot C.
- 7.67. To the east of The Site, The Sculptural Wall (Entry number 1400857) is a Grade II listed building which defines arrival to The Site from this direction.

Visual Amenity (refer to Appendix 7.2)

- 7.68. Given its city centre location, close to the transport hubs of Manchester Piccadilly Metrolink and rail station, many people pass by and through The Site and experience a transient view of Plot C. The Proposed Development is also located in proximity to a number of listed buildings and structures frequently visited by visitors. Receptors subject to this reporting are:
1. Piccadilly
 2. Chorlton Street
 3. London Road
 4. Fairfield Street
 5. Sackville Gardens
 6. Altrincham Street, Holloway Wall
 7. Mancunian Way

8. Former Bowling Green
9. Piccadilly Station Approach
10. Station Platform 13/14
11. Morton Labs, London Road
12. Former Bowling Green
13. Vimto Park
14. Ferranti Building
15. Altrincham Street, Renold Building
16. South of Barnes Wallis
17. Ardwick Green South
18. Lockton Close

Identification and Evaluation of Likely Significant Effects

7.69. A summary of effects is provided below with detailed commentary provided in Appendix 7.2 and 7.3.

Construction Phase

- 7.70. Construction of The Proposed Development will include the following activities that could have an impact on townscape and visual receptors that were identified in the previous section:
- Site clearance including demolition of Barnes-Wallis Building, Wright Robinson Tower, Manchester Meeting Place, Morton Laboratory, Moffat Building
 - Erection of site hoardings to The Site perimeter
 - Closure of Altrincham Street to pedestrians, cyclists and motorists
 - Construction of two tall commercial buildings (Phase A:C1 & Phase B:C2)
 - Changes to ground level public realm
 - The coming and going of construction traffic
 - Lighting to enable works to continue after dark
 - Removal of the Butterfly stairs
 - Interventions to the Hollaway Wall
 - Change of use to the railway arches
 - Lighting to enable works to continue after dark
- 7.71. Potential visual effects are outlined in Appendix 7.2 and townscape effects detailed in Appendix 7.3. The assessment is also summarised in Table 2 at the end of this section. Key findings are as described below:
- 7.72. Construction phase townscape impacts range from minor/moderate to moderate adverse. The majority of viewpoints experience a moderate or moderate/major significance of impact.

- 7.73. Urban grain will quickly change with the demolition of Barnes-Wallis Building, Wright Robinson Tower, Manchester Meeting Place, Morton Labs, Moffat Building, as well as the removal of the Butterfly steps. Land use will also experience immediate change, going from the baseline position to an active construction site. Building heights will fluctuate ultimately reaching 12 and 20 storeys on completion. During construction, disruption will affect the public realm and the streetscape with road closures and hoarding lines to enable construction to take place.
- 7.74. The effect on visual receptors is heavily dependent on proximity to The Site and varies from Neutral to Adverse. From more distant locations, demolition and early construction will not be visible as buildings in the foreground prevent views of activity at low level. As the building continues to rise out of the ground, its height makes it visible from more distant viewpoints.
- 7.75. The viewpoints that will experience the greatest significance of effect are 6, 8, 12, 13 and 15, all of which have an evaluated effect of a moderate/major level. This is attributed to the fact that these views are in close proximity to The Site.

Operational Phase

- 7.76. On completion of the construction phase and commencement of building operation, the following may have an impact on townscape and visual receptors:
- Presence of tall commercial buildings, Phase A (12 storey tower) and Phase B (20 storey)
 - New ground level public realm
 - Change of use of the railway arches to retail and beverage uses (Use Class E and Sui Generis)
- 7.77. Potential visual effects are outlined in Appendix 7.2 and townscape effects detailed in Appendix 7.3. The assessment is summarised in Table 2 at the end of this section. Key findings are described below.
- 7.78. The new footprint, although larger than the baseline position, remains congruous with the local vicinity.
- 7.79. Once operational The Site will host commercial land use which is precedented elsewhere in this part of the city and is reflective of general shifts in land use across the city centre.
- 7.80. The Proposed Development is taller than the baseline position, however it is located nearby to iQ Echo Street and Number 3 Circle Square, two tall buildings in the general vicinity. Building height is therefore in keeping with its surroundings.
- 7.81. The Proposed Development creates high quality public realm with space for pedestrian users to engage with the streetscape at a much greater level than the baseline position. Buildings of The Proposed Development will present active frontages onto Altrincham Street and other adjoining streets, all of which enhanced by the new public realm. These changes are an improvement on the baseline position and therefore of benefit to public realm and site character.
- 7.82. Operational phase townscape impacts range from minor/moderate to moderate with nature of effect being either neutral or beneficial. The majority of viewpoints experience a moderate or moderate/major significance of impact with fewer receptors experiencing an adverse nature of effect than during construction.
- 7.83. The construction of The Proposed Development will be reflective of The Site's existing urban grain resulting in a minor neutral effect.
- 7.84. Following on from the temporary nature of a construction site, once operational The Site will host commercial use which is complementary to the adjacent iQ Echo Street student accommodation currently under construction.
- 7.85. Once operational The Proposed Development will be taller than the baseline position, however there are a number of taller buildings in the surrounding area and proposals align with the aspirations of the ID Manchester SRF.

- 7.86. The Proposed Development creates high quality public realm and improved streetscape. On completion, the building and activation of the railway arches will present an active frontage onto adjoining streets, enhanced by new soft landscape. These changes to the landscape are an improvement on the baseline position and therefore of benefit to public realm and site character.
- 7.87. The effect on visual receptors follows the same trend as during the construction phase in that significance of effect is heavily influenced by proximity to The Site and varies from negligible/minor to moderate/major. The most significant adverse impacts are associated with viewpoints directly east of The Proposed Development where Phase B is taller, clad with darker materials and window fenestration is less varied. From an oblique position to the north or south (viewpoints 6, 11 and 13), magnitude of change is tempered by a mix of building materials and height variation between the phases. From the west, viewpoints 8, 12 and 15 nature of effect is beneficial as building materials are a warmer colour in keeping with the viaduct and iQ student accommodation, there is greater architectural texture from window fenestration and greening of balconies.
- 7.88. Generally, from more distant locations, only the upper parts of The Proposed Development will be visible. From these locations, the change is either minor due to the context of other tall buildings or, change is negligible due to the quantity of other buildings in the foreground that screen much of The Proposed Development from view.
- 7.89. The viewpoint that will experience the greatest change is viewpoint 12 which is located in the former bowling green in very close proximity to The Proposed Development.

Receptor	Value	Susceptibility	Sensitivity	Magnitude, significance & nature of effect			
Townscape							
	Scenario 1: Baseline			Scenario 5		Scenario 6	Scenario 7
				Construction	Operation	Cumulative	Cumulative + IDM SRF
Urban grain	Medium	Low	Low/mediu m	Moderate Min/mod - moderate Adverse	Minor Min/mod Neutral	Minor Min/mod Neutral	Minor Min/mod Neutral
Land use	Low	Low	Low	Moderate Min/mod Adverse	Moderate Min/mod Beneficial	Moderate Min/mod Beneficial	Moderate Min/mod Beneficial
Building height	Medium	Medium	Medium	Moderate Moderate Adverse	Moderate Moderate Neutral	Moderate Moderate Neutral	High Mod/major Neutral
Public realm & streetscape	Low	Low	Low	Moderate Min/mod Adverse	Moderate Min/mod Beneficial	Moderate Min/mod Beneficial	High Moderate Beneficial
Site character	Medium	Medium	Medium	Moderate Moderate Adverse	Moderate Moderate Beneficial	Moderate Moderate Beneficial	Moderate Moderate Beneficial
Visual							
Viewpoint 1) Piccadilly	Low	Low	Low	Minor Minor Neutral	Minor Minor Neutral	Minor Minor Neutral	Minor Minor Neutral
Viewpoint 2) Chorlton Street	High	High	High	Negligible Min/mod Neutral	Negligible Minor Neutral	Negligible Minor Neutral	Negligible Minor Neutral
Viewpoint 3) London Road	Medium	Low	Low/Mediu m	Moderate Min/mod - Moderate Adverse	Moderate Min/mod - Moderate Adverse	Moderate Min/mod - Moderate Adverse	Moderate Min/mod - Moderate Adverse
Viewpoint 4) Fairfield Street	Medium	Medium	Medium	Low Min/mod Neutral	Low Min/mod Neutral	Low Min/mod Neutral	Low Min/mod Neutral

Receptor	Value	Susceptibility	Sensitivity	Magnitude, significance & nature of effect			
Viewpoint 5) Sackville Gardens	High	High	High	Nil n/a n/a	Nil n/a n/a	Nil n/a n/a	Negligible Min/mod Neutral
Viewpoint 6) Altrincham St, Hollaway Wall	High	Low	Medium	High Mod/major Adverse	High Mod/major Neutral	High Mod/major Neutral	High Mod/major Neutral
Viewpoint 7) Mancunian Way	Low	Low	Low	Moderate Min/mod Neutral	Moderate Min/mod Neutral	Moderate Min/mod Neutral	Mod/High Moderate Neutral
Viewpoint 8) Former bowling green	Medium	Medium	Medium	High Mod/major Adverse	High Mod/major Beneficial	High Mod/major Beneficial	High Mod/major Beneficial
Viewpoint 9) Piccadilly Station Approach	Medium	Low	Low/medium	Low Min/mod Neutral	Low Min/mod Neutral	Low Min/mod Neutral	Low Min/mod Neutral
Viewpoint 10) Station platform 13/14	Low	Low	Low	High Moderate Neutral	High Moderate Neutral	High Moderate Neutral	High Moderate Neutral
Viewpoint 11) Morton Labs, London Road	Low	Low	Low	High Moderate Neutral	High Moderate Neutral	High Moderate Neutral	Substantial Mod/major Neutral
Viewpoint 12) Former bowling green	Low	Low	Low	Substantial Mod/major Adverse	Substantial Mod/major Beneficial	Substantial Mod/major Beneficial	Substantial Mod/major Beneficial
Viewpoint 13) Vimto Park	High	Medium	Medium/high	Moderate Mod/major Adverse	Moderate Mod/major Neutral	Moderate Mod/major Neutral	Moderate Mod/major Beneficial
Viewpoint 14) The Mill	Low	Low	Low	Low Minor Adverse	Low Minor Adverse	Low Minor Adverse	Moderate Min/mod Adverse
Viewpoint 15) Altrincham St, Renold building	Medium	Medium	Medium	High Mod/major Adverse	High Mod/major Beneficial	High Mod/major Beneficial	High Mod/major Beneficial

Receptor	Value	Susceptibility	Sensitivity	Magnitude, significance & nature of effect			
Viewpoint 17) Ardwick Green South	Medium	Low	Low/medium	Negligible Neg/minor Neutral	Negligible Neg/minor Neutral	Negligible Neg/minor Neutral	Negligible Neg/minor Neutral
Viewpoint 18) Lockton Close	Low	High	Medium	Medium Moderate Neutral	Medium Moderate Neutral	Medium Moderate Neutral	High Mod/major Adverse

Cumulative Effects (scenario 6 and 7)

7.90. As part of scenario 6, a total of 28 committed developments have been subject to the cumulative assessment, which is included in Appendix 7.2. . Location of these developments is included within Appendix 7.4.

- Vision
- Student Castle, Hulme Street
- Mayfield Baring Street Car Park
- The Republic
- Piccadilly Warehouse
- One City Road
- Apex Tower
- 50-56 Great Bridgewater Street
- Ferrous
- 50 Fountain Street
- M1 Piccadilly
- Great Northern Warehouse
- First Street Plot 10a
- Hilton Motto Hotel
- The Poulton
- Union Building
- Hotspur House
- Plot 11 Block C First Street South
- Land bounded by Upper Brook Street, Cottenham Street and Kincardine Road
- Land between Upper Brook Street, Cottenham Street and Grosvenor Street
- Curlew Student Hulme
- Metropolitan University Library
- Niven Street
- Viadux Phase 2

- 2-4 Whitworth Street West
- First Street Plot 9b
- Cambridge Halls
- Energy Centre

Construction

- 7.91. In terms of scenario 6, committed developments are located at too greater distance from both townscape and visual receptors for there to be any in combination effects.

Operation

- 7.92. In terms of scenario 6, committed developments are located at too greater distance from both townscape and visual receptors for there to be any in combination effects.
- 7.93. Scenario 7 considers in combination effects when The Proposed Development is experienced in the context of the ID Manchester masterplan completed. On the whole, completion of the masterplan will realise a strategic vision for this part of the city and see the implementation of considered and cohesive public realm and built form.
- 7.94. Receptors in closest proximity to Development Zones F and H will likely experience a greater magnitude of change as the illustrative masterplan proposes tall buildings in these locations. It is expected that viewpoints 5, 7, 11, 14 and 18 will have at least a partial view of these new buildings and experience in combination effects.

Mitigation Measures

Construction Phase

- 1.2. In advance of a construction phase management plan (to be conditioned), it is expected that the following operations and activities will be:
- Solid site hoarding will screen the workings of a construction site from view.
 - Lighting will be strategically placed to minimise "spill" towards sensitive receptors
 - Working hours will be limited to a timeframe agreed in advance of commencement on site.
 - Pedestrian access along Altrincham Street will be maintained for as long as possible.

Operational Phase

- 7.95. As the project has evolved and been refined, the following considerations have been embedded into the design of the built form and external surroundings to the Proposed Development:
- Two distinct buildings, connected by shared characteristics. As noted in the Design and Access Statement, C2, the big sister, is a metropolitan-scaled landmark facing north and east towards the growing city. C1, the little sister, is locally-scaled sister facing west and fitting in with its close neighbours.
 - The buildings are offset in plan, creating Hollaway Place in the north east of the site, the gateway to Sister from Piccadilly, and giving each building improved presence looking both east and west.
 - C1's massing is articulated in response to neighbouring buildings and public realm, stepping down on the south in response to the Mill, and to the west to Sister Square.
- 7.96. Materials are inspired by the existing context of two predominant types of buildings; red brick of the Whitworth Street Conservation Area and Modernist architecture of the former university campus.

- 7.97. The Hollaway Wall is part retained and integrated into new public realm.
- New public realm creates a series of connected outdoor spaces bringing continuity of finishes across the ID Manchester SRF area and supporting inclusive access.
 - Where possible, existing mature trees are preserved.
 - Lighting supports usability of public realm around the clock and sensitively illuminates heritage features such as the railway arches.
- 7.98. Demolition materials are repurposed throughout the public realm.
- 7.99. The Proposed Development will be delivered in-line with approved plans, secured via planning condition. Planning conditions to also require details of building and public realm materials to be submitted and approved by the LPA prior to works commencing.

Residual Effects

- 7.100. As required by the EIA Regulations (2017), “moderate or above” are deemed to be significant and therefore relevant townscape and visual receptors are reported below.

Table 7.5: Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Construction Phase (scenario 5)				
Moderate/major Adverse	Viewpoint 6) Altrincham St, Hollaway Wall	Solid site hoardings and maintenance of tidy construction site. Retention of long distance view along Altrincham Street.	Hoardings and maintenance is responsibility of works contractor. Construction phasing will determine scope to maintain pedestrian connection along Altrincham Street. Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate/major Adverse, Temporary
Moderate/major Adverse	Viewpoint 8) Former bowling green	Solid site hoardings and maintenance of tidy construction site.	Hoardings and maintenance is responsibility of works contractor. Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate/major Adverse, Temporary
Moderate/major Adverse	Viewpoint 12) Former bowling green	Solid site hoardings and maintenance of tidy construction site.	Hoardings and maintenance is responsibility of works contractor. Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate/major Adverse, Temporary

Moderate/major Adverse	Viewpoint 13) Vimto Park	Controlled working hours to minimise visibility of moving cranes.	Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate/major Adverse, Temporary
Moderate/major Adverse	Viewpoint 15) Altrincham Street, Renold Building	Controlled working hours to minimise visibility of moving cranes.	Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate/major Adverse, Temporary
Moderate Adverse	Building height	None	n/a	Moderate Adverse, Temporary
Moderate Adverse	Site character	Solid site hoardings and maintenance of tidy construction site.	Hoarding and maintenance is responsibility of works contractor. Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate Adverse, Temporary
Minor/ Moderate - Moderate Neutral	Viewpoint 3) London Road	Controlled working hours to minimise visibility of moving cranes.	Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Minor/Moderate - Moderate Neutral, Temporary
Moderate Neutral	Viewpoint 10) Station platform 13/14	Controlled working hours to minimise visibility of moving cranes.	Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate Adverse, Temporary
Moderate Neutral	Viewpoint 11) Morton Labs	Controlled working hours to minimise visibility of moving cranes. Solid site hoardings and maintenance of tidy construction site.	Planning condition regarding working hours. Hoarding and maintenance is responsibility of works contractor. Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate Neutral, Temporary
Moderate Neutral	Viewpoint 18) Lockton Close	Controlled working hours to minimise visibility of moving cranes.	Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate Neutral, Temporary
Operational Phase (scenario 5)				
Moderate/major Neutral	Viewpoint 6) Altrincham St, Hollaway Wall	Architectural design and massing. Public realm design and delivery.	Development to be delivered in-line with approved plans. Planning conditions requiring details of building and public realm materials to be submitted and approved by the LPA prior to works.	Moderate/major Neutral
Moderate/major Neutral	Viewpoint 13) Vimto Park			Moderate/major Neutral
Moderate/major Beneficial	Viewpoint 8) Former bowling green			Moderate/major Beneficial
Moderate/major Beneficial	Viewpoint 12) Former bowling green			Moderate/major Beneficial

Moderate/major Beneficial	Viewpoint 15) Altrincham Street, Renold Building			Moderate/major Beneficial
Moderate Adverse	Viewpoint 3) London Road			Minor/Moderate Neutral
Moderate Neutral	Viewpoint 10) Station platform 13/14			Moderate Neutral
Moderate Neutral	Viewpoint 11) Morton Labs			Moderate Neutral
Moderate Neutral	Viewpoint 18) Lockton Close			Moderate Neutral
Moderate Neutral	Building height	None	n/a	Moderate Neutral
Moderate Beneficial	Site character	Partial retention of Hollaway Wall, activation of railway arches and materials palette complementary to heritage assets.	Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate Beneficial

Monitoring

7.101. Not required

Reference List

- Guidelines for Landscape and Visual Impact Assessment, third edition, Landscape Institute and the Institute for Environmental Management and assessment, 2013.
- Technical Advice Note 06/19 Visual Representation of Development Proposals, The Landscape Institute.
- Technical Advice Note 05/17 Townscape Character Assessment, The Landscape Institute.

8. Air Quality

Introduction

- 8.1. This Chapter of the ES has been prepared by Buro Happold and assesses the likely significant air quality impacts of the Proposed Development upon the Site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.
- 8.2. The authors of this Chapter have the following qualifications and experience as shown in Table 8.1.

Table 8.1: Technical competence of chapter authors

	Lead Author	Reviewer
Name	Rachael Harrison	Kathryn Woolley
Company	Buro Happold	Buro Happold
Qualifications/Accreditations relevant to technical area incl. IEMA	BSc MIAQM	BSc MIAQM
Years technical experience (in technical area)	7	10
Number of EIA's delivered to date	30	Over 100

Assumptions and Limitations

- 8.3. There is always some uncertainty regarding the prediction of air quality. The main source of uncertainty in air quality assessments is typically associated with modelling, however modelling has not been undertaken as part of this assessment. The main source of uncertainty in this assessment will be in the monitored concentrations presented within the Baseline Assessment, particularly diffusion tubes, which will have a residual uncertainty of +/- 20%.
- 8.4. There is always some uncertainty regarding the prediction of air quality. This is associated with both the difficulty in simulating mathematically the very complex atmospheric processes that affect pollutant concentrations and the uncertainties in the model input data. However, the professional judgement and experience of the consultants preparing this Air Quality ES Chapter have been used, and the method for assessing air quality agreed to produce a robust assessment.
- 8.5. There are a number of factors that will contribute to uncertainty in the air quality dispersion modelling predictions, including the traffic and emissions data model inputs which will have inherent uncertainty associated with them. There is also additional uncertainty owing to the model simplifying real-world conditions into a series of algorithms.
- 8.6. To reduce this uncertainty, model verification was carried out for the assessment by comparing modelled and monitored concentrations, which will ensure a good degree of confidence in modelled results for the existing baseline year. Further details of modelling, verification and meteorological factors which could affect the precision and accuracy of the results are found in Appendix 8.3.

Relevant Legislation, Policy and Guidance

Legislation

- 8.7. This section appraises the current legislation used to inform the Air Quality Assessment;

- Air Quality Standards Regulations 2010 (HM Government, 2010)
- Environment Act 2021
- PM_{2.5} Interim Targets Guidance (Department for Environment Food & Rural Affairs, 2024)

8.8. Full details of relevant legislation are outlined within Appendix 8.1

Air Quality Objective

8.9. This air quality assessment is conducted to assess compliance with UK air quality objectives (AQO). The air quality objectives relevant to this assessment are presented in Table 8.2. It should be noted that air quality objectives are numerically the same as the 2008 EU limit values detailed within the Air Quality Standards Regulations (HM Government, 2000) , however, differ in terms of compliance dates, locations where the limit values apply, and the legal responsibility for ensuring compliance.

Table 8.2 National Air Quality Objectives relevant to the assessment

Pollutant	Concentration (µg/m ³)	Averaging Period	Number of allowable exceedances per calendar year
Nitrogen dioxide (NO ₂)	40	Annual mean	N/A
	200	Hourly mean	18
Particulates <10µm in diameter (PM ₁₀)	40	Annual mean	N/A
	50	Daily mean	35
Particulates <2.5µm in diameter (PM _{2.5})	20	Annual mean	N/A

8.10. The Environment Act was amended in 2021, requiring the government to set new targets for fine particulate matter (PM_{2.5}). The subsequent Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (HM Government, 2023) set the following targets:

- Annual mean PM_{2.5} concentration of 10 µg/m³ by 2040; and
- At least a 35% reduction in population exposure of PM_{2.5} by the end of 2040.

8.11. The Environment Act 2021 requires the publication of an Environmental Improvement Plan every five years, with progress against the set targets reported on annually. The Environmental Improvement Plan 2023 (Defra, 2023) sets the following interim target for PM_{2.5}:-

- Annual mean PM_{2.5} concentration of 12 µg/m³ by 2028; and
- At least a 22% reduction in population exposure of PM_{2.5} by the end of 2028.

8.12. The PM_{2.5} Targets: Interim Guidance was published in 2024 (Department for Environment Food & Rural Affairs, 2024) and outlines some actions to be taken by applicants and local authorities in addressing the new PM_{2.5} target. Air quality assessment reports would need to include evidence of identifying key pollution sources within their schemes and proof of actions taken to minimise PM_{2.5} emissions.

8.13. This report outlines qualitative actions taken to address the interim guidance in Appendix 8.1.

Policy

National Planning Policy

National Planning Policy Framework (Dec, 2024)

- 8.14. The National Planning Policy Framework (NPPF) (DLUHC, 2024) sets out the Government's planning policy for England. The legislation mandates that most new development should provide net gains for biodiversity, prevent waste and pollution, and take proactive action in mitigating and adapting to climate change.
- 8.15. With particular regard to air quality management, Section 9 of the NPPF notes that the environmental impact of transport and traffic should be identified and assessed, while mitigating adverse effects to bring about net environmental gains. The guidance states that the planning system should actively manage patterns of growth, offering a choice of transport modes to reduce air pollution.
- 8.16. Further to this, Section 15 of the NPPF notes that planning policies should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of AQMAs and Clean Air Zones (CAZ), and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Additionally, the NPPF states that planning decisions should ensure that any new development in AQMAs and CAZs is consistent with the local air quality action plan.

Local Planning Policy

- 8.17. The following local policy has been used to inform The Air Quality ES chapter:
- Manchester Core Strategy (MCC, 2012);
 - Addendum to Manchester Core Strategy (MCC, 2024)
- 8.18. Full details of relevant policy are outlined within Appendix 8.1

Guidance

National Guidance

- 8.19. Planning Practice Guidance (PPG) (DLUHC, 2019) provides guiding principles on how the planning process can consider the impact of new development on air quality. The guidance outlines when air quality considerations could be relevant to the development management process. Full details of the PPG are outlined within Appendix 8.1.
- 8.20. The following national guidance documents has also been used to inform The Air Quality ES chapter:
- IAQM land-use planning & development control: planning for air quality (IAQM , 2017)
 - IAQM Guidance on the assessment of dust from demolition and construction (IAQM, 2024);
 - Defra Local Air Quality Management Technical Guidance ('TG22') (Defra, 2022)

Local and Regional Guidance

- 8.21. The following regional and local guidance has been used to inform this ES chapter:
- MCC Air Quality and Planning Technical Guidance (MCC, 2022)
 - The Greater Manchester Strategy 2021-2027 (GMCA, 2021);
 - Greater Manchester Transport Strategy 2040 (TfGM, 2021a) and Our Five-Year Transport Delivery Plan 2021-2026 (TfGM, 2021b)
 - GMCA 5-year Environment Plan 2025-2030 (GMCA, 2024);
 - GMCA Air Quality Action Plan (GMCA / TfGM, 2016);
 - GM Clean Air Plan (GMCA, 2023)
- 8.22. Full details of relevant national and local guidance are outlined within Appendix 8.1.

Assessment Methodology and Significance Criteria

Scenarios Tested

- 8.23. The Proposed Development is to be phased (C1 to come forward prior to C2), and the Proposed Development phases are set out below.
- **Phase A:**
 - Full demolition package
 - Construction of C1
 - Servicing tunnel
 - Public realm: Sister Square, Mill Lane West, Altrincham Street West
 - **Phase B:**
 - Construction of C2
 - Public realm: Mill Lane East, Altrincham Street East, Hollaway Forest, Hollaway Place
 - **Phase C:**
 - Works to Grade II Listed Viaduct arches to facilitate change of use for commercial (F&B/ retail)
- 8.24. In line with the scenarios outlined within Chapter 1 of this ES, the following scenarios have been considered relevant for the assessment of Air Quality effects of the Proposed Development during the construction and operational phases:
- **Scenario 1:** Baseline
 - **Scenario 6:** Baseline + Phase A + Phase B + Phase C + Cumulative.
- 8.25. Further details on the scenarios considered and associated traffic flows for construction and operation flows are outlined in the below paragraphs 8.26 and 8.27 respectively.
- 8.26. For construction phase the construction activities associated with all phases of the Proposed Development (Scenario 6) has been considered and are as follows:
- **2023 Existing Baseline Scenario¹:** Establish existing baseline conditions
 - **Scenario 1: Future Year peak construction year Do Minimum ('DM'):** future baseline traffic flows for the peak construction year, with cumulative developments only;
 - **Scenario 6: Future Year peak construction year Do Something ('DS'):** future baseline traffic flows for the peak construction year, with cumulative developments and traffic flows associated with the construction activities for all phases (Phase A, B and C construction);
- 8.27. For the operational phase of the Proposed Development, Scenario 6 considers traffic generated by all phases (Phase A, B and C) of Plot C within this ES chapter, during the construction and operational phases. Scenario 6 is considered to represent a worst case operational scenario in respect to road vehicle exhaust emissions, as it considers the combined air quality impacts of Phases A, B and C, in conjunction with appropriate cumulative traffic flows provided by the Transport Consultants (Chapter 14). As such the following scenarios have been considered to determine the potential air quality impact:
- **Scenario 1: Future Year earliest operational year DM:** future baseline traffic flows for the earliest opening year for the Proposed Development with cumulative developments only; and
 - **Scenario 6: Future Year earliest operational year DS:** traffic flows for the earliest opening year with cumulative developments and traffic generated by the operation of the Proposed Development (Phases A, B and C operational traffic).
- 8.28. Scenario 2, 3, 5 and 8 outlined within the EIA scoping, have not been progressed further within this ES chapter as these scenarios consider the in-insolation or combined assessment of one or more phases or without the consideration to cumulative impacts. Therefore the road vehicle exhaust emissions generated by each of these

¹ A 2023 baseline is utilised for the purpose of air quality as the 2023 provided the latest available, ratified and bias adjusted air quality monitoring data from MCC as outlined within GMCA Air Quality Annual Status report and is used to establish exiting baseline conditions at the Proposed Development.

scenarios are likely to be lower than when all phases are considered together, with cumulative impacts, as in Scenario 6. As such a detailed assessment on these scenarios (2,3,5 and 8) has not been undertaken.

- 8.29. Details of the traffic generated by other Plots within the IDM masterplan are currently unknown, however commentary on the air quality impact in regard to the wider ID Masterplan development, Scenario 7 will also be undertaken within a qualitative assessment. Scenario 4 has not been considered further as Scenario 7 is considered to provide a worst-case assessment of the wider IDM masterplan.

The Study Area

- 8.30. The study area of this assessment includes the Site and the area that can potentially experience air quality impacts from the construction and operational phases of the Proposed Development.
- 8.31. The study area has been determined by the scale of traffic generated by the operation and construction of the Proposed Development. Air quality impacts were assessed in proximity to any road links on which there is an increase in traffic volume resulting from the Proposed Development that exceeds the criteria outlined in IAQM/EPUK guidance on land-use planning and development control (IAQM, 2017). The Study Area is shown in Figure 8.1 within Appendix 8.3A.

Surveys and Data Sources

- 8.32. This Chapter is accompanied by the following technical appendices:
- Appendix 8.1 Legislation and Guidance
 - Appendix 8.2 Construction Dust Risk Assessment
 - Appendix 8.3 Air Quality Assessment Appendices
- 8.33. A baseline air quality review was undertaken to determine the existing air quality in the vicinity of the Site. This baseline study was undertaken using the following sources:
- Air quality data for MCC and GMCA, including a review of the most recent MCC air quality annual status report and Clean Air Plan monitoring data (GMCA, 2024);
 - Background pollution maps from Defra's Local Air Quality Management (LAQM) website (Defra, 2024)
 - Environment Agency Pollution Inventory (Environmental Agency, 2024); and
 - Aerial photography from Google Maps (Google, 2024).

Source of Effect

- 8.34. The source of effects scoped into the assessment are emissions from vehicles associated with the Proposed Development during both the construction and operational phases.
- 8.35. The effect of construction dust on dust soiling and human health impacts are scoped out of the ES. The IAQM guidance on the assessment of dust from demolition and construction (IAQM, 2024) recommends that significance criteria are only assigned to the identified risk of dust impacts occurring from a construction activity with appropriate mitigation measures in place. The reason for this is that for almost all construction activities, the application of effective mitigation should prevent any Significant effects from occurring to existing sensitive receptors, and therefore the residual effect will normally be Negligible.
- 8.36. A construction dust risk assessment has been carried out to inform the appropriate mitigation measures. The assessment, alongside the mitigation measures are presented in Appendix 8.2.

Significance Criteria

- 8.37. For this assessment the approach in the EPUK/IAQM guidance (IAQM , 2017) has been used to describe the effects at individual existing sensitive receptors. This is based on the percentage change in concentration (magnitude of change) relative to the AQO and with the total long-term average concentration with the Proposed Development as shown in Table 8.3.
- 8.38. The magnitude of change is determined quantitatively by establishing the change in pollutant concentration at each existing sensitive receptor as predicted by the dispersion modelling. There is no distinction in the sensitivity of different human receptors to air quality and all existing sensitive receptors are considered high sensitivity.
- 8.39. The impact significance with regards to exposure of future site users to air pollution is determined by comparing the predicted pollutant concentrations to the relevant AQO.

Table 8.3 IAQM Air quality impact significance descriptors

Sensitivity	Change in concentration relative to AQO				
	0%	1%	2-5%	6-10%	>10%
75% or less of AQO	Negligible	Negligible	Negligible	Slight	Negligible
76-94% of AQO	Negligible	Negligible	Slight	Moderate	Moderate
95-102% of AQO	Negligible	Slight	Moderate	Moderate	Substantial
103-109% of AQO	Negligible	Moderate	Moderate	Substantial	Substantial
110% or more of AQO	Negligible	Moderate	Substantial	Substantial	Substantial

* Throughout the rest of the chapters, 'Slight' is equal to 'Minor' and 'Substantial' is equal to 'Major' in this ES methodology.

- 8.40. For each effect, a statement has been made as to whether the level of effect is 'Significant' or 'Not Significant'. In line with the EPUK/IAQM guidance, when considering the overall significance of the effect 'Moderate' or 'Major' ('Substantial') impacts will generally give rise to a Significant effect and requires mitigation. 'Negligible' or 'Minor' ('Slight') impacts will generally not have a Significant effect and do not usually require mitigation, but this depends on a number of other factors including:
- Existing and future air quality in the absence of the Proposed Development;
 - The extent of current and future population exposure to the impacts;
 - The assumptions adopted when predicting impacts; and hence the likelihood of the identified impacts occurring; and
 - The likely duration of impacts.
- 8.41. Additionally, the air quality impact with regards to exposure of future site users is determined by comparing the predicted pollutant concentrations to the relevant AQO.
- 8.42. IAQM/EPUK guidance states the following:
- "Where the air quality is such that an air quality objective at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means. For people working at new developments in this situation, the same will not be true as occupational exposure standards are different, although any assessment may wish to draw attention to the undesirability of the exposure."*
- 15.66 The determination of the significance of the likely effects includes elements of professional judgement and the professional experience of the consultants preparing this chapter is set out in Table 8.1 .

Baseline Conditions

Existing Baseline

- 8.43. An Air Quality Management Area (AQMA) has been declared across Manchester city centre and surrounding arterial roads owing to consistent exceedances of the AQO for the annual average concentration of NO₂. These exceedances are predominantly due to pollution from road transport, which accounts for 65% of the total NO₂ emission within Greater Manchester (GMCA , 2019). The entirety of the Site is within the AQMA.
- 8.44. GMCA has established an extensive monitoring network for LAQM purposes and to support the Greater Manchester Clean Air Plan (GM CAP). According to the latest ASR, GMCA has deployed 20 automatic monitoring sites and 368 non-automatic (diffusion tube) monitoring sites for LAQM. In addition, 503 non-automatic roadside monitoring sites have been operated for monitoring and evaluation purposes of GM CAP.
- 8.45. Monitoring data from 2023 is considered the most appropriate year for determining baseline air quality conditions in the aftermath of the COVID-19 pandemic. The latest update (v1.1) of the IAQM position statement on the use of 2020 and 2021 monitoring datasets states that 2022 (or later) monitoring data should be used for model verification, as it represents a typical post-pandemic year (IAQM, 2023).
- 8.46. Figure 8.1 and Figure 8.2 within Appendix 8.3A, present the CAP and LAQM monitoring sites in proximity to the Site. Monitoring data from the recent five years are presented in Table 8.4 and Table 8.5, respectively. The CAP monitoring sites are mainly deployed along A57 Mancunian Way, A635 Great Ancoats Street and A6 Downing Street. In 2023, annual mean NO₂ concentrations at the majority of the monitoring sites are within 24-36 µg/m³, below the AQO level of 40 µg/m³. Two of the closest monitoring sites to the Site, site 006 and site 105, measured NO₂ annual average concentrations of 25.6 µg/m³ and 33.4 µg/m³ in 2023, within the AQO level of 40 µg/m³.

Table 8.4 Monitoring results from CAP monitoring sites in proximity to the Site.

Site ID	Distance from the Site (m)	Site type	Annual average NO ₂ concentration (µg/m ³)				
			2019	2020	2021	2022	2023
006	137	Roadside	42.7	26.9	29.9	30.8	25.6
105	159	Roadside	-	-	-	38.5	36.4
106	168	Roadside	-	-	-	36.1	35.3
104	200	Roadside	-	-	-	38.3	37.6
022	187	Roadside	49.5	32.9	32.7	35.5	33.3
004	228	Roadside	46.9	28.4	31.2	33.4	33
002	247	Roadside	-	32.2	33.8	35.5	34.2
164	255	Roadside	-	-	-	34.6	-
020	305	Roadside	-	22.1	25.6	26.2	-
167	315	Roadside	-	-	-	48.1	49.1
166	390	Roadside	-	-	-	38.6	37.1
040	404	Roadside	41.6	31.3	37.8	38.6	33.4
165	454	Roadside	-	-	-	33.7	-
003	470	Roadside	51.6	29.8	33.7	35.7	34.8
036	490	Roadside	39.2	29.0	31.7	32.9	-
039	540	Roadside	43.9	33.5	37.3	37.7	35.3
037	550	Roadside	36.2	27.1	29.3	31.9	-
038	570	Roadside	37.7	26.5	30.6	32.3	-
168	580	Roadside	-	-	-	41.9	44.3
Notes: Figures in bold indicate an exceedance of the long-term air quality objective (40 µg/m ³). Owing to the influence of lockdown measures implemented in response to the COVID-19 pandemic, monitoring data from 2020 and 2021 should be treated with caution as it may not represent typical conditions.							

Table 8.5 Monitoring results from LAQM monitoring sites in proximity to the Site.

Site ID	Distance from the Site (m)	Site Type	Annual average NO ₂ concentration (µg/m ³)				
			2019	2020	2021	2022	2023
MA72NO	184	Urban Background	32.8	24.5	27.5	26.3	24.3
MA82NO, MA83NO, MA84NO	475	Roadside	52.0	34.1	40.7	42.6	41.1
MA29ANO	497	Roadside	55.4	39.0	44.8	49.8	49.6
MA96BNO	551	Roadside	46.0	36.4	41.0	43.5	39.7
MA9ANO	585	Kerbside	44.9	32.5	35.7	37.5	36.2
MA71NO	695	Roadside	45.3	31.4	34.2	34.4	30.7
MA113BNO	740	Roadside	-	-	28.1	29.2	28.2
MA59NO MA60NO MA61NO	741	Urban Background	31.6	22.4	24.6	25.3	24.4
MA24NO	758	Kerbside	40.8	26.8	31.8	32.4	29.8
MA112BNO	1,030	Roadside	-	-	21.4	22.7	19.8
MA77NO	1,022	Urban Background	43.7	26.9	30.8	33.1	31.6
<p>Notes:</p> <p>Figures in bold indicate an exceedance of the long-term air quality objective (40 µg/m³).</p> <p>Owing to the influence of lockdown measures implemented in response to the COVID-19 pandemic, monitoring data from 2020 and 2021 should be treated with caution as it may not represent typical conditions.</p>							

- 8.47. The Manchester Oxford Road site (MAN1) is the closest automatic monitoring site to the Site, approximately 550m to the southwest of the Site. The annual average NO₂ levels at the MAN1 were above the AQO level of 40 µg/m³ in the past five years, except for 2020, in which traffic flows were reduced considerably due to policies in response to the COVID-19 pandemic.
- 8.48. The 1-hour averages at the MAN1 exceeded the 200 µg/m³ threshold for no more than three times in each of the past years, in compliance with the permitted 18 allowable exceedances outlined in the AQO (Table 8.6).
- 8.49. The Manchester Piccadilly (MAN3) site is about 1.1 km away from the Site. Annual average NO₂ concentrations measured at MAN3 have constantly achieved the AQO level of 40 µg/m³, and no short-term exceedance were recorded in the past five years.
- 8.50. Figure 8.3, within Appendix 8.3A demonstrates the annual average NO₂ concentrations at all nearby monitoring sites during 2018-2023. Overall, pollution concentrations have decreased over the five years. Among all monitoring sites that began operating before 2020, the lowest concentrations were recorded in 2020, attributed to behavioural changes during the COVID-19 pandemic. Slight concentration increases are observed in 2021 and 2022. Despite the increases, 2023 annual average NO₂ concentrations at all sites remain lower than the 2019 level.
- 8.51. Similar to NO₂, the MAN1 site recorded higher annual average PM₁₀ concentrations and greater number of short-term exceedances, compared to the MAN3 site (Table 8.7). Despite this, long-term and short-term AQOs for PM₁₀ have been achieved at both sites since 2018, and a general decrease in annual average concentration has been observed in the recent five years.

8.52. MAN3 is the only nearby automatic monitoring site that monitors PM_{2.5}. This has not exceeded the annual average PM_{2.5} AQO (20 µg/m³) since 2018 (Table 8.8).

Table 8.6 Monitored annual average NO₂ and exceedances of short term (1-hour) NO₂ objective (18 allowable exceedances) at automatic monitoring sites in the vicinity of the Site.

Site ID	Site Name	Site Type	Distance from the development (m)	Annual average NO ₂ concentration (µg/m ³)					Number of exceedances of 1-hour NO ₂ AQO (> 200 µg/m ³)				
				2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
MAN1	Manchester Oxford Rd	Kerbside	550	59	36	44	43	41	1	0	0	3	0
MAN3	Manchester Piccadilly	Urban Centre	755	36	27	30	29	27	0	0	0	0	0

Table 8.7 1 Monitored annual average PM₁₀ and exceedances of short term (24-hour) PM₁₀ objective (35 allowable exceedances) at automatic monitoring sites in the vicinity of the Site

Site ID	Site Name	Site Type	Distance from the development (m)	Annual average PM ₁₀ concentration (µg/m ³)					Number of exceedances of 24-hour PM ₁₀ AQO (> 50 µg/m ³)				
				2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
MAN1	Manchester Oxford Rd	Kerbside	550	26	18	18	18	18	18	5	2	8	4
MAN3	Manchester Piccadilly	Urban Centre	755	20	15	15	17	15	7	1	2	4	1

Table 8.8 2 Annual average PM_{2.5} at automatic monitoring sites in the vicinity of the Site.

Site ID	Site Name	Site Type	Distance from the development (m)	Annual average PM _{2.5} concentration (µg/m ³)				
				2019	2020	2021	2022	2023
MAN3	Manchester Piccadilly	Urban Centre	755	12	8	9	10	9

Industrial Pollution Sources

8.53. There are no UK pollutant release and transfer register (PRTR) registered emission sources (Defra, 2012), National Atmospheric Emission Inventory (NAEI) (NAEI, 2024), or Defra registered Part A1 air pollution emission sources (Environmental Agency, 2024) within 500m from the Site. The nearest facilities registered under Part B Environmental Permits (Manchester City Council, 2024) are more than 500m away and therefore will not have a significant impact on air quality at the Site, so have been scoped out.

Defra Predicted Concentrations

- 8.54. Defra model grid background concentrations across the UK on 1km x 1km grid squares, utilising a base year of 2021 (Defra, 2024). Table 8.9 presents the Defra Modelled background pollution concentrations for NO₂, PM₁₀ and PM_{2.5} for the grid square in which the majority of the Site lies (384500,397500) for the existing baseline year 2023, alongside the 2023 monitored data recorded at automatic monitoring site MAN 3. Monitored and modelled annual mean background concentrations of NO₂, PM₁₀, and PM_{2.5} across the study area are all below their relevant AQOs.
- 8.55. The monitored background concentration at MAN 3 is slightly higher than background concentrations obtained from other sources, hence it is considered a worst-case option as background air quality conditions for this assessment.

Table 8.9 Defra modelled background concentrations for the baseline year (2023)

Year	Defra modelled annual average background concentration (µg/m ³) (Grid square: 384500,397500)				Monitored annual average concentrations at Urban Centre monitoring site (MAN3) (µg/m ³)		
	NO ₂	NO _x	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}
2023	23.4	34.5	15.1	8.2	27.0	15.0	9.0

- 8.56. Air quality is generally expected to improve with time with the increased uptake of cleaner vehicles and with newer vehicles having more stringent emission standards. In order to give an indication of potential future baseline concentrations, the predicted background concentrations for NO₂, PM₁₀ and PM_{2.5} for the grid squares covering the Site are provided in Table 8.10 for the 2028 peak construction year and the 2029 the earliest operational year for the Proposed Development (Phase A).

Table 8.10 Defra modelled background concentrations for the peak construction year Phase A (2028) and Phase B (2031) and earliest operational year Phase A (2029) and Phase B (2032).

Year	Defra modelled annual average background concentration (µg/m ³) (Grid square: 384500,397500)			
	NO ₂	NO _x	PM ₁₀	PM _{2.5}
Phase A				
Peak construction (2028)	20.9	30.2	15.0	8.0
Opening Year (2029)	18.7	26.4	14.9	7.9
Phase B				
Peak construction (2031)	17.3	24.3	14.8	7.8
Opening Year (2032)	16.9	23.6	14.7	7.7

- 8.57. It can be seen from Table 8.10 that background concentrations at the Site are anticipated to reduce over time, with an improvement in concentrations predicted when compared against the background concentrations for 2023 (Table 8.9).
- 8.58. However, it is important to note that these future baseline concentrations are only predictions and there remains some uncertainty regarding future concentrations of NO₂ as emissions from diesel vehicles have not declined as

expected. Therefore, the future year background concentrations are provided for information only and 2023 background have been used within the dispersion modelling to provide a worst case and conservative approach.

Summary of Baseline

- 8.59. The baseline assessment has shown that monitored baseline concentrations at monitoring locations along the Mancunian Way, adjacent to the Site, are in compliance with the UK NO₂ AQO. Whilst the majority of monitoring locations are in compliance with the annual average AQO, there are several roadside locations in the wider area that are in exceedance of the annual average NO₂ AQO. The nearest automatic monitoring sites have all been in compliance with the PM₁₀ and PM_{2.5} AQOs in recent years.
- 8.60. Furthermore, the Defra predicted background concentrations for NO₂, PM₁₀ and PM_{2.5} are predicted to be in compliance with the relevant air quality objectives at the Site in 2023.

Identification and Evaluation of Likely Significant Effects

Construction Phase

Effects of emissions generated by construction traffic

- 8.61. Vehicle emissions from traffic generated as a result of the construction phase of the Proposed Development on the local road network have the potential impact on local air quality.
- 8.62. Existing receptor locations to construction vehicle emission impacts are presented in Figure 6 within Appendix 8.3D. Changes in NO₂, PM₁₀ and PM_{2.5} concentrations due to the construction of the Proposed Development have been predicted at each location.
- 8.63. The modelled results of the change in pollutant concentration due to the construction of the Proposed Development are presented in Tables 7, Tables 8 and Tables 9 (included at Appendix 8.3D).
- 8.64. The predicted increases in annual mean NO₂ concentrations as a result of the construction of the Proposed Development at R8 and R9 is 0.2 µg/m³, which is less than 1% of the annual average NO₂ AQO (40 µg/m³). The annual average NO₂ concentration will be 57.7-63.3% of the AQO and therefore the impact is deemed negligible in line with the EPUK/IAQM guidance (Table 8.3). Annual average PM₁₀ and PM_{2.5} concentrations were predicted between 36.9 – 51.2% of the AQO and the change in concentration due to the Proposed Development is less than 1% of the AQOs, so the impact is also deemed negligible in line with the EPUK/IAQM guidance.
- 8.65. An annual mean NO₂ concentration of 60 µg/m³ has been used to determine whether an exceedance of the 1-hour mean NO₂ AQO is likely. The maximum NO₂ concentration is modelled at existing sensitive receptor location R8 with an annual mean NO₂ concentration of 32.2 µg/m³ for the DM scenario and 32.5 µg/m³ for the DS scenario. This is below the 60 µg/m³ indicative criteria. Therefore, in accordance with LAQM.TG(22) guidance, exceedance of the 1-hour mean NO₂ AQO is considered unlikely since the Proposed Development will not lead to any exceedance of the 60 µg/m³ threshold.
- 8.66. A maximum PM₁₀ concentration of 18.1 µg/m³ is predicted to occur at existing sensitive receptor location R8 for the DM scenario and 18.2 µg/m³ for the DS scenario. Based upon the maximum predicted annual mean PM₁₀ concentration, this equates to less than 1 day when 24-hour mean PM₁₀ concentrations are greater than 50 µg/m³. Additionally, the Proposed Development has not led to an increase in the number of days of exceedance of the 24-hour mean AQO. The number of exceedances is within the 35-day compliance limit of the 24-hour mean AQO and therefore no exceedance of the 24-hour mean AQO is considered likely.
- 8.67. As such, the overall significance of construction vehicle emission impacts from the Proposed Development on NO₂, PM₁₀ and PM_{2.5} concentrations will result in a negligible impact and therefore is determined not to be significant in line with EPUK and IAQM guidance.

Operational Phase

Effects of emissions generated by operational traffic

- 8.68. Vehicle emissions from traffic generated as a result of the operational phase of the Proposed Development on the local road network have the potential impact on local air quality.

- 8.69. Traffic generated by the Proposed Development (in line with Scenario 6) has been provided by Civic Engineers. The Proposed Development (Phases A, B and C) is indicated to lead to a maximum AADT increase of 179 AADT (163 LDV/16 HDV) of new trips on the surrounding road network. The additional traffic is considered to distribution along the local road network from Altrincham Street with 50% to travel on London Road North, and 50% travelling along London Road South. As such the trip generation falls below the EPUK and IAQM criteria for detailed operational traffic assessment (100 LDVs or 25 HDVs) on a single road network.
- 8.70. It has been confirmed by Civic Engineers that the AADT for the Proposed Development has been calculated using smaller development surveys (circa 12,000 m²) with a scaling factor applied to the size of the Proposed Development and therefore may provide an overestimation of total AADT anticipated.
- 8.71. When considering Scenarios 2, 3,5 and 8; the additional AADT on the road network will be less than that of Scenario 6 and therefore remain below the EPUK and IAQM criteria and there is anticipated to be no significant impact on air quality. Therefore, Scenario 6 provides a worst case and robust assessment.
- 8.72. As such, vehicle emissions from operational traffic have been scoped out as the increase in traffic flows below the threshold requiring a detailed assessment and the impact from traffic emissions associated with the Proposed Development will be considered negligible and therefore not significant in line with professional guidance.

Effects associated with sources of air pollutant emissions on future receptors

- 8.73. A qualitative site suitability assessment has been undertaken to consider the exposure of future occupants, introduced by the Proposed Development, to current air quality. In line with LAQM.TG (22), the 1-hour mean AQO applies to the Proposed Development due to its proposed use as an office. As such, this section considers the predicted 1-hour mean NO₂ concentrations at the Site.
- 8.74. Air quality monitoring in the vicinity of the Proposed Development is presented in Figure 8.2 and Figure 8.3A. The majority of sites are in compliance with the UK AQO for annual average NO₂ (40 µg/m³). The closest monitoring location to the Proposed Development is site 006, 70 m to the south of the Site, which recorded an annual average NO₂ concentration of 28.6 µg/m³ in 2023.
- 8.75. As shown on Figure 8.2, 2023 CAP monitored roadside concentrations along London Road to the south of the Proposed Development observed concentrations between 33 µg/m³ (Site 004) to 49.1 µg/m³ (Site 167) with a maximum set back distance of 4.5m from London Road. The Proposed Development is set back approximately 17.8m from London Road and annual mean NO₂ concentrations at the Proposed Development are likely to be significantly lower than those recorded at Site 167 s NO₂ concentrations will decrease with increasing distance from road.
- 8.76. Therefore, the Proposed Development will not introduce any new receptor into an area of exceedance of the annual or 1- hour mean NO₂ AQO based upon a review of NO₂ monitoring data and Defra background maps within the development locale. As air pollutant concentrations will be in compliance with AQOs across the EIA Site, the impact of air pollution on new receptors introduced by the Proposed Development will be negligible.
- 8.77. As no exceedance of the considered AQO is predicted, mitigation measures are not required for the operational phase of the Proposed Development. As such, the overall effect is considered to be 'not significant'.

Cumulative Effects

- 8.78. The complete list of cumulative schemes is detailed in Appendix 2.3. The impacts of the cumulative schemes on future traffic are integrated into the supplied traffic data and are therefore considered inherently in the assessment (detailed above).

Construction

- 8.79. There is potential for cumulative effects on construction dust impacts from other major developments in the vicinity of the Proposed development should the construction phases overlap for each scheme.
- 8.80. IAQM guidance indicates that with appropriate mitigation measures in place, the impact from construction dust will be not significant. Guidance also suggests that cumulative effects may occur from sites within 500m of one another.

In line with proposed mitigation measures, the contractor should hold regular liaison meetings with other high risk construction sites within 500m of the Site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised.

- 8.81. It is assumed that an appropriate assessment of potential construction effects will have been carried out at cumulative schemes and necessary mitigation will have been identified. Mitigation for this Proposed Development will therefore compliment the mitigation identified for the other cumulative developments and ensure overall impacts are negligible.

Operation

- 8.82. Scenario 7 consider the impacts of the wider IDM Masterplan, including all Phases of Plot C.
- 8.83. Traffic for the wider masterplan is likely up to a 30% increase in AADT along London road, however the full development details and design massing is currently unknown. It is considered that a detailed assessment of impacts for each plot within the wider IDM masterplan would be undertaken within the respective application as the plots move forward to ensure that potential significant air quality impacts are assessed. Additionally, appropriate mitigation is expected to be implemented within each application.
- 8.84. It is therefore considered that the wider masterplan is unlikely to give rise to significant impacts, following appropriate assessment of air quality during their respective planning applications.

Mitigation Measures

Construction Phase

- 8.85. As the impact of construction traffic on all human receptors will be negligible, no additional mitigation is recommended.
- 8.86. In line with best practice, the IAQM construction guidance sets out the recommended mitigations measures to be implemented in order to mitigate the potential impacts during the construction phase. Table 8.13 within Appendix 8.2 outline the specific mitigations measures to be incorporated into the DMP for the Proposed Development, as a result of the dust risk assessment undertaken within Appendix 8.2. The dust risk assessment indicted that high risk mitigations measures are required to minimise potential dust impacts due to the proximity of high sensitive receptors.
- 8.87. Examples of high risk general mitigation measures include but are not limited to:
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the Site.
 - Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
 - Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked;
 - Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.
 - Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
 - Ensure all vehicles switch off engines when stationary - no idling vehicles.
 - Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.

- 8.88. Ensure an adequate water supply on the Site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.

Operational Phase

- 8.89. As the impact of operational traffic on all human receptors will be negligible, no additional mitigation is recommended.

Residual Effects

Construction Phase

- 8.90. The conclusions on residual effects for construction phase are presented in Table 8.11.
- 8.91. As outlined within paragraph 8.35 an assessment of the construction dust on dust soiling and human health impacts are scoped out of the ES in line with IAQM guidance, however has been included within Table 8.11. for completeness.

Table 8.11: Summary of Construction Phase Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Effects of emissions arising from dust generated during the construction of Proposed Development on human health	Surrounding sensitive uses, e.g. residential properties and schools (high)	Recommended mitigation measures has been outlined within Appendix 8.2.	Mitigation measures typically implemented through a Construction environmental Management Plan (CEMP) submitted and approved by the LPA as a condition of planning permission before construction works commence.	Negligible
Effects of emissions arising from traffic generated by the construction of Proposed Development on human health	Surrounding sensitive uses, e.g. residential properties and schools (high)	No mitigation is required	N/A	Negligible

Operational Phase

- 8.92. The conclusions on residual effects for operational phase are presented in Table 8.12.

Table 8.12: Summary of Operational Phase Residual Effects

Likely Significant Effect	Receptor	Pre Mitigation Measure	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
			Operational Phase		
Effects of emissions arising from traffic generated by the	Surrounding sensitive uses, e.g. residential	Negligible	No mitigation is required	N/A	Negligible

Likely Significant Effect	Receptor	Pre Mitigation Measure	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
operation of Proposed Development on human health	properties and schools (high)				
Effect of air pollution on new exposure introduced by the Proposed Development	Future sensitive uses on-site, including residential properties (high)	Negligible	No mitigation is required	N/A	Negligible

Monitoring

- 8.93. As no significant air quality effects have been identified, and no mitigation is being added to the Proposed Development, monitoring is not deemed a requirement.

Reference List

8.94. This ES Chapter has been prepared in reference to the following:

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9. Climate Change

Introduction

- 9.1. This Chapter of the ES has been prepared by Buro Happold and assesses the likely effects of the Proposed Development with respect to climate change. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative effects and the likely residual effects after these methods have been adopted.
- 9.2. Climate change resilience has been assessed in the form of a Climate Change Risk Assessment (CCRA), which is reported in full in appendix 9.1. The results of the assessment are summarised in Part 1 of this chapter. The assessment of the likely effects of the Proposed Development on greenhouse gas emissions have been reported in Part 2 of this chapter.
- 9.3. This Chapter is accompanied by four technical appendices: Climate Change Resilience Risk Assessment (appendix 9.1), Greenhouse Gas Calculation Inputs (appendix 9.2), Scope 3 Emissions Considerations (appendix 9.3), and Legislation, Policy and Guidance (appendix 9.4).

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Years technical experience (in technical area)	3.5	EIA practitioner: 14 years Climate Change assessments in EIA: 7 years
Number of EIA's delivered to date	Climate Change assessments in EIA: 20+	Climate Change assessments in EIA: 20+

Assumptions and Limitations

- 9.4. In undertaking this assessment, there are a number of assumptions and limitations affecting the outputs. These comprise:
- In line with the principles set out in BS EN 15978, a Reference Study Period (RSP) of 60 years after opening (the fully operational opening year) has been used. The assessment reported in this chapter is also based on various other assumptions, set out in the Methodology section of this chapter;
 - It is assumed that embodied carbon from maintenance and replacement (lifecycle stage B1-B5) will occur from 15 years after the beginning of operation, to the end of the lifecycle of the development. This is because replacement and maintenance are not expected to be required in the first 15 years of operation;
 - The detailed scheme information required to undertake a full operational energy and embodied carbon assessment of the Proposed Development, such as construction material quantities, is not yet available. Operational energy and embodied carbon benchmarks have therefore been used in the calculation of GHG emissions for the Proposed Development based on expected floor areas and building uses. Whilst these benchmarks have given an estimate of the scale of GHG emissions associated with the Proposed Development, they will not be completely accurate due to variations between buildings, including geography, construction processes and construction materials used. However, these are considered the best methods for estimating GHG emissions available to us at the time the chapter was prepared. Additionally, where there is uncertainty, a worst-case scenario approach has been taken.

- There is some inherent uncertainty in the Department for Energy Security and Net Zero (DESNZ) emissions factors. The emissions factors are in line with the UK's decarbonisation trajectory towards net zero in 2050, however this is an assumption, and the actual emissions trajectory is unknown.
- The main uncertainty regarding the CCRA relates to the climate change projections that the scheme is assessed against. Climate change projections (e.g., UKCP18) are presented in appendix 9.1 using a set of scenarios that capture the relationships between human choices, emissions, concentrations and temperature change. The UKCP18 climate change projections have been selected, as they are UK specific, and relatively conservative. Some scenarios are consistent with continued dependence on fossil fuels, while others are associated with deliberate actions to reduce GHG emissions. Therefore, these climate change projections contain inherent uncertainty, reflecting the uncertainty associated with quantifying human activities (including technological change) and their influence on climate. There are four Representative Concentration Pathway (RCP) scenarios available in the UKCP18 climate projections: RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5. In line with IEMA EIA Guide to Climate Change Resilience and Adaptation, 2020, RCP 8.5 has been used, which represents the most conservative, highest-impact scenario.

Part 1: Climate Change Resilience

- 9.5. Climate change resilience has been assessed in the form of a Climate Change Risk Assessment (CCRA), which is reported in full in appendix 9.1. The four risk assessment methodology is set out in the appendix, including the route to establishing the risk rating.
- 9.6. Climate change hazards that pose risks to the Proposed Development have been identified using the C40 Cities Climate Change Risk Assessment Guidance. The risks associated with these hazards have been assessed based on the probability of an event occurring and the consequence if it occurred. Mitigation measures have been identified for risks where required, and with the appropriate mitigation measures in place, the risk rating for all climate change hazards relating to the Proposed Development have been reduced. The residual risk ratings are set out in Table 9.1.

Table 9.1 Summary of residual risks ratings based on probability and consequence taking into account mitigation measures

Hazard	Risk rating pre-mitigation	Probability rating (1-5)	Consequence rating (1-7)	Residual risk rating
Rainstorm	5	5	1	5
Heavy snow	4	2	2	4
Fog	5	5	1	5
Hail	5	5	1	5
Severe wind	8	4	1	4
Extra tropical storm	12	3	3	9
Lightning	6	1	6	6
Extreme winter conditions	12	4	2	8
Cold wave	12	4	2	8
Extreme cold days	12	4	2	8
Heat waves	20	4	3	12
Extreme hot days	16	4	3	12

Hazard	Risk rating pre-mitigation	Probability rating (1-5)	Consequence rating (1-7)	Residual risk rating
Drought	16	4	2	8
Wild fire	6	1	6	6
Flash/surface flood	4	1	4	4
River flood	4	1	4	4
Groundwater flood	4	1	4	4
Subsidence	4	1	4	4
Water-borne disease	6	2	3	6
Vector borne disease	3	1	3	3
Air-borne disease	6	2	3	6
Insect infestation	4	2	2	4

- 9.7. It is considered that the residual risks are in line with typical expectations for urban developments of this nature in the UK. Nevertheless, due to the nature and scale of many climate hazards, some level of residual risk remains in some instances.

Part 2: Greenhouse Gas Emissions

Relevant Legislation, Policy and Guidance

- 9.8. The following legislation, policy and guidance is of relevance to this assessment. Further detail on the relevant policies within each document is presented in Appendix 9.4 (ES Volume II).

Legislation

- Paris Agreement (United Nations Framework Convention on Climate Change, 2015);
- The Special Report on Global Warming of 1.5oC, International Panel on Climate Change (IPPC) 2018;
- The Climate Change Act (2008) & The Climate Change Act 2008 (2050 Target Amendment) Order 2019;
- Planning and Energy Act (2008); and
- Carbon Budgets Order (2021).

Policy

National Planning Policy

- National Planning Policy Framework (NPPF) Ministry of Housing Communities & Local Government (MHCLG (formerly DLUHC), 2025);
- National Planning Practice Guidance (NPPG) (MHCLG (formerly DLUHC), 2024);
- The Building Regulations Part L 2021 Edition;
- The Carbon Plan: Delivering our Low Carbon Future (DESNZ (formerly DECC), 2011);

- British energy security strategy (DESNZ, 2022); and
- Net Zero Strategy: Build Back Greener (HM Government, 2021).

Regional Planning Policy

- Places for Everyone (PfE) Joint Development Plan for Boulton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan (2024).

Local Planning Policy

- Guide to Development in Manchester Supplementary Planning Document and Planning Guidance. Adopted April 2007;
- Manchester Core Strategy (MCC, 2012) (as amended, 2024);
- Manchester City Council Climate Change Action Plan 2020 – 2025; and
- Manchester Climate Change Framework 2020 – 2025.

Guidance

- IEMA EIA Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance 2nd Edition (Institute of Environmental Management and Assessment (IEMA), 2022) (the 'IEMA GHG Guidance');
- RIBA 2030 Climate Challenge (Royal Institute of British Architects (RIBA), 2021);
- BS EN 15978 Sustainability of Construction Works – Assessment of Environmental Performance and Buildings – Calculation Method (British Standards Institution (BSI), 2011);
- Royal Institution of Chartered Surveyors (RICS) Whole Life Carbon Assessment for the Built Environment 2nd edition (RICS, 2023);
- UK Green Building Council (UKGBC) Embodied Carbon: Developing a Carbon Brief (UKGBC, 2017);
- Waste and Resource Action Programme (WRAP) Cutting Embodied Carbon in Construction Projects (WRAP, 2011a);
- WRAP Procurement Requirements for Carbon Efficiency (WRAP, 2011b);
- Greater London Authority Construction Scope 3 (Embodied) Guidance on Greenhouse Gas Accounting and Reporting (GLA, 2013);
- Mayor of London Whole Life-Cycle Carbon Assessments Guidance (GLA, 2022);
- Low Energy Transformation Initiative (LETI) Embodied Carbon Primer (LETI, 2020); and
- LETI Climate Emergency Design Guide (2020).

Assessment Methodology and Significance Criteria

- 9.9. The metric for assessing the climate change impacts of GHG emissions in this assessment is Global Warming Potential (GWP). This is expressed in units of CO₂ equivalent (CO₂e) over 100 years. This allows for the emissions of the seven key GHGs: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF₃) and sulphur hexafluoride (SF₆) expressed in terms of their equivalent global warming potential in mass of CO₂e.
- 9.10. There is currently no standard methodology for quantifying GHG emissions within the EIA process. The IEMA GHG Guidance instead advocates for flexibility and proportionality to suit the specific development being assessed.
- 9.11. A GHG emissions assessment typically covers the whole life of a development. This can be broken down into 'lifecycle stages' or 'modules' of the Proposed Development, as set out in BS EN 15978 Sustainability of Construction Works - Assessment of Environmental Performance of Buildings - Calculation Method, as shown in Figure 9.1.

- 9.12. With some minor exceptions, all activities within lifecycle stages A, B and C have been included in this assessment. Any activities that have been excluded are explained and justified in the 'Sources of GHG emissions excluded from the assessment' section, included later in the methodology section of the chapter. The assessment has taken into account the design detail currently available.
- 9.13. GHG emissions caused by an activity are often categorised into 'scope 1', 'scope 2' or 'scope 3', following the guidance of the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) Greenhouse Gas Protocol suite of guidance documents (WRI and WBCSD, 2014).
- 9.14. The ES chapter does not refer to scope 1, 2 and 3 emissions throughout, instead referring to emissions by lifecycle stage. However, the following section provides an overview of which scope the assessed emissions fall within.
- 9.15. Scope 1 emissions include direct emissions from owner or controlled sources. With respect to the Proposed Development, this may include:
- Emissions from fleet vehicles e.g. heavy goods vehicles (HGV's) during the construction phase.
- 9.16. Scope 2 emissions include indirect emissions from purchased energy. With respect to the Proposed Development this may include:
- Electricity, steam, heat or cooling generated offsite, purchased and consumed by the Proposed Development.
- 9.17. Scope 3 emissions include indirect value chain emissions, resulting from the activities of assets not controlled or owned by the Proposed Development occurring before or after they have control of an asset. With respect to the Proposed Development this may include:
- Upstream emissions related to the purchase of required goods and services.
- 9.18. For the purpose of this assessment, in line with the principles set out in BS EN 15978, a Reference Study Period (RSP) of 60 years after opening (the fully operational opening year) has been used. For the purpose of the assessment, decommissioning has been assumed to take place in the final year of the RSP. However, it should be noted that the Applicant does not necessarily propose to decommission the development at the end of this 60-year period. This is considered a conservative assumption.

Methodology for Determining Impact Magnitude and Sensitivity of Receptors

- 9.19. The impacts and effects of GHG emissions are global, with the global atmosphere serving as the sensitive receptor. The IEMA GHG Guidance advises that '*the receptor has a high sensitivity, given the severe consequences of global climate change and the cumulative contributions of all GHG emission sources.*' The quantity of GHG emissions produced would inform the impact magnitude. However, in line with the methodology set out in the IEMA GHG Guidance, it is not considered necessary to explicitly determine the sensitivity of the receptor or the magnitude of the impact in order to assess the significance of GHG emissions effects. As such, this ES Chapter makes no further reference to receptor sensitivity or impact magnitude.
- 9.20. As stated in paragraph 9.42 the assessment of significance for GHG emissions is determined based on whether the project supports or undermines a trajectory towards net zero and is in line with national and local policy requirements. The assessment of effect significance is set out in paragraph 9.70.

Scenarios Tested

- 9.21. This assessment has considered two scenarios. These are:
- Scenario 1: Baseline Conditions; and
 - Scenario 5: Baseline + Phase A + Phase B + Phase C.

- 9.22. The Following scenarios have not been assessed:

- Scenario 2: Baseline + Phase A + Phase C;
- Scenario 3: Baseline + Phase A + Phase C + Cumulative;
- Scenario 4: Baseline + Phase A + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative;
- Scenario 6: Baseline + Phase A + Phase B + Phase C + Cumulative;
- Scenario 7: Baseline + Phase A + Phase B + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative; and
- Scenario 8: Baseline + Phase C.

- 9.23. The assessment has focused on the ‘worst case scenario’, which in this case is Scenario 5. Scenarios 3, 4, 6, and 7 have not been assessed, either because they do not represent a worst case scenario or because they include cumulative schemes. As set out in paragraph 9.60, Cumulative Effects, the atmospheric concentration of GHGs and the resulting effects on climate change are affected by all sources (anything emitting GHG) and sinks (anything absorbing GHG) globally, anthropogenic or otherwise. As GHG emission impacts and resulting effects are global rather than affecting one localised area, the approach to the assessment of cumulative effects for GHGs differs from that of many EIA topics where only projects within a geographically bounded study area would be included. As such, as stated in the IEMA Guidance, effects of GHG emissions from specific cumulative schemes should not be individually assessed, as there is no basis for selecting any particular cumulative project for assessment over any other. The Guidance goes on to advise that the contextualisation of GHG emissions should incorporate by its nature the cumulative contributions of other GHG sources which make up that context. An inter-development cumulative effects assessment has therefore not been undertaken on a specific cumulative scheme basis; however, the proposed development’s GHG emissions have been considered in the context of both the UK national carbon budgets and the Tyndall Centre recommended energy only carbon budgets for Manchester City. As such, the cumulative contributions of other GHG sources that make up the national and Manchester City contexts have been considered within the assessment.
- 9.24. Whilst it was initially anticipated that Scenarios 2 and 8 would also need to be assessed, so that each phase of the Proposed Development could be ‘severable’ from one another, it has since been confirmed by the Applicant that this is no longer necessary. Given that neither scenarios represents the worst case scenario, they have not been assessed.

The Study Area

- 9.25. GHG emissions impacts and resulting effects are global. As such, the spatial scope of the assessment is global.
- 9.26. In line with the advice provided in the IEMA GHG Guidance, the Proposed Development’s GHG emissions have been considered in the context of both the UK national carbon budgets and Tyndall Centre recommended energy-only carbon budgets for Manchester.

Surveys and Data Sources

- 9.27. The assessment reported in this chapter is based on scheme information provided in the following documents:
- SISO-AAM-ZZ-ZZ-DR-AR-09001_GIA Area Plans_S1 – Suitable for Coordination _PO1_01 (Allies and Morrison LLP, 2025);
 - 25.02.19 - Sister Plot C AADT AAWT_v1.1 (Civic Engineers, 2025);
 - SISCO-BHE-ZZ-ZZ-RP-SU-00002 Circular Economy Statement (Buro Happold, 2025); and
 - SISCO-BHE-ZZ-ZZ-RP-SU-00002 Environmental Standards Statement (ESS) (Buro Happold, 2025).

Source of Effect

Construction Stage GHG Emissions

- 9.28. Based on the criteria set out in **Error! Reference source not found.**, the assessment of the construction stage takes into account the following sources of GHG emissions:

- A1 – A3 Product Stage: GHG emissions associated with the material extraction, transportation and manufacturing of construction products; and
- A4-A5 Construction process stage: GHG emissions associated with product delivery to the Site and the installation process.

9.29. Embodied carbon associated with the construction stage of the Proposed Development has been estimated by applying GLA (2022) and RICS (2012) embodied carbon benchmarks, based on proposed floor areas and building typologies. Further information on these benchmarks and how they have been applied in this assessment is provided in Appendix 9.2 (ES Volume II).

Operational Stage GHG Emissions

9.30. Based on the criteria set out in Figure 9.1, the assessment of the operational stage takes into account the following sources of GHG emissions:

- B1-B5 In-use stage: This stage captures GHG emissions associated with the operation of the built asset over its period of use, from practical completion to end of its service life, including use, maintenance, repair, refurbishment and replacement. Embodied carbon associated with these activities has been estimated by applying appropriate embodied carbon benchmarks from GLA (2022) and RICS (2012) WLC benchmark based on proposed floor areas and building typologies. It is assumed that embodied carbon from maintenance and replacement (lifecycle stage B1-B5) will occur from 15 years after the beginning of operation, to the end of the lifecycle of the development. This is because replacement and maintenance are not expected to be required in the first 15 years of operation;
- B6 Operational energy: GHG emissions associated with the estimated total operational energy. CIBSE Guide F (2021) benchmarks for energy use intensity per square metre of floor area, have been applied to the maximum floor area of the Proposed Development. The Department for Energy Security and Net Zero (DESNZ) Greenhouse Gas Reporting: Conversion Factors 2024 for grid electricity have then been applied to provide an estimate of annual operational energy GHG emissions associated with the Proposed Development;
- B7 Operational water: GHG emissions associated with operation water consumption and foul water. This falls within scope 2 emissions. Estimated water consumption for the Proposed Development has been established, based on benchmarks provided in the Building Services Research and Information Association (BSRIA) Rules of Thumb Guidance for Building Services (BSRIA, 2011) and SD5078: BREEAM UK New Construction 2018 3.0 Technical Manual. Estimated foul water has been assumed to be equal to water consumption, in line with project experience. The DESNZ Greenhouse Gas Reporting Conversion Factors 2024 have been used to calculate GHG emissions from the operational water use; and
- Operational transport emissions, which are not included in Figure 9.1 but have also been included in the assessment due to the substantial role they play in the UK's total GHG emissions. Surface transport is the largest source of GHG emissions in the UK, accounting for 24% of emissions in 2019, according to the Committee on Climate Change (2020). The GHG emissions associated with vehicles travelling to and from the Proposed Development during the operational stage have been estimated by applying a Department for Energy Security and Net Zero (DESNZ) emissions factor for average vehicle use, to trip numbers provided by the project transport consultant, Civic Engineers, and an indicative trip distance figure, estimated by the Department for Transport. These emissions factors include wheel to tank emissions, as well as tail pipe emissions. Additional information on the assumptions that have been made is provided in Appendix 9.1 (ES Volume II).

Decommissioning Phase GHG Emissions

9.31. Based on the criteria set out in Figure 9.1, the assessment of the decommissioning stage takes into account the following sources of GHG emissions:

- C1-C4 End of Life stage: GHG emissions associated with the demolition and disassembly of the Proposed Development at the end of its life. GHG emissions associated with this stage have been estimated by applying appropriate benchmarks from GLA (2022) and RICS (2012) WLC benchmark based on the proposed floor areas and building typologies.

Sources of GHG emissions excluded from the assessment

- 9.32. The IEMA guidance states that ‘certain life cycle modules (or stages) can be excluded if these exclusions are clearly highlighted and justified by the practitioner using professional judgement and in accordance with the materiality and cut-off guidance.’ In line with this guidance, the following sources of GHG emissions have been excluded from the scope of the assessment, as agreed in the Scoping Opinion (April, 2025):
- Operational Waste: The opportunities for design and construction decisions to significantly influence the reduction of GHG emissions associated with operational waste are low, as it is highly dependent on occupant behaviour and waste processing at the city scale by the Local Authority. The emissions associated with operational waste are also not expected to be material in scale, such that they could influence the overall significance of effects, and have therefore been scoped out;
 - Carbon sequestration from green infrastructure: GHG emissions associated with carbon sequestration from proposed green infrastructure would be low relative to the total GHG emissions over the life of the Proposed Development. They would also ultimately reduce the emissions from the Proposed Development, rather than increase them. On the basis that the emissions would be small and would lead to an overall reduction in emissions, excluding them from the assessment is considered conservative and robust; and
 - Module D – Beyond Assets Life Cycle Stage: the ‘Beyond Asset Life Cycle’ stage, encompasses emissions associated with activities beyond the Site boundary and life cycle of the Proposed Development. This module relates to the repurposing of discarded building elements or any energy recovered from beyond a project’s lifecycle. Reliable information about how the components of the scheme could potentially be repurposed following its demolition at the end of its life is not currently available. Given that Module D lies outside the Proposed Development’s lifecycle and only covers GHG emissions that could potentially be avoided as a result of repurposing of discarded materials, it is considered that the proposed assessment of Modules A to C (only) comprises a conservative assessment. On this basis, consideration of Module D has not been included in the scope of the assessment.

Programme Assumptions

- 9.33. It is anticipated that the construction programme for Phase A will commence in September 2025, Phase B in January 2030 and Phase C in January 2033. Table 9.2 sets out the anticipated construction programme.

Table 9.2 - Anticipated construction programme

Phase	Works Period
Phase A – Demolition and Ground Formation	September 2025 – December 2026 (16 months)
Phase A – C1 Construction incl. service tunnel	January 2027 – October 2029 (34 months)
Phase B – C2 Construction	January 2030 – January 2033 (37 months)
Phase C – Viaduct Arches	January 2033 – December 2033 (12 months)

- 9.34. It is assumed that the operational phase for each phase would start the month after the works period set out in Table 9.2. The end of life stage is assumed to start 60 years after the beginning of operation for each phase and be completed within 1 year, in line with the 60 year RSP.

Consideration of Scope 3 emissions

- 9.35. As previously stated, this Climate Change ES chapter has been undertaken in line with the IEMA GHG Guidance and other best practice industry guidance. With some minor exceptions set out in the section above, the assessment has included a consideration of all scope 1, 2 and 3 GHG emissions from all activities within lifecycle stages A, B, and C of relevance to the proposed development, as set out in the Whole Life Carbon Assessment for the Built Environment (RICS, 2023) (the “RICS 2023 Guidance”) and BS EN 15978 Sustainability of Construction Works - Assessment of Environmental Performance of Buildings - Calculation Method (“BS EN 15978”) guidance.

- 9.36. The Supreme Court judgement on the application of Finch (on behalf of the Weald Action Group) v Surrey County Council and others (judgement given on 20 June 2024) has raised implications for the assessment of scope 3 emissions from development projects in the EIA process, potentially requiring the consideration of additional indirect emissions that do not, to date, require consideration under the relevant industry good practice guidance, including the IEMA GHG Guidance, the RICS 2023 Guidance and BS EN 15978.
- 9.37. A consideration of the Finch case judgement and the alignment of the assessment of Scope 3 emissions within this assessment with the judgement is provided in Appendix 9.3 (Volume II). The methodology employed in this assessment is considered to align with the Finch case Supreme Court judgement.

Significance Criteria

- 9.38. Three overarching principles are set out in the IEMA GHG Guidance, which IEMA advise should be considered when looking to establish the effect significance of GHG emissions. These comprise:
- *‘The GHG emissions from all projects will contribute to climate change, the largest interrelated cumulative environmental effect;*
 - *The consequences of a changing climate have the potential to lead to significant environmental effects on all topics in the EIA Directive (e.g. human health, biodiversity, water, land use, air quality); and*
 - *GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit; as such any GHG emissions or reductions from a project might be considered to be significant.’*
- 9.39. IEMA has further built on these principles in the guidance, as follows:
- *‘When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project’s emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible;*
 - *Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project’s residual emissions at all stages; and*
 - *Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project’s remaining emissions should be considered.’*
- 9.40. The goal of the Paris Agreement is to limit global temperature rise to well below 2°C, aiming for 1.5°C, compared with pre-industrial levels, in order to stand a greater chance of avoiding severe adverse effects from climate change. The UK has set a legally binding GHG reduction target for 2050 through the Climate Change Act, including interim five-yearly carbon budgets, which define a trajectory towards net zero. The Climate Change Committee (CCC) has confirmed that the 2050 target and interim budgets are compatible with the required magnitude and rate of GHG emissions reductions required in the UK to meet the goals of the Paris Agreement, thereby limiting severe adverse effects.
- 9.41. To meet the 2050 target and interim budgets, action is required to reduce GHG emissions from all sectors, including urban development projects. As stated in the IEMA GHG Guidance, *‘EIA for any proposed project must therefore give proportionate consideration to whether and how that project will contribute to or jeopardise the achievement of these targets...the crux of significance therefore is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050’.*
- 9.42. Building on this, the IEMA GHG Guidance sets out an approach to the assessment of effect significance that comprises judgements on the Proposed Development’s consistency with policy requirements (as these have been implemented to ensure the economy decarbonises in line with the UK’s net zero target); and the extent to which the Proposed Development’s GHG emissions have been mitigated.
- 9.43. Table 9.3 sets out the significance of effect criteria provided in the IEMA Guidance. The significance of effect scale is also shown in Figure 9.2 to illustrate how this relates to the 1.5°C compliance trajectory.

Table 9.3 - Criteria for determining significance of effect

Significance of Effect	Criteria for assessing effect significance
Major	The Proposed Development's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero.
Moderate	The Proposed Development's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.
Minor	The Proposed Development's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with neutral effects is fully in line with or exceeds measures necessary to achieve the UK's trajectory towards net zero.
Negligible	The Proposed Development's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well ' <i>ahead of the curve</i> ' for the trajectory towards net zero and has minimal residual emissions.
Beneficial	The Proposed Development's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with major beneficial effects substantially exceeds net zero requirements with a positive climate impact.

9.44. In line with the IEMA GHG Guidance, major and moderate adverse and beneficial effects are considered significant. Effects can be described as:

- Beneficial or adverse;
- Permanent or temporary;
- Reversible or irreversible; and
- Short, medium or long term.

9.45. The IEMA GHG Guidance advises that the approach should be modified for the very largest-scale developments, which can in themselves have magnitudes of GHG emissions that materially affect the UK's or a devolved administration's total carbon budget. In the case of such developments, irrespective of the level of mitigation proposed, if net GHG emissions exceed 5% of the relevant UK or devolved administration carbon budget, the effects of the development are likely to be significant.

9.46. The guidance also advises that '*Practitioners should note that existing policy and regulation may in some cases lag behind the necessary levels of GHG emission reductions (or types of actions to achieve those) that are compatible with the UK's or devolved administrations' targets and with a science based 1.5°C compatible trajectory towards net zero. Meeting the minimum standards set through existing policy or regulation cannot necessarily be taken as evidence of avoiding a significant adverse effect, and it is recommended that practitioners consider and have reference also to emerging policy/standards and the guidance of expert bodies such as the CCC on necessary policy developments, particularly for multi-phased projects with long timescales. This must be evaluated by the practitioner as part of the evidence base used in the assessment of effects. References to 'existing' and 'emerging' policy in the principles of significance and example criteria above must be interpreted with this in mind.*'

Contextualisation of GHG emissions

- 9.47. The IEMA Guidance also recommends that the context of the project's carbon footprint is determined in order to establish whether the project supports or undermines the trajectory towards net zero. This can help decision makers in their evaluation of the effects of the Proposed Development.
- 9.48. As noted in the previous section, the UK has a defined national carbon budget and budgets have also been set by devolved administrations, which the CCC has confirmed are compatible with net zero and international climate commitments. The IEMA GHG Guidance advised that the starting point for contextualising the project's GHG emissions should be the percentage contribution of the project to the relevant national or devolved administration carbon budget. However, it goes on to advise that the contribution of most individual projects to national-level budgets will be small and so this context will have limited value. In response, the guidance presents a good practice approach for contextualising a project's GHG emissions against pre-determined carbon budgets or against emerging policy and performance standards, where a budget is not available. This is shown in **Error! Reference source not found.**
- 9.49. Under the Manchester Climate Change Action Plan, Manchester City Council has a *'target for the Council to reduce its direct CO₂ emissions by 50% between 2020 and 2025'*. This target is only applicable to the activities of the Council, and not for all emissions occurring within the council boundary. Whilst Manchester City Council has not yet formally adopted carbon budgets, the Tyndall Centre for Climate Change Research has produced carbon budget reports (the "Tyndall Carbon Budget Reports") that provide recommended climate change commitments for UK Local Authority areas that are aligned with the commitments in the Paris Agreement, informed by the latest science on climate change and defined by science based carbon budget setting. The Tyndall Carbon Budget Report for Manchester provides MCC with recommended budgets for CO₂ emissions from the energy system for 2018-2100.
- 9.50. The net GHG emissions arising from the Proposed Development have been considered in the context of both the UK national carbon budgets and the Tyndall Centre recommended energy-only carbon budgets for Manchester City.
- 9.51. The UK national carbon budgets for the period over which the Proposed Development will be under construction and operational are presented in Table 9.4. The UK national carbon budgets cover the fourth, fifth, and sixth budget periods. The CCC has provided a recommendation on the seventh carbon budget period (2038 – 2042), however this has not yet been set in law by the UK Government.

Table 9.4 - UK National Carbon Budgets

Carbon budget	Period	Million tonnes of CO ₂ e
Fourth	2023 – 2027	1,950
Fifth	2028 – 2032	1,725
Sixth	2033 – 2037	965
Seventh	2038 – 2042	535

- 9.52. The construction period for the Proposed Development is expected to fall within the fourth, fifth and sixth carbon budget periods, from 2025-2033. The operational stage is expected to commence after the construction period (with C1 becoming operational in 2029 and C2 becoming operational in 2033) and will continue during the fifth, sixth and seventh budget periods.
- 9.53. The Tyndall Centre energy-only carbon budgets for Manchester City for the same period (2023 to 2042) are presented in Table 9.5.

Table 9.5 - Tyndall Centre Energy-Only Carbon Budgets for Manchester

Carbon budget period	Million tonnes of CO ₂ e
2023 – 2027	4.6
2028 – 2032	2.4
2033 – 2037	1.2
2038 – 2042	0.6

- 9.54. For the purpose of this assessment, the results of the emissions calculations have been presented in terms of their percentage contribution to the relevant carbon budget period, as set out above. Given that the Tyndall Centre carbon budgets are “energy-only”, the comparison of the Proposed Development’s GHG emissions with these local budgets has been limited to the scheme’s GHG emissions arising from operational energy use to ensure consistency.

Baseline Conditions

- 9.55. The baseline is a reference point against which the effects of the Proposed Development can be compared. The IEMA GHG Guidance states that ‘*the ultimate goal of establishing a baseline is being able to assess and report the net GHG impact of the proposed project.*’
- 9.56. The Site is not currently in use and therefore it is assumed that there are currently no GHG emissions from the Site.
- 9.57. The future baseline scenario considers how the GHG emissions associated with the Site are likely to change in the future, should the Proposed Development not come forward, based on a time period comparable to the design life of the Proposed Development (i.e., 60 years). Should the Proposed Development not come forward, for the purposes of this assessment, it has been assumed that the Site would remain in its current state. As such, the future baseline GHG emissions from the EIA Site are also considered to be zero.

Identification and Evaluation of Likely Significant Effects

- 9.58. As stated in paragraph 9.42, the assessment of significance for GHG emissions is determined based on whether the project supports or undermines a trajectory towards net zero and is in line with national and local policy requirements. The assessment of effect significance is set out in paragraph 9.70.

Construction and Operational Phases

- 9.59. Table 9.6 sets out the GHG emissions (tCO₂e) produced by the Proposed Development across the 60-year RSP.

Table 9.6 - Estimated total GHG emissions (tCO₂e)

Lifecycle Stage/Module	Total GHG emissions (tCO ₂ e)
Produce stage (lifecycle stage A1-A3)	106,725
Construction process stage (lifecycle stage A4-A5)	5,073
In use stage embodied carbon (lifecycle stage B1-B5)	98,187
Use stage Operational energy (lifecycle stage B6)	3,243
Use stage operational water use (lifecycle stage B7)	2,430
Use stage operational transport	40,780

Lifecycle Stage/Module	Total GHG emissions (tCO ₂ e)
End-of-life stage (lifecycle stage C1-C4)	273
Total	256,711

Cumulative Effects

- 9.60. The atmospheric concentration of GHGs and the resulting effects on climate change are affected by all sources (anything emitting GHG) and sinks (anything absorbing GHG) globally, anthropogenic and otherwise. As GHG emission impacts and resulting effects are global rather than affecting one localised area, the approach to cumulative effects assessment for GHGs differs from that for many EIA topics where only projects within a geographically bounded study area would be included. As such, as stated in the IEMA Guidance, effects of GHG emissions from specific cumulative schemes should not be individually assessed, as there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other. The Guidance goes on to advise that the contextualisation of GHG emissions should incorporate by its nature the cumulative contributions of other GHG sources which make up that context. As part of this assessment, an inter-development cumulative effects assessment has not been undertaken on a specific cumulative scheme basis; however, the Proposed Development's GHG emissions have been considered in the context of both the UK national carbon budgets and Tyndall Centre recommended energy-only carbon budgets for Manchester City. As such, the cumulative contributions of other GHG sources that make up the national and local contexts have been considered within the assessment.

Mitigation Measures

- 9.61. This section describes the mitigation measures “embedded” into the Proposed Development (or ‘primary mitigation’) (i.e. where commitments have been made), as well as additional supplementary mitigation measures (or ‘secondary mitigation’) that have been proposed, which are relevant to this Chapter.

For the purposes of this assessment, due to a lack of available detailed scheme information at the time the assessments were completed (such as construction material quantities), the benchmarks set out in paragraphs 9.29 and 9.30 have been used, constituting a conservative assessment. It is likely that the proposed embedded mitigation and additional mitigation measures set out below would reduce the reported GHG emissions; however, it has not been possible to quantify these reductions at this stage due to the use of benchmarks rather than detailed scheme information.

- 9.62. The following principles and targets are set out for the Proposed Development:

Lifecycle embodied carbon (lifecycle stage A1-A5, B1-B5 and C1-C4)

- 600 kg/CO₂e/m²GIA should be targeted, with 800 kg/CO₂e/m²GIA as a maximum;

In-use stage Operational Energy (lifecycle stage B6):

- On-site solar PV will be maximised
- The development will be supplied with zero carbon energy, to achieve operational net zero carbon from day 1;

Operational water consumption (lifecycle stage B7):

- Water demand will be reduced in line with best practice targets

- 9.63. The Circularity Statement (Buro Happold, 2025) sets out the following embedded mitigation measures:

Product Stage (lifecycle stage A1-A3)

- Materials from the existing building that are not suitable or selected for re-use will ‘go through a careful demolition process with segregated waste streams that minimise the demolition waste sent to landfill.’
- ‘The procurement stage will prioritise specifications for materials that are reused or contain high recycled content wherever feasible or valuable.’

- *'Material specifications with high recycled content have been considered and will be adopted subject to market availability, structural, programme and financial constraints. Optimisations under consideration include:*
 - *Prioritise concrete with recycled aggregate;*
 - *Prioritise concrete with cement replacement;*
 - *Prioritise aluminium with recycled content, if possible with post-consumer recycled content;*
 - *Prioritise reused steel and/or new structural steel with high recycled content;*
 - *Prioritise low carbon steel reinforcement rebar with high rates of recycled content;*
 - *Aim to procure low carbon and/or reused raised access floor, subject to availability, warranty and fire risk.'*
- *'A Sustainable Procurement Plan (SPP) is under coordination. This sets out the requirements for sustainable and ethical sourcing.'*
- *'The materials circular economy strategic approach targets waste reduction in line with MCC's local plan ambitions' and includes the following principles:*
 - *'Target off-site pre-fabricated elements to minimise construction waste.'*
 - *'Integration of reuse materials where technically, practically and financially feasible in an efficient manner to reduce the need of new materials and reduce demolition waste.'*
 - *'Target reuse of excavation waste in the landscape if feasible to reduce excavation and construction waste along with minimising new materials brought to site.'*
- *'A careful management strategy will be developed with the soft-strip out and demolition contractors and potential manufacturers. This approach aims to ensure proper material segregation, minimise contamination, and support recycling initiatives that preserve the value of existing materials.'*
- *'Several reuse opportunities have been identified at Sister Manchester. All options are subject to technical, practical and financial feasibility, requiring surveys and collaboration with appropriate contractors for confirmation and implementation.'*
- *'Construction waste will be minimised through a lean design strategy that reduces material demand and avoids oversizing where feasible.'*
- *'A Whole Life-cycle Carbon Assessment (WLCA) will be conducted throughout the design stages to evaluate the carbon impact of the proposed design.'*
- *'The proposed development is targeting a construction waste resource efficiency benchmark of ≤ 11.1 tonnes of waste generated per 100m² (GIA), in line with BREEAM requirements.'*

In-use stage embodied carbon (lifecycle stage B1-B5)

- *'The design will prioritise accessibility, maintenance, and replaceability of building components. During the detailed design stage, the team will develop strategies to enable the disassembly and recoverability of materials, ensuring alignment with this principle.'*
- *'The services proposal is designed to allow easy replacement of major plant systems throughout the building's lifespan. For concealed elements, removable panels on floors and walls will be prioritised to provide access to frequently serviced equipment without impacting the structure.'*
- *'Modular and demountable building services equipment will be emphasised, enabling straightforward, non-destructive replacement. Self-finished materials and dry connections will also be prioritised, minimising the use of adhesives, sealants, and silicon-based solutions. This approach supports layer independence and enhances the building's adaptability and sustainability.'*
- *'The public realm incorporates a gravity drainage system, reducing maintenance risks and supporting a durable and sustainable surface water network.'*
- *'Hard-wearing materials will be prioritised at entrances to ensure durability, complemented by climate-resilient landscaping. Key pavements and high-traffic areas will also feature robust materials to withstand frequent use.'*

- *'A disassembly guide will be developed during the detailed design stages to ensure layer independence and facilitate the future reuse of installed materials. It will focus on key elements that may require replacement during the building's lifespan, such as façades and internal partitions, excluding load-bearing walls.'*

9.64. The Environmental Standards Statement (ESS) (Buro Happold, 2025) sets out the following embedded mitigation measures:

Product Stage (lifecycle stage A1-A3)

- *'The design will consider the application of materials with recycled content and the potential of specifying recycled aggregates during the procurement process.'*

Construction Process Stage (lifecycle stage A4-A5)

- *'The Main Contractor will be required to set targets and monitor and record data for the potable water consumption (m³) arising from the use of construction plant, equipment (mobile and fixed) and site accommodation.'*

In-use stage Operational Energy (lifecycle stage B6)

- *'The proposed development is designed to be "all-electric", with no reliance on gas or fossil fuel for the heating of the premises. The use of heat-pump heating and cooling will take advantage of the advancing decarbonisation of the electricity grid. In addition, in line with Policy JP-S2, 637.5m² roof mounted photovoltaic (PV) panels will be installed on the roof of the C2 tower.'*
- Whilst the connection to a district heat network has been deemed not viable, the building has been *'designed with future connection should a district wide heat network become available.'*
- *'The building fabric performance will ensure that heating and cooling demands are minimised.'*

In-use stage operational transport

- *'The site will be car free, except for 3no. disabled parking bays.'*

End-of-life stage (lifecycle stage C1-C4)

- The project will incorporate *'design for disassembly (DFD) principles into its end-of life strategy, while strive for regenerative systems, wherever practical and feasible.'*

9.65. The Energy Statement (Appendix A of Environmental Standards Statement) (Buro Happold, 2025) sets out the following embedded mitigation measures:

In-use stage Operational Energy (lifecycle stage B6)

- *'The proposed services strategy includes the utilisation of air-source heat pumps to provide heating, cooling and domestic hot water, taking advantage of the decarbonised electricity grid.'*
- *'The proposals include the installation of 637.5 m² of photovoltaic panels.'*
- *'A fabric-first approach has been adopted to maximise the energy demand. U-values of the proposed development are better than the notional building.'*
- *'Demand control ventilation and LED lighting with daylighting dimming control have been proposed.'*
- *'The proposed development is designed to be "all-electric", with no reliance on gas or fossils fuel for the heating or cooling of the premises. The use of primarily heat-pump heating and cooling will take advantage of the advancing decarbonisation of the electricity grid.'*
- *'The use of point-of-use electric water heaters to provide domestic hot water in the tenant office spaces for tea point connections or kitchenette water usage.'*

Supplementary Mitigation Measures

9.66. No supplementary mitigation measures are proposed for the Proposed Development.

Residual Effects

Comparison with UK and Manchester Carbon Budgets

- 9.67. Table 9.7 and Table 9.8 set out the net GHG emissions arising from the Proposed Development's construction and operational phases in the context of the UK national carbon budgets and the Tyndall Centre Energy Only Carbon Budgets for Manchester City respectively, considering both the embedded and additional mitigation.
- 9.68. While it is likely that the proposed mitigation measures would reduce the Proposed Development's GHG emissions, given that the assessment has been based on benchmarks rather than full detailed scheme information (as explained in paragraph 9.4 in the assumptions and limitations section), it has not been possible to quantify these reductions at this stage. This is considered a conservative approach.

Table 9.7 - Post mitigation comparison of the GHG emissions arising from the Proposed Development with the UK National Carbon Budgets

UK National Carbon Budgets		Baseline	Impact		
UK Carbon Budget Period	UK Carbon Budget (MtCO ₂ e)	Total Baseline emissions (tCO ₂ e)	GHG emissions from the Proposed Development (tCO ₂ e)	Baseline % of UK Carbon Budget	Proposed Development % of UK Carbon Budget
Fourth (2023-2027)	1,950	0	18,629	0	0.00096%
During the fourth budget period, the Proposed Development would generate GHG emissions from the construction process (lifecycle stage A1-A5) between 2025 and 2027. This equates to 0.00096% of the total carbon budget. It is likely that the proposed embedded mitigation and additional mitigation measures would reduce these GHG emissions; however, it has not been possible to quantify these reductions at this stage. The Proposed Development is unlikely to have a material impact on the UK's ability to meet this carbon budget.					
Fifth (2028-2032)	1,725	0	94,985	0	0.0054%
During the fifth budget period, the Proposed Development would generate GHG emissions from the construction process (lifecycle stages A1-A5) 2028 - 2032. It would also generate GHG emissions from operational energy (lifecycle stage B6), operational water consumption (lifecycle stage B7), and operational transport between 2028 and 2032. This equates to 0.0054% of the total carbon budget. It is likely that the proposed embedded mitigation and additional mitigation measures would reduce these GHG emissions; however, it has not been possible to quantify these reductions at this stage. The Proposed Development is unlikely to have a material impact on the UK's ability to meet this carbon budget.					
Sixth (2033-2037)	965	0	5,050	0	0.00052%
Throughout the sixth budget period, the Proposed Development would generate GHG emissions from the construction process (lifecycle stages A1-A5) in 2033. It would also generate GHG emissions from operational energy (lifecycle stage B6), operational water consumption (lifecycle stage B7), and operational transport. This equates to 0.00052% of the total carbon budget. It is likely that the proposed embedded mitigation and additional mitigation measures would reduce these GHG emissions; however, it has not been possible to quantify these reductions at this stage. The Proposed Development is unlikely to have a material impact on the UK's ability to meet this carbon budget.					
Seventh (2038 - 2043)	535	0	4,321	0	0.00081%
Throughout the seventh budget period, the Proposed Development would generate GHG emissions from operational energy (lifecycle stage B6), operational water consumption (lifecycle stage B7), and operational transport. This equates to 0.00081% of the total carbon budget. It is likely that the proposed embedded mitigation and additional mitigation measures would reduce these GHG emissions; however, it has not been possible to quantify these reductions at this stage. The Proposed Development is unlikely to have a material impact on the UK's ability to meet this carbon budget.					

Table 9.8 - Post-mitigation comparison of the GHG emissions arising from the Proposed Development with the Tyndall Centre Energy-Only Carbon Budgets for Manchester City

Tyndall Centre Energy Only Carbon Budgets for Manchester		Baseline	Impact		
Carbon Budget Period	Tyndall Centre Carbon Budget for Manchester (MtCO ₂ e)	Total Baseline emissions (tCO ₂ e)	GHG emissions from the Proposed Development (tCO ₂ e)	Baseline % of Tyndall Centre Carbon Budget	Proposed Development % of Tyndall Centre Carbon Budget
2023-2027	4.6	0	0	0	0
During this budget period, the Proposed Development would not be operational, and would therefore not generate any operational GHG emissions.					
2028-2032	2.4	0	557	0	0.023%
During this budget period, the Proposed Development would generate GHG emissions from operational energy use (lifecycle stage B6). This equates to 0.045% of the total carbon budget. It is likely that the proposed embedded mitigation and additional mitigation measures would reduce these GHG emissions; however, it has not been possible to quantify these reductions at this stage. The Proposed Development is unlikely to have a material impact on the Manchester's ability to meet this carbon budget.					
2033-2037	1.2	0	477	0	0.040%
During this budget period, the Proposed Development would generate GHG emissions from operational energy use (lifecycle stage B6). This equates to 0.040% of the total carbon budget. It is likely that the proposed embedded mitigation and additional mitigation measures would reduce these GHG emissions; however, it has not been possible to quantify these reductions at this stage. The Proposed Development is unlikely to have a material impact on the Manchester's ability to meet this carbon budget.					
2038-2042	0.6	0	366	0	0.061%
During this budget period, the Proposed Development would generate GHG emissions from operational energy use (lifecycle stage B6). This equates to 0.061% of the total carbon budget. It is likely that the proposed embedded mitigation and additional mitigation measures would reduce these GHG emissions; however, it has not been possible to quantify these reductions at this stage. The Proposed Development is unlikely to have a material impact on the Manchester's ability to meet this carbon budget.					

Proposed Development alignment with Policy requirements and the Net Zero trajectory

- 9.69. As set out in paragraph 9.42 the IEMA GHG Guidance sets out an approach where the assessment of effect significance should comprise judgements on the Proposed Development's consistency with policy requirements. A review of the compliance of the Proposed Development with relevant policy is presented in Table 9.9.

Table 9.9 - Compliance of the Proposed Development with relevant policy

Policy requirement	Proposed Development compliance
National Policy	
<u>The National Planning Policy Framework (MHCLG, 2024)</u>	
Paragraph 164: <i>'New development should be planned for in ways that . . . help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings in plans should reflect the Government's policy for national technical standards.'</i>	Paragraph 164: <ul style="list-style-type: none"> As stated in the Environmental Standards Statement, the Proposed Development commits to operational net zero carbon from day one via a supply of zero carbon energy. As set out in the Circularity Statement (Buro Happold, 2025), landfill waste will be minimised while reuse will be maximised, and low embodied carbon materials will be prioritised.
Paragraph 165: <i>'To help increase the use and supply of renewable and low carbon energy and heat, plans should:</i>	

Policy requirement	Proposed Development compliance
<p><i>a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, and their future re-powering and life extension, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);</i></p> <p><i>b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and</i></p> <p><i>c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.'</i></p> <p>Paragraph 166: <i>'In determining planning applications, local planning authorities should expect new development to:</i></p> <p><i>a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and</i></p> <p><i>b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.'</i></p>	<ul style="list-style-type: none"> Water demand will be reduced in line with best practice. <p>Paragraph 165:</p> <ul style="list-style-type: none"> The Proposed Development will maximise solar PV onsite, where feasible. As set out in the ESS (Buro Happold, 2025), Sister Plot C will use energy innovations including <i>'air source heat pumps'</i>, <i>'electric water heaters'</i>, and <i>'high efficacy LED lighting'</i>. An all electric approach is proposed, with no reliance on fossil fuels for heating. The building fabric performance will minimise heating and cooling demands. <p>Paragraph 166:</p> <ul style="list-style-type: none"> The Proposed Development will use various low-energy implementations, in line with the ambitions of national, regional, and local policy.
<p><u>The Building Regulations Part L 2021 Edition</u></p> <p>A 31% reduction in carbon emissions over the previous Part L (2013) standard, achieved through better fabric performance standards, alongside low carbon heating and/or renewable energy generation e.g., solar photovoltaics (PV).</p>	<ul style="list-style-type: none"> The ESS (Buro Happold, 2025) and the Energy Statement (Buro Happold, 2025), state that <i>'the development will comply with current Building Regulations Part L (2021).'</i> The ESS (Buro Happold, 2025) sets out measures to be implemented to reduce energy demand and how the Proposed Development will meet the requirements of Part L.
Regional Policy	
<p><u>Places for Everyone (PfE) Joint Development Plan for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan (2024)</u></p> <p>Policy JP-S 2 Carbon and Energy:</p> <ul style="list-style-type: none"> Promote the <i>'retrofitting of existing buildings with measures to improve energy efficiency and generate renewable and low carbon energy, heating and cooling'</i> <i>'Use of life cycle cost and carbon assessment tools'</i> <i>'Positive approach to renewable and low carbon energy schemes'</i> <i>'An expectation that new development will, unless it can be demonstrated that it is not practicable or financially viable:</i> <p style="text-align: center;">O Be net zero carbon</p> <p>Policy JP-S 2 Carbon and Energy</p> <ul style="list-style-type: none"> The Viaduct arches will be retrofitted for a change of use. A Whole Life Cycle Carbon Assessment (WLCA) will be undertaken at each lifecycle stage (ESS, Buro Happold, 2025) Solar PV will be maximised on Site, where feasible. The Proposed Development commits to be net zero carbon from day one. 	

Policy requirement	Proposed Development compliance
<ul style="list-style-type: none"> ○ <i>Incorporate adequate electric vehicle charging points</i> ● <i>[] prioritise connection to a renewable energy/heating/cooling network in the first instance or a low carbon energy/heating/cooling network that is adaptable to non-fossil fuels at a later date'</i> <p>Policy JP-S 6 Resource Efficiency</p> <p><i>'Using sustainable design and construction techniques to reduce carbon emissions, adapt and future proof to the impact of climate change, reduce and recycle waste and minimise water use.'</i></p>	<p>Policy JP-S Resource Efficiency</p> <ul style="list-style-type: none"> ● The Proposed Development will have a supply of zero carbon energy with the target of being operational net zero by day one. ● Operational water demand will be reduced in line with best practice targets. <p>The Circularity Statement (Buro Happold, 2025) sets out the following:</p> <ul style="list-style-type: none"> ● As much of the existing building will be reused as is possible, materials that can't will go through segregated waste streams to minimise demolition waste to land fill. ● The use of materials with high recycled content will be targeted. ● WLCA will be conducted throughout the design stages. ● Building components will be chosen for ease of replacement throughout the lifecycle. <p>The ESS (Buro Happold, 2025) sets out the following:</p> <ul style="list-style-type: none"> ● An all electric approach is proposed, with no reliance on gas, or fossil fuel for heating. ● The building fabric performance will ensure that heating and cooling demands are minimised.
Local Policy	
<p><u>Guide to Development in Manchester Supplementary Planning Document and Planning Guidance. Adopted April 2007</u></p> <p><i>'Developers should aim to reduce CO₂ emissions by at least 25% more than the requirements of the current Building Regulations'</i></p> <p><i>'Developers should aim for at least 20% of final site energy demand to be met by on-site renewable energy technologies.'</i></p>	<ul style="list-style-type: none"> ● Solar PV will be maximised on Site, where feasible. ● Water demand will be reduced in line with best practice targets. ● 600 kg/CO₂e/m²GIA will be targeted, with a maximum of 800 kg/CO₂e/m²GIA for lifecycle embodied carbon. ● The Proposed Development will have a supply of zero carbon energy with the commitment of being operational net zero by day one.

Policy requirement	Proposed Development compliance
<p><i>'New developments should seek to use water efficiently, through specification of water efficient device and through the use of rainwater harvesting and grey water recycling.'</i></p> <p><i>'building materials used in new development and refurbishment schemes [are required] to be environmentally friendly wherever possible, and encourages the use of recycled building materials, which is also energy efficient. Site waste management plans should, therefore, be implemented to reduce the quantity of waste generated, and to increase re-use and recycling. Opportunities for reuse of existing structures should be explored, and where this is not appropriate, materials should be reused on site and incorporated into the new design where practicable. Materials that are environmentally friendly, of low embodied energy, locally sourced, and can be recycled or reclaimed when the building comes to the end of its life should be prioritised. Materials that contain environmentally damaging chemicals should be avoided.'</i></p>	<ul style="list-style-type: none"> • The Circulatory Statement (Buro Happold, 2025) sets out how existing building components will be re-used or disposed of if required and how materials with a high recycled content will be chosen were appropriate.
<p><u>Manchester's Local Development Framework. Core Strategy Development Plan Document (MCC, 2012) (as amended, 2024)</u></p> <p>Policy EC 1 Employment and Economic Growth in Manchester</p> <p><i>'Development proposals should have regard to: [] an aim of zero carbon emissions, through energy efficiency, renewable energy and contributing to low and zero carbon decentralised energy infrastructure'</i></p> <p>Policy EN 4 Reducing CO₂ Emissions by enabling Low and Zero Carbon Development</p> <p><i>'All development must follow the principle of the Energy Hierarchy.'</i></p> <p><i>'New development [] must be located and designed in a manner that allows advantage to be taken of opportunities for low and zero carbon energy supplies'</i></p> <p><i>'New development [] will be used as a mechanism to help improve energy efficiency and provide low and zero carbon energy supplies to existing buildings;</i></p> <p><i>'new development [] will be required to connect to and/or make contributions to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing/potential decentralised energy schemes.'</i></p> <p><i>'use of building materials with low embodied carbon in new development and refurbishment schemes.'</i></p>	<p>Policy EC 1</p> <ul style="list-style-type: none"> • Solar PV will be maximised on Site, where feasible. • The Proposed Development will have a supply of zero carbon energy with the target of being operational net zero by day one. • The ESS (Buro Happold, 2025) sets out the all-electric approach being taken, with no reliance on gas or fossil fuels for heating requirements. <p>Policy EN 4</p> <ul style="list-style-type: none"> • The Energy Statement (Buro Happold, 2025) sets out how the Energy Hierarchy has been applied in the design of the Proposed Development. • The ESS (Buro Happold, 2025) sets out the all-electric approach, with the use of solar PV panels where feasible. • The ESS (Buro Happold, 2025) sets out how the Proposed Development is being designed with the capability to connect to a district wide heat network if this becomes available in the future. • The Circularity Statement (Buro Happold, 2025) sets out how the design will prioritise the use of low embodied carbon materials in the Proposed Development.

Significance of effects assessment

9.70. Table 9.10 and Table 9.11 **Error! Reference source not found.** set out the assessment of residual effect significance for the construction and operational stages respectively in accordance with the IEMA GHG Guidance.

Table 9.10 - Assessment of residual effect significance during the construction stage

Receptor	Compliance with existing and emerging policy	Effect significance
Global atmosphere	<p>The Proposed Development has been considered in relation to local, regional, and national policy. The key construction phase mitigation measures which are relevant to this GHG emissions assessment include:</p> <ul style="list-style-type: none"> • The re-use of materials on Site where suitable; • Reduction in demolition waste through re-use and recycling of materials; • The implantation of a Sustainable Procurement Plan; • A Whole Life-cycle Carbon Assessment to be conducted throughout the design stages; • The Contractor will minimise construction water use on Site; and • Materials with high recycled content will be chosen. <p>As set out in Table 9.9, it is considered that the Proposed Development is consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. Therefore, in line with the IEMA GHG Guidance, this is considered to be a minor adverse effect. In line with the guidance, this effect is considered to be not significant.</p>	Minor adverse, direct, long term and permanent.

Table 9.11 - Assessment of residual effect significance during the operational stage

Receptor	Compliance with existing and emerging policy	Effect significance
Global atmosphere	<p>The Proposed Development has been considered in relation to local, regional, and national policy. The key operational phase mitigation measures which are</p>	Minor adverse, direct, long term and permanent.

Receptor	Compliance with existing and emerging policy	Effect significance
	<p>relevant to this GHG emissions assessment include:</p> <ul style="list-style-type: none"> • An all-electric approach with no reliance on fossil fuels; • The fabric performance will ensure that heating and cooling demands are minimised; • PV solar panels will be maximised; • Water demand will be minimised; and • The Proposed Development will be designed for disassembly. <p>As set out in Table 9.9 Error! Reference source not found., it is considered that the Proposed Development is consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. Therefore, in line with the IEMA GHG Guidance, this is considered to be a minor adverse effect. In line with the guidance, this effect is considered to be not significant.</p>	

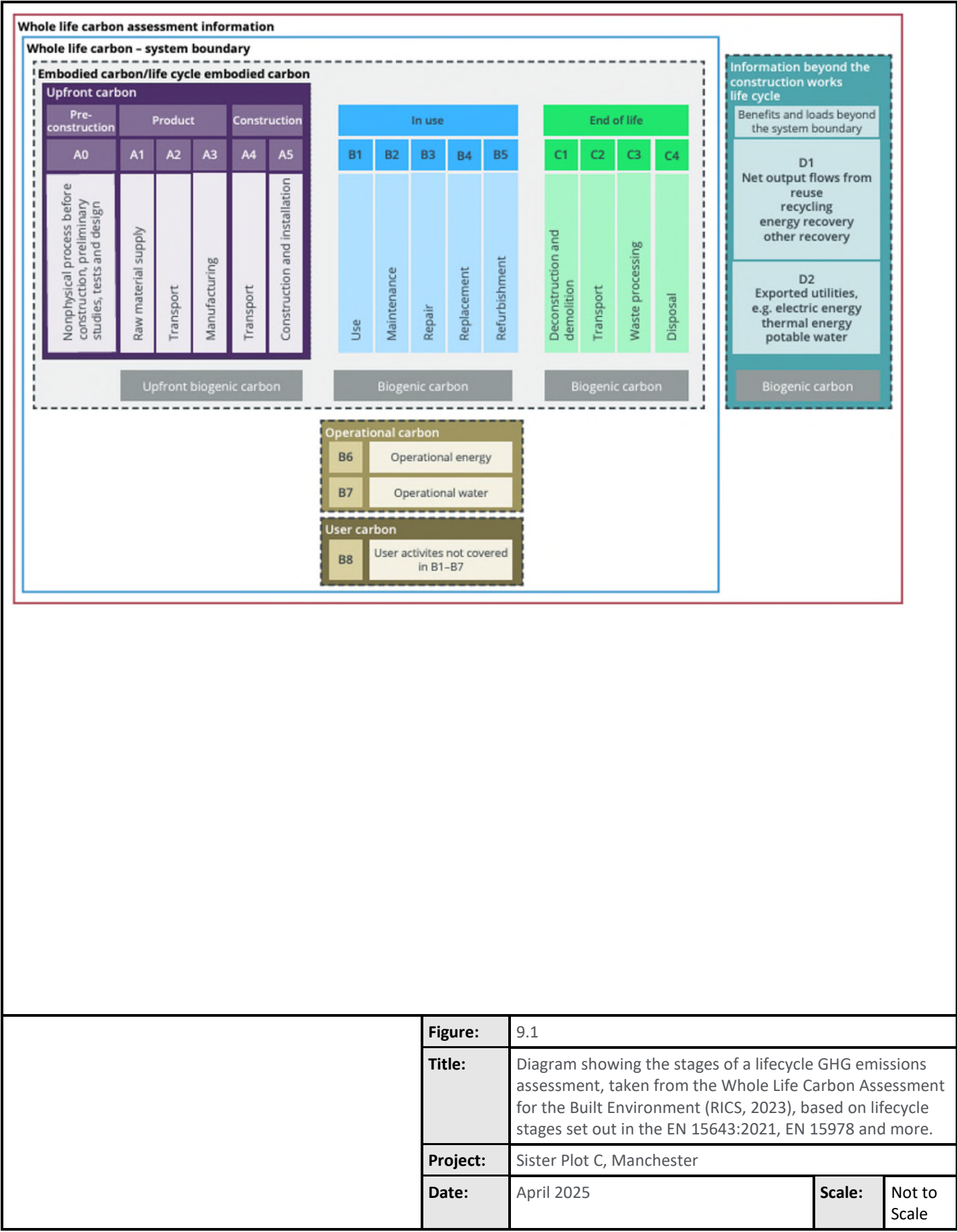
Monitoring

9.71. No future monitoring is proposed

Reference List

- British Standards Institution (BSI). (2011). BS EN 15978:2011 Sustainability of Construction Works – Assessment of Environmental Performance of Buildings – Calculation Method;
- Building Services Research and Information Association (BSRIA) (2011). Rules of Thumb Guidance for Building Services;
- Chartered Institution of Building Service Engineers (CIBSE) (2018). SD5078: UK New Construction 3.0 Technical Manual;
- Department for Energy Security and Net Zero (DESNZ) (2011). The Carbon Plan: Delivering our Low Carbon Future;
- DESNZ (2021). Carbon Budgets Order;
- DESNZ (2022). British energy security strategy;
- Ministry of Housing, Communities and Local Government (MHCLG) (formerly DLUHC) (2012, amended 2025) National Planning Policy Framework (NPPF);
- MHCLG (formerly DLUHC) (2024). National Planning Practice Guidance;

- Greater London Authority (GLA) (2013). Scope 3 (Embodied) Guidance on Greenhouse Gas Accounting and Reporting;
- Greater Manchester Combined Authority (GCMA) (2024). Places for Everyone, Joint Development Plan – Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford, Wigan;
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- HM Government (2021). Net Zero Strategy: Build Back Greener;
- HM Government (2021). The Building Regulations, Part L, Conservation of fuel and power;
- Institute of Environmental Management and Assessment (IEMA) (2022). Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance Second Edition;
- International Panel on Climate Change (IPCC) (2018). The Special Report on Global Warming of 1.5°C;
- London Energy Transformation Initiative (LETI) (2020). Climate Emergency Design Guide – How new buildings can meet UK climate change targets. Available at: <https://www.leti.uk/cedg>;
- LETI (2020). Embodied Carbon Primer;
- Mayor of London (2022). London Plan Guidance, Whole Life-Cycle Carbon Assessments;
- Manchester City Council (MCC) (2007). Guide to Development in Manchester Supplementary Document and Planning Guidance. Adopted 2007;
- MCC (2012). Manchester’s Local Development Framework. Core Strategy Development Plan Document (as amended, 2024);
- MCC (2020). Manchester City Council Climate Change Action Plan (2020 – 2025);
- Manchester Climate Change Partnership and Manchester Climate Change Agency (2020). Manchester Climate Change Framework 2020-2025;
- Royal Institute of British Architects (RIBA) (2021). RIBA 2030 Climate Challenge;
- Royal Institution of Chartered Surveyors (RICS) (2023). Whole Life Carbon Assessment for the Built Environment;
- The Department for Business, Energy, and Industrial Strategy (BEIS) (2023). Greenhouse Gas Reporting: Conversion Factors;
- The Climate Change Act (2008). (2050 Target Amendment) Order (2019);
- Tyndall Centre for Climate Change Research (2025). Setting Climate Commitments for Manchester. Available at: <https://carbonbudget.manchester.ac.uk/reports/E08000003/>;
- UK Green Building Council (UKGBC) (2017). Embodied Carbon: Developing a Client Brief;
- United Nations Framework Convention on Climate Change (UNFCCC) (2015). The Paris Agreement;
- Waste and Resource Action Programme (WRAP) (2011a). Cutting Embodied Carbon in Construction Projects; and
- Waste and Resource Action Programme (WRAP) (2011b). Procurement Requirements for Carbon Efficiency.



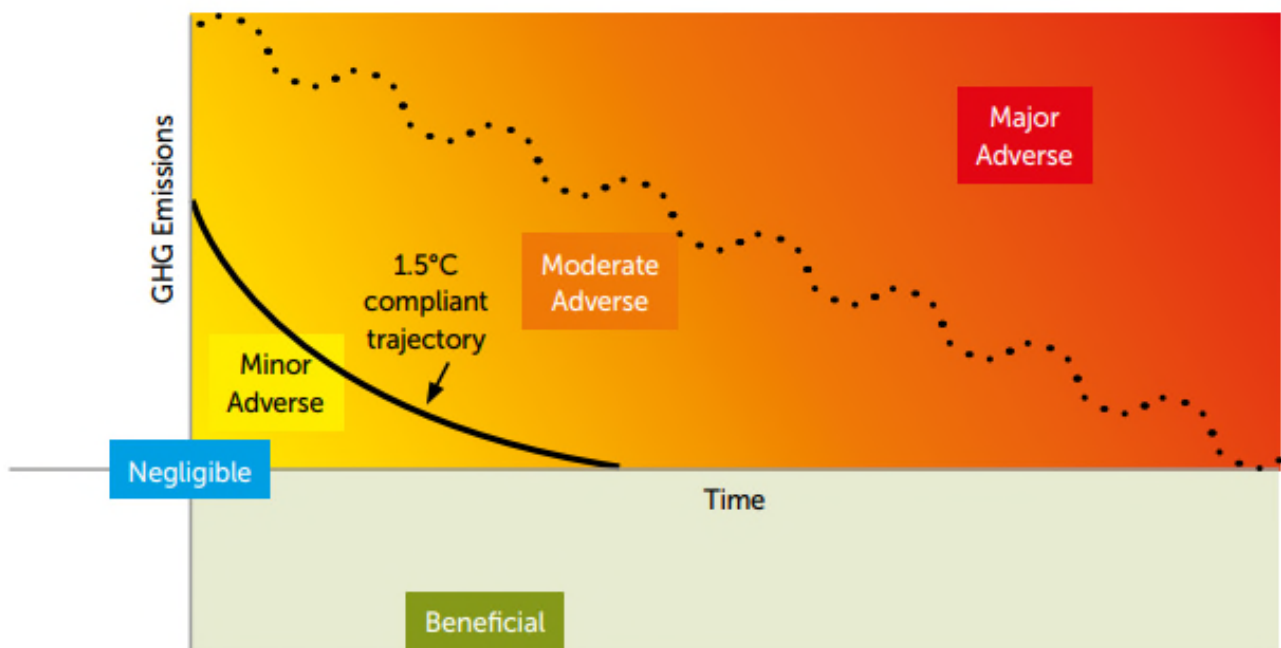


Figure:	9.2		
Title:	Different levels of significance plotted against the UK's net zero compatible trajectory. Source: IEMA guide to 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' Second edition.		
Project:	Sister Plot C, Manchester		
Date:	April 2025	Scale:	Not to Scale

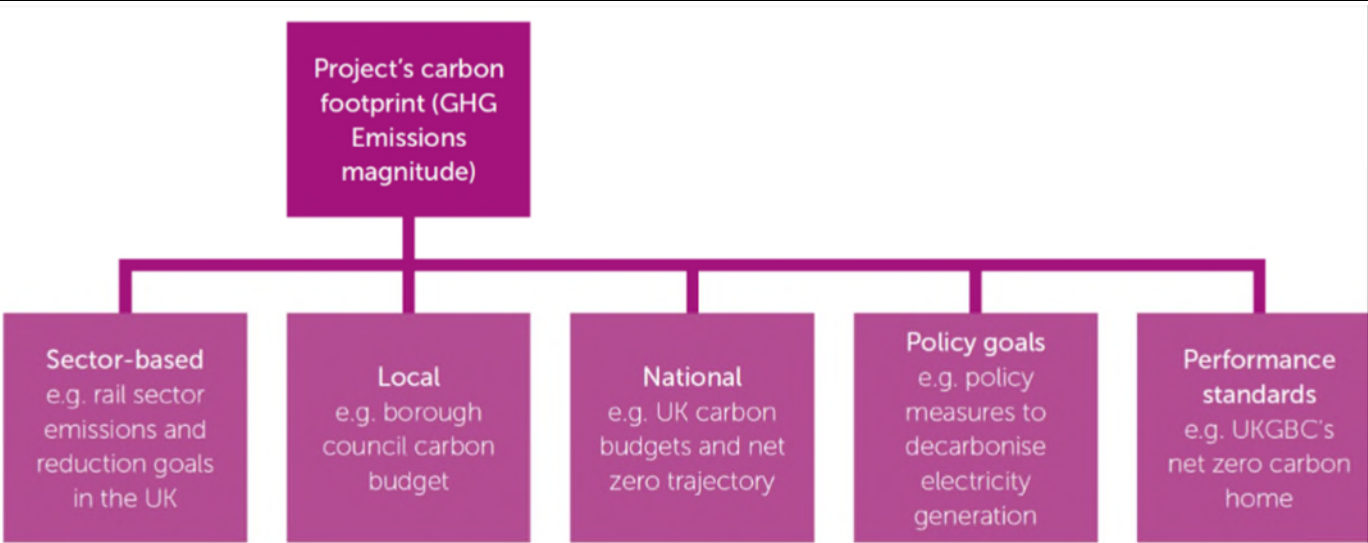


	Figure:	9.3		
	Title:	Good practice approaches for contextualising a project's GHG emissions. Source: IEMA guide to 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' Second edition.		
	Project:	Sister Plot C, Manchester		
	Date:	April 2025	Scale:	Not to Scale

10. Wind Microclimate

Introduction

- 10.1. This Chapter of the ES has been prepared by GIA and assesses the likely Wind Microclimate impacts of the Proposed Development upon the Site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted. This Chapter is accompanied by two technical appendices, a Detailed Wind Microclimate Methodology (Appendix 10.1) and an appendix which contains the Wind Microclimate CFD Results (Appendix 10.2).
- 10.2. It should be noted that, wherever figures are referenced in this chapter (Figures 10.1 to Figure 10.40) these can be found in Appendix 10.2.
- 10.3. The authors of this chapter are:

Table 10.0: Technical competence of chapter authors

	Lead Author	Reviewer
Name	Jon Winchester	Chris Harley
Company	GIA	GIA
Qualifications/Accreditations relevant to technical area inc. IEMA	BSc (Hons), MSc, PhD	MEng, PhD
Years technical experience (in technical area)	13	12
Number of EIA's delivered to date	42	24

Assumptions and Limitations

- 10.4. The accuracy of the results is dependent upon the accuracy of the architectural CAD used to construct the model.
- The Proposed Development has been modelled based on the CAD model SISCO-AAM-ZZ-ZZ-ME-AR-00002.rvt, supplied by Allies and Morrison Architects on 05/03/25.
 - The proposed landscaping (where relevant) has been modelled based on SISCO-SLA-LA-ZZ-DR-LA-00001.pdf and SISCO-SLA-LA-ZZ-DR-LA-00002.pdf, supplied by SLA on 16/04/25.
- 10.5. There is an inherent assumption that on-Site wind speeds will scale linearly with the measured wind speeds at the airport (Manchester International).
- 10.6. It is assumed that, during the construction process, wind conditions will gradually change from the Baseline Conditions to the conditions for the Completed Proposed Development.
- 10.7. It is assumed that on-Site activity during construction will be able to withstand a higher category of pedestrian comfort level that for the Completed Proposed Development.
- 10.8. It is assumed that Site hoardings would be in place throughout the demolition and construction phase and would not be removed until the Proposed Development is operational and any necessary mitigation measures are installed.
- 10.9. The CFD testing has been undertaken using steady state analysis, with gust effects modelled indirectly based on empirical data. The empirical relationship used is chosen to give a conservative estimate of gust effects, so may mean that gust wind speeds are over-estimated (i.e. windier than reality), especially at lower mean wind speeds where gust effects tend to be dominant.

Relevant Legislation, Policy and Guidance

Legislation

10.10. There are no legislative policies relating to the assessment of environmental wind flows in the built environment.

Policy

National Planning Policy

National Planning Policy Framework (2024)

10.11. The National Planning Policy Framework (NPPF) was revised December 2024 by the Ministry of Housing, Communities and Local Government (MHCLG). The relevant paragraphs are as follows:

Paragraph 135 of the National Planning Policy Framework states that:

“Planning policies and decisions should ensure that developments:

- will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;
- are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;
- are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);
- establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;
- optimise the potential of the Site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks; and
- create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users; and where crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion and resilience.”

10.12. There is no specific planning policy guidance dealing with microclimate in terms of pedestrian comfort set out in the revised NPPF.

Regional Planning Policy

Places for Everyone Joint Development Plan (2024)

10.13. Places for Everyone (2024) Policy JP-P-1 “Sustainable Places” states that “all development [...] should be consistent with: [...] comfortable and inviting, with indoor and outdoor environments: [...] addressing microclimate issues such as sunlight, indoor air quality, overheating, shade, wind and shelter”.

Local Planning Policy

Manchester Core Strategy (2012 – 2027)

10.14. Manchester's Local Development Framework, Core Strategy Policy EN 2 relates to Tall Buildings. Policy EN2 – Tall Buildings, which states that, by their very size, tall buildings can have a significant impact on the local environment and its micro-climate. It is therefore expected that this impact be modelled and that submissions for tall buildings also include appropriate measures to create an attractive, pedestrian friendly local environment. This policy is still part of the Manchester Core Strategy following the adoption of the 2024 Addendum to the Manchester Core Strategy 2024.

10.15. Paragraph 12.4 supports this stating “Tall buildings by their very nature can dominate the street scene and be highly visible over long distances. They can also have an impact on the local micro-climatic conditions, for example, by creating wind tunnels. It is for these reasons that it is considered particularly important that they are designed to the highest quality, both in terms of appearance and their impact on the functioning of surrounding space.”

Guidance

National Planning Practice Guidance (2021)

- 10.16. The NPPG identifies the potential for tall and large buildings to affect the wind microclimate, as part of the National Design Guide as set out below.
- 10.17. The National Design Guide (2021) states in Paragraph 41 that good design “enhances positive qualities and improves negative ones. Some features are physical, including:...environment – including landscape and visual impact, microclimate, orientation, flood risk, noise, air and water quality.”
- 10.18. The National Design Guide (2021) also states in Paragraph 71 that: “Proposals for tall buildings (and other buildings with a significantly larger scale or bulk than their surroundings) require special consideration. This includes their [...] environmental impacts, such as [...] wind. These need to be resolved satisfactorily”

Historic England Advice Note 4: Tall Buildings, 2022

- 10.19. The Historic England Advice Note 4: Tall Buildings (2022) states in Section 3.3 that:

“The following factors need to be considered to determine the impacts a tall building could have upon the historic environment[...] the influence on local micro-climates such as creation of wind tunnels, canyon effect, over-shadowing, glare, and air quality and effect on heritage assets in terms of the impact these micro-climatic changes could have upon their fabric, and how they are experienced.” A

Building Aerodynamics, T. Lawson, 2001

- 10.20. Building Aerodynamics by Tom Lawson sets out the Lawson Comfort Criteria for defining the suitability of wind conditions, as well as guidance on how to apply the criteria. The Lawson Comfort Criteria has been used to assess pedestrian comfort within the application Site and surrounding area, in line with industry standards.

Assessment Methodology and Significance Criteria

Scenarios Tested

- 10.21. Testing was undertaken using high-resolution Computational Fluid Dynamics (CFD), using a full-scale digital model of the Site and surrounding area.
- 10.22. The following EIA scenarios were assessed for wind microclimate:
- Scenario 1: Baseline Conditions (existing Site as of April 2025 including developments defined within the Baseline section of the committed development schedule in Appendix 2)
 - Scenario 2: Baseline + Phase A + Phase C
 - Scenario 3: Baseline + Phase A + Phase C + Cumulative
 - Scenario 5: Baseline + Phase A + Phase B + Phase C
 - Scenario 6: Baseline + Phase A + Phase B + Phase C + Cumulative
- 10.23. The above scenarios were assessed directly in CFD, in the absence of hard or soft landscaping, to ensure conservative results, and also given that not all specifics for the proposed landscaping (e.g. tree species) were known at this stage. Retained existing trees would form embedded mitigation and proposed landscaping would form additional mitigation.
- 10.24. Furthermore, the Wind assessment has looked at two additional scenario assessed with the Proposed Development (scenario 5 and 6 above) with additional mitigation (i.e. mitigation not embedded into the design) resulting in two further scenarios being presented - Scenario 5a and Scenario 6a - for clarity scenario 5a is scenario 5 (as explained above) plus additional mitigation measures; and Scenario 6a is Scenario 6 (as explained above) plus additional mitigation measures.

- 10.25. The resulting further scenarios are:
- Scenario 5a: Baseline + Phase A + Phase B + Phase C + mitigation measures
 - Scenario 6a: Scenario 5a Baseline + Phase A + Phase B + Phase C + Cumulative + mitigation measures
- 10.26. All committed developments within 400m of the Site were considered. Those which were considered to be sufficiently advanced (i.e. with a status of "under construction" or "complete" in the appended Committed Developments table) to be considered part of the existing baseline, were included within all scenarios. Those which were not considered sufficiently advanced (i.e. with a status of "consented" in the appended Committed Developments table) were only included as part of the cumulative surrounds for Scenarios 3, 6 and 6a.
- 10.27. All committed developments over 400m from the Site were scoped out of the assessment on grounds of distance from the Site.

The Study Area

- 10.28. The study area for this assessment comprises 400 m radius from the centre of the Site. This is the industry standard value for the UK. This distance is considered sufficient to capture all wind effects on Site, as well as those effects on the surrounding area.

Surveys and Data Sources

- 10.29. No surveys were undertaken with regards to wind microclimate.
- 10.30. 30 years-worth of historical climate data were obtained from the UK Met Office for Manchester International Airport measurement station to create the underlying wind statistics for the assessment.

Source of Effect

- 10.31. The Proposed Development would have the potential to cause effects on sensitive receptors by creating unsuitable wind conditions due to a combination of downdrafts, corner accelerations and channelling between buildings.
- 10.32. In order to measure wind effects, 3D models of the Proposed Development, existing surroundings and nearby cumulative schemes, as appropriate, were created and tested in CFD.
- 10.33. CFD has been chosen as a method for this study as physical limitations on the number of probes associated with wind tunnel testing would restrict the potential coverage of the Site and surrounding area, and could cause significant wind effects to be missed. GIA's High resolution CFD is used to ensure that accurate and conservative results were obtained.
- 10.34. GIA's CFD methods have been extensively correlated to physical data to ensure accuracy, and also allows for a greater level of detail (such as terrain undulations and fine building details) to be captured by the model, as well as allowing the ability to test at full scale.
- 10.35. The testing was performed from 18 wind angles, representing all wind directions and spaced so that no individual wind angle is representative of more than 10% of annual winds. Mean wind speeds and turbulence levels (to allow the calculation of gust speeds) were measured at 1.5m above ground level and any raised areas which are accessible to pedestrians, for all wind directions.
- 10.36. The measured mean and gust-equivalent-mean wind speeds were combined with wind statistics, based upon 30 years of wind climate data from Manchester Airport and used to undertake a statistical analysis of the wind climate prevailing across the area.

Lawson Comfort Criteria

- 10.37. The CFD results were "graded" against the Lawson Comfort Criteria and the Lawson Safety Criteria. The commonly used London Docklands Development Corporation (LDDC) method of the Lawson Criteria is set out in Table 10.1 and Table 10.2 below.

Table 10.1: Lawson Comfort Criteria (LDDC Variant)

Comfort Category	Mean Wind Speed (5% exceedance)	Description
Sitting	4m/s	Acceptable for outdoor sitting use (e.g. cafes, benches, balconies)
Standing	6m/s	Acceptable for main building entrances, pick-up / drop-off points and bus stops
Walking (Leisure)	8m/s	Acceptable for strolling
Walking (Business)	10m/s	Acceptable for external pavements, walking purposefully without lingering
Uncomfortable	>10m/s	Not comfortable for regular pedestrian access

Table 10.2: Lawson Safety Criteria (LDDC Variant)

Safety Category	Mean Wind Speed (0.025% exceedance)	Description
No Safety Exceedance	<15m/s	No significant wind safety risks
S15 (Distress)	>15m/s	Unsafe for frail individuals or cyclists
S20 (Safety)	>20m/s	Wind conditions considered unsafe for all users

Target Conditions

- 10.38. The wind assessment takes into account seasonal variations in wind conditions and also seasonal variations of pedestrian activities. Amenity spaces (such as parks, terraces or balconies) would experience maximum usage during the summer (June, July and August), so the suitability of these spaces are based on the results in these months. For other receptors (such as thoroughfares, waiting areas such as bus stops, or building entrances) they can be expected to be used throughout the year, so the suitability of these spaces are based on the results for the windiest season (typically winter, consisting of December, January and February).
- 10.39. For a typical mixed-use urban area within which the Site is located, the desired wind microclimate would typically need to have areas acceptable for sitting, standing (including at entrances of buildings) and walking use.
- 10.40. The target conditions, in terms of pedestrian comfort and safety risks due to strong winds, for each type of receptor are set out below.

Pedestrian Comfort

- 10.41. The target is for the majority of thoroughfares to be suitable for leisure walking. Localised regions of business walking can be tolerated as a transitory pedestrian will pass through them relatively quickly, but an extensive region of business walking is not acceptable.
- 10.42. Within roadways, business walking is acceptable as these areas will only be used by people undertaking high energy activities such as cycling or brisk walking to cross the road. Uncomfortable conditions are not acceptable in pedestrianised areas.
- 10.43. The areas immediately outside any building entrances should be suitable for standing use during the windiest season to provide a “buffer” between the still conditions in interior spaces and the general thoroughfare.
- 10.44. Bus stops, tram stops or railway platforms would be targeted to be suitable for standing, as pedestrians would be expected to dwell in these spaces for a longer duration than a general thoroughfare. This applies to the bus stops on London Road to the east of the Site, as well as Platforms 13 and 14 of Manchester Piccadilly Railway Station.
- 10.45. Amenity areas (including parks, terraces and balconies) are targeted to be suitable for a mixture of standing and sitting in summer conditions.

Strong Winds

- 10.46. Wind safety risk due to strong winds is based on the level of wind speed recorded for a “single instance” annually (defined as 0.025% of the year).
- 10.47. Any location which is accessible to pedestrians and cyclists would be considered to have an unacceptable level of wind safety risk due to strong winds if it falls within the S15 (distress) category or the S20 (safety) category as set out in Table 10.2.
- 10.48. For locations where access is restricted so that the only likely usage would be able bodied construction or maintenance workers (such as within the site hoardings during construction), an unacceptable wind risk would only be should conditions fall within the S20 (safety) category, as set out in Table 10.2.
- 10.49. Any areas which show up as subject to strong winds will require mitigation, unless they are in locations where pedestrian access can be controlled in the event of strong winds. This applies to all thoroughfares (for pedestrians) and roads (for cyclists) around the Proposed Development.

Identification of Sensitive Receptors

- 10.50. The following sensitive receptors have been identified and are shown in Figure 10.1:
- Throughfares on and around the Site (targeted to be suitable for leisure walking in winter);
 - Roadways around the Site (targeted to be suitable for business walking in winter);
 - Entrances to the Proposed Development (marked E, targeted to be suitable for standing in winter);
 - Existing off-Site entrances (marked O, targeted to be suitable for standing in winter);
 - Bus stops on London Road to the east of the Site (marked B, targeted to be suitable for standing in winter);
 - Platforms 13 and 14 of Manchester Piccadilly Railway Station (marked P, targeted to be suitable for standing in winter);
 - Existing amenity in the form of parks to the west, north west and south west of the Site (marked A2, A3 and A4, targeted to be suitable for a mix of sitting and standing in summer);
 - Proposed amenity at ground level in Phase C of the Proposed Development (marked A1, targeted to be suitable for a mix of sitting and standing in summer); and
 - Terraces and balconies within Phases A and B of the Proposed Development (targeted to be suitable for a mix of sitting and standing in summer).

Significance Criteria

- 10.51. A significant effect is defined as any effect where:
- Conditions at an existing receptor which were suitable for the intended use (in accordance with the Lawson Comfort Criteria) in the baseline are made unsuitable by the inclusion of the Proposed Development;
 - Conditions at an introduced receptor are not suitable for the intended use (in accordance with the Lawson Comfort Criteria); or
 - The inclusion of the Proposed Development causes the introduction of a wind safety risk due to strong winds (in accordance with the Lawson Safety Criteria).
- 10.52. An increase in windiness relative to the baseline will be considered not significant if the wind speed is not expected to exceed the limit for the pedestrian activity being undertaken in that area.
- 10.53. Any significant adverse effects would require mitigation. Should mitigation measures be required to provide wind conditions within a particular area / space to be suitable for their intended use, or are required to mitigate against predicted strong winds, the areas identified requiring suitable mitigation measures will be developed in consultation with the Applicant and the Design Team. Where necessary, mitigation measures will be tested through additional rounds of CFD studies. Following mitigation, the scale of any residual effects will be identified.

- 10.54. The significance of effects are determined by the sensitivity of the receptors and the magnitude of the impacts. These are set out in Tables 10.3 and 10.4.

Table 10.3: Criteria for Sensitivity of Wind Receptors

Sensitivity	Examples of Receptor
High	All locations which are accessible to pedestrians or cyclists on and around the Site, plus any introduced private external amenity spaces.
Medium	Locations for which access is restricted to construction or maintenance workers (such as those within the Site hoardings during construction).
Low	Locations which are not accessible at any time.

Table 10.4: Criteria for Magnitude of Wind Impacts

Magnitude of Impact	Criteria for Assessing Effect
Major	Wind conditions which are three categories windier/calmer than the target conditions (unless consistent with the baseline conditions)
Moderate	Wind conditions which are two categories windier/calmer than the target conditions (unless consistent with the baseline conditions)
Minor	Wind conditions which are one category windier/calmer than the target conditions (unless consistent with the baseline conditions)
Negligible	Wind conditions which are consistent with the target conditions or consistent with the baseline conditions.

- 10.55. Effect magnitude is defined by the severity of the deviation from the standards set out by the Lawson criteria. Exceedances of the safety criteria are deemed to be the most critical, given their potential effect on pedestrians' wellbeing, i.e. they may be unduly exposed to the potential for harm. Such effects are thus deemed to have a major impact magnitude. Where the comfort criteria are not met, i.e. where the conditions are too windy for a particular receptor to be sufficiently comfortable for existing or planned pedestrian uses and thus inconvenient but not unsafe, the magnitude of such effects is determined by the number of categories by which the target condition is exceeded (minor for one category up to major for three categories over the target). Effects where the comfort conditions are consistent with the target conditions are considered negligible.

- 10.56. Any adverse effects which make conditions one, two or three categories windier than the target, or introduce wind safety risks (i.e. minor, moderate or major adverse effects in Table 10.5 are considered to be significant in EIA terms and would require mitigation. Negligible or beneficial effects (of any magnitude) are not considered significant in EIA terms as they would not require mitigation.

- 10.57. All construction wind effects are temporary, and all operational effects are permanent.

Table 10.5: Criteria for Significance of Wind Effects

Significance of Impact	Criteria for Assessing Impact
Major Adverse	Wind conditions which are three categories windier than the target conditions (unless consistent with the baseline conditions) OR Wind safety risks due to strong winds are introduced by the inclusion of the Proposed Development
Moderate Adverse	Wind conditions which are two categories windier than the target conditions (unless consistent with the baseline conditions)
Minor Adverse	Wind conditions which are one category windier than the target conditions (unless consistent with the baseline conditions)
Negligible	Wind conditions which are consistent with the target conditions OR

	Wind conditions which are consistent with the baseline conditions
Minor Beneficial	Wind conditions which are one category calmer than the target conditions (unless consistent with the baseline conditions)
Moderate Beneficial	Wind conditions which are two categories calmer than the target conditions (unless consistent with the baseline conditions)
Major Beneficial	Wind conditions which are three categories calmer than the target conditions (unless consistent with the baseline conditions) OR Wind safety risks due to strong winds are eradicated by the inclusion of the Proposed Development

Baseline Conditions

Scenario 1: Baseline Conditions

- 10.58. To ascertain baseline conditions, a CFD scenario was tested incorporating the existing buildings on Site within the existing surrounds.
- 10.59. The existing surrounds incorporated the following committed developments which were considered sufficiently advanced (and in close enough proximity to the Site) to be included within the baseline:
- London Road (116099/FO/2017 & 125712/FO/2019); and
 - IQ Echo Street (136874/FO/2023)
- 10.60. The status of the above developments is as described in the list of committed developments which was submitted to, and agreed with, MCC in advance of the application submission.
- 10.61. The results for the existing baseline (Scenario 1) are presented graphically in Figures 10.2 to 10.4.
- Wind safety at ground level for Scenario 1 is shown in Figure 10.2
 - Winter Comfort at ground level for Scenario 1 is shown in Figure 10.3
 - Summer Comfort at ground level for Scenario 1 is shown in Figure 10.4

Strong Winds

- 10.62. There is a pre-existing wind safety exceedance on Echo Street to the north of the Site, by the south east corner of IQ Echo Street (marked 1 on Figure 10.2). This poses a risk to the safety of pedestrians and cyclists in this location.
- 10.63. Elsewhere, all locations within the Site and immediate surrounds meet the safety criteria and there are not considered to be wind safety risks in these areas.

Pedestrian Comfort

- 10.64. Winter comfort conditions range between suitable for sitting, standing and leisure walking across the study area, with highly localised regions which are suitable for business walking. Summer conditions range between suitable for sitting and standing across the study area.
- 10.65. Conditions are windier to the north and south of the Site, and calmer to the west and east.
- 10.66. The comfort criteria are entirely met at the following receptors:
- Conditions for thoroughfares are suitable for a mix of sitting, standing and leisure walking (with only highly localised regions suitable for business walking). This is suitable for the intended use.
 - Conditions for roadways are suitable for a mix of sitting, standing, leisure walking and business walking. This is suitable for the intended use.
 - Conditions for all existing off-Site entrances (marked O in results figures) are suitable for sitting or standing in winter. This is suitable for the intended use.

- Conditions for the bus stops on London Road (marked B in results figures) are suitable for standing in winter. This is suitable for the intended use.
- Conditions for platforms 13 and 14 of Manchester Piccadilly Railway Station (marked P in results figures) are suitable for a mix of sitting and standing in winter. This is suitable for the intended use.
- Conditions for the parks to the west, south west and north west of the Site (marked A2, A3 and A4) are suitable for a mix of sitting and standing in summer. This is suitable for the intended use.

10.67. For the baseline scenario, pedestrian comfort conditions are suitable for existing pedestrian uses, including the use of thoroughfares, roadways, building entrances, railway platforms, bus stops and amenity spaces.

Identification and Evaluation of Likely Significant Effects

Construction Phase

- 10.68. For introduced receptors (proposed entrances, introduced ground level amenity spaces, terraces and balconies) construction phase effects are not relevant as the receptors will only become operational once the relevant phases of the Proposed Development are operational.
- 10.69. During construction, conditions will gradually change from the baseline conditions to conditions for the completed and operational development. Therefore, construction effects can be inferred from the effects due to the completed and operational development.
- 10.70. Operational wind comfort effects (as described in the results of Scenarios 2 and 5 in the next section) on thoroughfares, roadways, off-Site entrances, platforms 13 and 14 of Manchester Piccadilly Railway Station, bus stops and off-Site parks for the completed and operational development are negligible (not significant), so all demolition and construction wind effects will also be negligible (not significant).
- 10.71. As construction commences, the wind conditions on and around the Site would be consistent with the baseline (Scenario 1). As construction progresses, the wind conditions would change as follows with regards to potential wind safety risks:
- The wind conditions to the east of the Site would gradually become windier until (once the tower reaches a certain point) they would become subject to localised exceedances of the S15 (distress) criteria (as described for the results of Scenario 5 below) and would pose potential safety risks to frail individuals or cyclists. These risks would be mitigated by the inclusion of the proposed landscaping (as set out for the results including additional mitigation measures for Scenarios 5a and 6a below).
 - One of the impacted locations (marked 3 in Figure 10.11) would be within the Site boundary so would not be accessible to pedestrians, as such this would not pose a genuine wind safety risk. The level of exceedance (S15) is considered a safety risk to frail individuals or cyclists but would not pose a safety risk to construction workers, so mitigation is not required during the construction process.
 - The other impacted location (marked 4 in Figure 10.11) would be in the roadway of London Road. Given the low likelihood pedestrian activity in this location coupled with the fact that conditions would only become too windy for the very last stages of construction and also the expected inhibitory impact of the hoarding at the eastern perimeter of the Site on the wind flow paths that contribute to the issue, this location is also not considered to be subject to a genuine wind safety risk.
- 10.72. On this basis, the construction phase effects on wind safety would also be negligible (not significant).

Operational Phase

- 10.73. To ascertain operational effects, two scenarios were assessed (as outlined below). Operational effects are set out for both scenarios, and any mitigation requirements are based on the “worst case” of the two scenarios assessed.

Scenario 2: Baseline + Phase A + Phase C

- 10.74. A scenario consisting of Phases A and C of the Proposed Development, within the existing surrounds (baseline), was tested in CFD. The results for Scenario 2 are presented graphically within figures 10.5 - 10.10:

- Wind safety at ground level for Scenario 2 is shown in Figure 10.5.
- Winter Comfort at ground level for Scenario 2 is shown in Figure 10.6.
- Summer Comfort at ground level for Scenario 2 is shown in Figure 10.7.
- Wind safety at terrace and balcony level for Scenario 2 is shown in Figure 10.8.
- Winter Comfort at terrace and balcony level for Scenario 2 is shown in Figure 10.9.
- Summer Comfort at terrace and balcony level for Scenario 2 is shown in Figure 10.10.

Strong Winds (Scenario 2)

- 10.75. The pre-existing wind safety exceedance on Echo Street to the north of the Site, by the south east corner of IQ Echo Street (marked 1 on Figure 10.5) is substantially reduced in extent relative to the baseline for Scenario 2. This means that the inclusion of Phases A and C of the Proposed Development has eradicated regions which were previously subject to safety risks due to strong winds. This is a major beneficial wind effect (not significant).
- 10.76. There would be a region which exceeds the S15 (distress) criteria on the railway line to the north of the Site (marked 2 on Figure 10.5). As this is located on the railway tracks, it would not be accessible to pedestrians or cyclists so does not pose a wind safety risk. This is a negligible wind effect (not significant).
- 10.77. Elsewhere, all locations within the Site and immediate surrounds meet the safety criteria and there are not considered to be wind safety risks in these areas. This is a negligible wind effect (not significant).

Pedestrian Comfort (Scenario 2)

- 10.78. Winter comfort conditions range between suitable for sitting, standing and leisure walking, with localised regions which are suitable for business walking. Summer conditions range between suitable for sitting and standing.
- 10.79. Conditions for Scenario 2 show a similar overall level of wind conditions to the baseline.
- 10.80. Conditions for thoroughfares are suitable for a mix of sitting, standing and leisure walking (there is a localised region which is suitable for business walking to the north of the Site on Granby Row but the area of the pavement which is suitable for business walking is not extensive and located away from the busier thoroughfares, as such this would not have a substantial impact on the pedestrian experience in this location). This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.81. Conditions for roadways are suitable for a mix of sitting, standing, leisure walking and business walking for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.82. Conditions for the principal proposed entrances (marked E in results figures) are suitable for sitting or standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.83. Conditions for all existing off-Site entrances (marked O in results figures) are suitable for sitting or standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.84. Conditions for the bus stops on London Road (marked B in results figures) are suitable for standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.85. Conditions for platforms 13 and 14 of Manchester Piccadilly Railway Station (marked P in results figures) are suitable for a mix of sitting and standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.86. Conditions for the parks to the west, south west and north west of the Site (marked A2, A3 and A4 in results figures) are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).

- 10.87. Conditions for the proposed ground level amenity (marked A1) are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.88. Conditions for the proposed roof terraces of Building C1 are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.89. Conditions for the proposed balconies of Building C1 are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.90. For the scenario for Phases A + C within existing surrounds (Scenario 2), pedestrian comfort conditions are suitable for existing and intended pedestrian uses, including the use of thoroughfares, roadways, building entrances (existing and proposed), railway platforms, bus stops, ground level amenity spaces, roof terraces and balconies.

Scenario 5: Baseline + Phase A + Phase B + Phase C

- 10.91. A scenario consisting of Phases A, B and C (i.e the full Proposed Development), within existing surrounds, was tested in CFD. The results for Scenario 5 are presented graphically within figures 10.11 - 10.16:
- Wind safety at ground level for Scenario 5 is shown in Figure 10.11
 - Winter Comfort at ground level for Scenario 5 is shown in Figure 10.12
 - Summer Comfort at ground level for Scenario 5 is shown in Figure 10.13
 - Wind safety at terrace and balcony level for Scenario 5 is shown in Figure 10.14
 - Winter Comfort at terrace and balcony level for Scenario 5 is shown in Figure 10.15
 - Summer Comfort at terrace and balcony level for Scenario 5 is shown in Figure 10.16

Strong Winds (Scenario 5)

- 10.92. The pre-existing wind safety exceedance on Echo Street to the north of the Site, by the south east corner of IQ Echo Street (marked 1 on Figures 10.11) is substantially reduced in extent. This means that the inclusion of the Proposed Development has eradicated regions which were previously subject to safety risks due to strong winds. This is a major beneficial wind effect (not significant).
- 10.93. Exceedances of the S15 (distress) criteria are introduced at the south east corner of the Site (marked 3 on Figure 11) and within the roadway of London Road (marked 4). These would pose a safety risk to pedestrians or cyclists in these locations and represent a major adverse wind effect (significant) which would require mitigation.
- 10.94. Exceedances of the S15 (distress) criteria are introduced at the north east corner balconies of Building C2 at levels 13 to 17. These would pose a safety risk to balcony users and represent a major adverse wind effect (significant) which would require mitigation.
- 10.95. Elsewhere, all locations within the Site and immediate surrounds meet the safety criteria and there are not considered to be wind safety risks in these areas. This is a negligible wind effect (not significant).

Pedestrian Comfort (Scenario 5)

- 10.96. Winter comfort conditions range between suitable for sitting, standing and leisure walking, with localised regions which are suitable for business walking. Summer conditions range between suitable for sitting and standing.
- 10.97. The introduction of Phase 2 of the Proposed Development (i.e. Scenario 5 compared to Scenario 2) would introduce windier conditions immediately south east and north east of the Site.
- 10.98. Conditions for thoroughfares are suitable for a mix of sitting, standing and leisure walking (there is a localised region which is suitable for business walking to the north of the Site on Granby Row but the area of the pavement which is suitable for business walking is not extensive and located away from the busier thoroughfares, as such this would not

have a substantial impact on the pedestrian experience in this location). This is suitable for the intended use and represents a negligible wind effect (not significant).

- 10.99. Conditions for roadways are suitable for a mix of sitting, standing, leisure walking and business walking for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.100. Conditions for the principal proposed entrances (marked E in results figures) are suitable for sitting or standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.101. Conditions for all existing off-Site entrances (marked O in results figures) are suitable for sitting or standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.102. Conditions for the bus stops on London Road (marked B in results figures) are suitable for standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.103. Conditions for platforms 13 and 14 of Manchester Piccadilly Railway Station (marked P in results figures) are suitable for a mix of sitting and standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.104. Conditions for the parks to the west, south west and north west of the Site (marked A2, A3 and A4 in results figures) are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.105. Conditions for the proposed ground level amenity (marked A1) are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.106. Conditions for the proposed roof terraces of Buildings C1 and C2 are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.107. Conditions for the proposed balconies of Buildings C1 and C2 are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.108. For the scenario for Phases A + B + C within existing surrounds (Scenario 5), pedestrian comfort conditions are suitable for existing and intended pedestrian uses, including the use of thoroughfares, roadways, building entrances (existing and proposed), railway platforms, bus stops, ground level amenity spaces, roof terraces and balconies.

Cumulative Effects

- 10.109. The following committed developments have been considered in the assessment as cumulative developments that have been granted planning consent to assess cumulative effects:
- Mayfield Baring Street Car Park (124972/FO/2019 & 137350/JO/2023);
 - The Republic (125248/FO/2019, 137349/JO/2023 & 141645/JO/2024);
 - The Poulton (137263/FO/2023); and
 - Energy Centre (141496/FO/2024)
- 10.110. All other committed developments (included at Appendix 2.3) have been scoped out of the assessment on grounds of distance from the Site.

Construction

- 10.111. For introduced receptors (proposed entrances, introduced ground level amenity spaces, terraces and balconies) construction phase effects are not relevant as the receptors will only become operational once the relevant phases of the Proposed Development are operational.

- 10.112. Operational wind comfort effects (as described in the results of Scenarios 3 and 6 in the next section) on thoroughfares, roadways, off-Site entrances, platforms 13 and 14 of Manchester Piccadilly Railway Station, bus stops and off-Site parks for the completed and operational development are negligible (not significant), so all demolition and construction wind effects will also be negligible (not significant).
- 10.113. As construction commences, the wind conditions on and around the Site would be consistent with the baseline (Scenario 1). As construction progresses, the wind conditions would change as follows with regards to potential wind safety risks:
- The wind conditions to the east of the Site would gradually become windier until (once the tower reaches a certain point) they would become subject to localised exceedances of the S15 (distress) criteria (as described for the results of Scenario 5 below) and would pose potential safety risks to frail individuals or cyclists. These risks would be mitigated by the inclusion of the proposed landscaping (as set out for the results including additional mitigation measures for Scenarios 5a and 6a below).
 - One of the impacted locations (marked 3 in Figure 10.23) would be within the Site boundary so would not be accessible to pedestrians, as such this would not pose a genuine wind safety risk. The level of exceedance (S15) is considered a safety risk to frail individuals or cyclists but would not pose a safety risk to construction workers, so mitigation is not required during the construction process.
 - The other impacted location (marked 4 in Figure 10.23) would be in the roadway of London Road. Given the low likelihood pedestrian activity in this location of coupled with the fact that conditions would only become too windy for the very last stages of construction and also the expected inhibitory impact of the hoarding at the eastern perimeter of the Site on the wind flow paths that contribute to the issue, this location is also not considered to be subject to a genuine wind safety risk.
- 10.114. On this basis, the construction phase effects on wind safety would also be negligible (not significant).

Operation

- 10.115. The following scenarios were assessed to determine cumulative effects. Cumulative operational effects are set out for both scenarios, and any mitigation requirements are based on the “worst case” of the two scenarios assessed.

Scenario 3: Baseline + Phase A + Phase C + Cumulative Schemes

- 10.116. A scenario consisting of Phases A and C of the Proposed Development, within the cumulative surrounds, was tested in CFD. The results for Scenario 3 are presented graphically within figures 10.17 - 10.22:
- Wind safety at ground level for Scenario 3 is shown in Figure 10.17
 - Winter Comfort at ground level for Scenario 3 is shown in Figure 10.18
 - Summer Comfort at ground level for Scenario 3 is shown in Figure 10.19
 - Wind safety at terrace and balcony level for Scenario 3 is shown in Figure 10.20
 - Winter Comfort at terrace and balcony level for Scenario 3 is shown in Figure 10.21
 - Summer Comfort at terrace and balcony level for Scenario 3 is shown in Figure 10.22

Strong Winds (Scenario 3)

- 10.117. The pre-existing wind safety exceedance on Echo Street to the north of the Site, by the south east corner of IQ Echo Street (marked 1 on Figure 10.17) is substantially reduced in extent relative to the baseline for Scenario 3. This means that the inclusion of Phases A and C of the Proposed Development has eradicated regions which were previously subject to safety risks due to strong winds. This is a major beneficial wind effect (not significant).
- 10.118. There would be a region which exceeds the S15 (distress) criteria on the railway line to the north of the Site (marked 2 on Figure 10.17). As this is located on the railway tracks, it would not be accessible to pedestrians or cyclists so does not pose a wind safety risk. This is a negligible wind effect (not significant).
- 10.119. Elsewhere, all locations within the Site and immediate surrounds meet the safety criteria and there are not considered to be wind safety risks in these areas. This is a negligible wind effect (not significant).

Pedestrian Comfort (Scenario 3)

- 10.120. Winter comfort conditions range between suitable for sitting, standing and leisure walking, with localised regions which are suitable for business walking. Summer conditions range between suitable for sitting and standing.
- 10.121. The inclusion of cumulative schemes would not have a material impact on wind conditions on or around the Site (i.e. comparing the results of Scenario 2 to Scenario 3 shows the same distribution and strength of wind conditions).
- 10.122. Conditions for thoroughfares are suitable for a mix of sitting, standing and leisure walking (there is a localised region which is suitable for business walking to the north of the Site on Granby Row but the area of the pavement which is suitable for business walking is not extensive and located away from the busier thoroughfares, as such this would not have a substantial impact on the pedestrian experience in this location). This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.123. Conditions for roadways are suitable for a mix of sitting, standing, leisure walking and business walking for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.124. Conditions for the principal proposed entrances (marked E in results figures) are suitable for sitting or standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.125. Conditions for all existing off-Site entrances (marked O in results figures) are suitable for sitting or standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.126. Conditions for the bus stops on London Road (marked B in results figures) are suitable for standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.127. Conditions for platforms 13 and 14 of Manchester Piccadilly Railway Station (marked P in results figures) are suitable for a mix of sitting and standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.128. Conditions for the parks to the west, south west and north west of the Site (marked A2, A3 and A4 in results figures) are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.129. Conditions for the proposed ground level amenity (marked A1) are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.130. Conditions for the proposed roof terraces of Building C1 are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.131. Conditions for the proposed balconies of Building C1 are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.132. For the scenario for Phases A + C within cumulative surrounds (Scenario 3), pedestrian comfort conditions are suitable for existing and intended pedestrian uses, including the use of thoroughfares, roadways, building entrances (existing and proposed), railway platforms, bus stops, ground level amenity spaces, roof terraces and balconies.

Scenario 6: Baseline + Phase A + Phase B + Phase C + Cumulative Schemes

- 10.133. A scenario consisting of Phases A, B and C (i.e the full Proposed Development), within cumulative surrounds, was tested in CFD. The results for Scenario 6 are presented graphically within figures 10.23 - 10.28:
- Wind safety at ground level for Scenario 6 is shown in Figure 10.23.
 - Winter Comfort at ground level for Scenario 6 is shown in Figure 10.24.
 - Summer Comfort at ground level for Scenario 6 is shown in Figure 10.25.
 - Wind safety at terrace and balcony level for Scenario 6 is shown in Figure 10.26.

- Winter Comfort at terrace and balcony level for Scenario 6 is shown in Figure 10.27.
- Summer Comfort at terrace and balcony level for Scenario 6 is shown in Figure 10.28.

Strong Winds (Scenario 6)

- 10.134. The pre-existing wind safety exceedance on Echo Street to the north of the Site, by the south east corner of IQ Echo Street (marked 1 on Figure 10.23) is substantially reduced in extent. This means that the inclusion of the Proposed Development has eradicated regions which were previously subject to safety risks due to strong winds. This is a major beneficial wind effect (not significant).
- 10.135. Exceedances of the S15 (distress) criteria are introduced at the south east corner of the Site (marked 3 on Figure 10.23) and within the roadway of London Road (marked 4). These would pose a safety risk to pedestrians or cyclists in these locations and represent a major adverse wind effect (significant) which would require mitigation.
- 10.136. Exceedances of the S15 (distress) criteria are introduced at the north east corner balconies of Building C2 at levels 13 to 17. These would pose a safety risk to balcony users and represent a major adverse wind effect (significant) which would require mitigation.
- 10.137. Elsewhere, all locations within the Site and immediate surrounds meet the safety criteria and there are not considered to be wind safety risks in these areas. This is a negligible wind effect (not significant).

Pedestrian Comfort (Scenario 6)

- 10.138. Winter comfort conditions range between suitable for sitting, standing and leisure walking, with localised regions which are suitable for business walking. Summer conditions range between suitable for sitting and standing.
- 10.139. The introduction of Phase 2 of the Proposed Development (i.e. Scenario 6 compared to Scenario 3) would introduce windier conditions immediately south east and north east of the Site.
- 10.140. Conditions for thoroughfares are suitable for a mix of sitting, standing and leisure walking (there is a localised region which is suitable for business walking to the north of the Site on Granby Row but the area of the pavement which is suitable for business walking is not extensive and located away from the busier thoroughfares, as such this would not have a substantial impact on the pedestrian experience in this location). This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.141. Conditions for roadways are suitable for a mix of sitting, standing, leisure walking and business walking for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.142. Conditions for the principal proposed entrances (marked E in results figures) are suitable for sitting or standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.143. Conditions for all existing off-Site entrances (marked O in results figures) are suitable for sitting or standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.144. Conditions for the bus stops on London Road (marked B in results figures) are suitable for standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.145. Conditions for platforms 13 and 14 of Manchester Piccadilly Railway Station (marked P in results figures) are suitable for a mix of sitting and standing in winter for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.146. Conditions for the parks to the west, south west and north west of the Site (marked A2, A3 and A4 in results figures) are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.147. Conditions for the proposed ground level amenity (marked A1) are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).

- 10.148. Conditions for the proposed roof terraces of Buildings C1 and C2 are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.149. Conditions for the proposed balconies of Buildings C1 and C2 are suitable for a mix of sitting and standing in summer for all relevant scenarios. This is suitable for the intended use and represents a negligible wind effect (not significant).
- 10.150. For the scenario for Phases A + B + C within cumulative surrounds (Scenario 6), pedestrian comfort conditions are suitable for existing and intended pedestrian uses, including the use of thoroughfares, roadways, building entrances (existing and proposed), railway platforms, bus stops, ground level amenity spaces, roof terraces and balconies.

Mitigation Measures

Construction Phase

- 10.151. No additional mitigation measures are proposed for the construction phase of the Proposed Development.

Operational Phase

- 10.152. The assessment above takes into account embedded mitigation, in which wind aspects have formed part of the proposed design. In addition to mitigation which is embedded, additional mitigation has also been considered below:
- Detailed landscaping including deciduous trees ranging between 3m, 4m and 5m high at planting across the site, and 8 evergreen trees ranging between 3m, 4m and 5m immediately east of the south east corner of Building C2; and
 - 1200mm tall, glazed screens behind the balustrade on the eastern elevation of the level 13 to 17 balconies on Building C2.

Residual Effects

Construction Phase

- 10.153. All residual construction effects would be negligible (not significant).

Operational Phase

Scenario 5a: Baseline + Phase A + Phase B + Phase C + Mitigation

- 10.154. An additional scenario consisting of Phases A, B and C (i.e the full Proposed Development), within existing surrounds, plus the proposed landscaping and mitigation was tested in CFD. The results for Scenario 5a are presented graphically within figures 10.29 - 10.34:
- Wind safety at ground level for Scenario 5a is shown in Figure 10.29
 - Winter Comfort at ground level for Scenario 5a is shown in Figure 10.30
 - Summer Comfort at ground level for Scenario 5a is shown in Figure 10.31
 - Wind safety at terrace and balcony level for Scenario 5a is shown in Figure 10.32
 - Winter Comfort at terrace and balcony level for Scenario 5a is shown in Figure 10.33
 - Summer Comfort at terrace and balcony level for Scenario 5a is shown in Figure 10.34
- 10.155. The impact of the proposed mitigation can be seen from comparison of the results for Scenario 5 with those for Scenario 5a. Any receptors which were suitable for the intended use, or consistent with the baseline, for Scenario 5 would remain so for Scenario 5a. The conditions for those receptors which were subject to adverse effects in Scenario 5 are set out below.
- 10.156. The exceedances of the S15 (distress) criteria which had been introduced in Scenario 5 at the south east corner of the Site (marked 3 on Figure 10.29) and within the roadway of London Road (marked 4) have been eradicated. There is no longer a wind safety risk in these locations and any residual effects would be negligible (not significant).

- 10.157. The exceedances of the S15 (distress) criteria which had been introduced in Scenario 5 at the north east corner balconies at levels 13 to 17 of Building C2 have been eradicated. There is no longer a wind safety risk in these locations and any residual effects would be negligible (not significant).
- 10.158. An additional scenario consisting of Phases A, B and C (i.e the full Proposed Development), within cumulative surrounds, plus the proposed landscaping and mitigation (Scenario 6a) was also tested in CFD. The results for this scenario are shown in Figures 10.35 to 10.40, which do not show any material differences between the conditions for Scenario 5a and Scenario 6a, so the residual effects for the Proposed Development in Cumulative Surrounds would be consistent with those for the Proposed Development in Existing Surrounds.

Table 10.6: Residual Wind Effects (Operational Phase)

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Negligible effect	All	None	N/A	Negligible temporary effects (not significant)
Operational Phase				
Major Beneficial effect on wind safety risk due to strong winds	Echo Street thoroughfare to north of Site	None	N/A	Major Beneficial permanent effects on wind safety risk due to strong winds (not significant)
Major Adverse effect on wind safety risk due to strong winds	At the south east corner of the Site and in London Road to the east of the Site	Proposed Landscaping consisting of deciduous trees ranging between 3m, 4m and 5m across the site, and 8 evergreen trees ranging between 3m, 4m and 5m immediately east of the south east corner of Building C2.	Mitigation to be designed and developed in detail, secured via planning condition.	Major Adverse permanent effects on wind safety risk due to strong winds (significant) to be reduced to Negligible (not significant) on finalisation of additional mitigation measures.
Major Adverse effect on wind safety risk due to strong winds	Proposed Balconies at levels 13 to 17 of Building C2	1200mm tall, glazed screens behind the balustrade on the eastern elevation of the level 13 to 17 balconies on Building C2.	Mitigation to be designed and developed in detail, secured via planning condition.	Major Adverse permanent effects on wind safety risk due to strong winds (significant) to be reduced to Negligible (not significant) on finalisation of additional mitigation measures.

Monitoring

- 10.159. No monitoring of the wind microclimate is recommended.

Reference List

- 10.160. This ES Chapter has been prepared in reference to the following:

- Ministry of Housing, Communities and Local Government (MHCLG), National Planning Policy Framework (NPPF). 2024
- Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government. Planning Practice Guidance. 2021.

- Greater Manchester Combined Authority Joint Development Plan “Places for Everyone”. 2024
- Manchester City Council, Manchester Core Strategy (2012 – 2027)
- Historic England Advice Note 4: Tall Buildings, 2022
- Lawson, T.V. Building Aerodynamics. Imperial College Press, 2001.

11. Solar Glare

Introduction

- 11.1. This Chapter of the ES has been prepared by GIA Surveyors Ltd and assesses the likely solar glare impacts of the Proposed Development upon the Site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.
- 11.2. This Chapter assesses the potential solar glare impact to road users and train drivers only, for sensitive locations within 500m of the Site. Potential solar glare impacts on neighbouring residential amenity are not expected to be significant and an assessment of solar glare to neighbouring buildings is not considered proportionate or necessary. Solar glare effects to occupants of neighbouring buildings are scoped out of the EIA and are not reported upon further within this Chapter.
- 11.3. The author of this Chapter has a Masters in Buildings Science (MBSc Dist) from Victoria University of Wellington, NZ and 9 years of UK experience in preparing solar glare for EIA developments. GIA are the largest specialist daylight and sunlight advisor in the UK, with over 30 years of specialisation and expertise, having advised on some of the largest developments within Greater Manchester and the United Kingdom.

Table 11.1: Technical competence of chapter authors

Lead Author	
Name	Krystle Stewart
Company	GIA
Qualifications/Accreditations relevant to technical area inc. IEMA	MBSc (Dist)
Years technical experience (in technical area)	16
Number of EIA's delivered to date	25+

Assumptions and Limitations

- 11.4. Although great care is taken in identifying typical viewpoints, this does not guarantee that there are no additional sensitive locations where reflected solar glare could present a particular risk. This assessment is based on the assumption that in an urban environment moving traffic represents the biggest risk factor and so viewpoints and focus points are selected accordingly. For practical reasons the area of the assessment is limited to the area surrounding the Proposed Development. The occurrence of reflected solar glare at greater distances is not the subject of this assessment.
- 11.5. It is also to be noted that the hours presented reflect solar time and therefore do not take Daylight Saving Hours into account. Where times are reported between the last Sunday in March and the last Sunday in October, they would need to be adjusted forward an hour to reflect British Summer Time (BST). For example, where a reflection is recorded at 09:00-10:00 GMT in April, this would correlate to 10:00-11:00 BST.

Relevant Legislation, Policy and Guidance

- 11.6. There is no legislation, National or Local Planning Policy relevant to Solar Glare.

Guidance

Building Research Establishment (BRE) – Site Layout Planning for Daylight and Sunlight: A guide to good practice (2022)

- 11.7. The BRE Guidelines includes the following statement with regard to the potential for reflected solar glare from a new development:

“Glare or solar dazzle can occur when sunlight is reflected from a glazed façade. This can affect road users outside and the occupants of adjoining buildings. The problem can occur either when there are large areas of reflective glass or cladding on the façade, or when there are areas of glass or cladding which slope back so that high altitude sunlight can be reflected along the ground. Thus solar dazzle is only a long term problem only for some heavily glazed (or mirror clad) buildings...”

Commission Internationale de L’Eclairage (CIE) 146:2002 & CIE 147:2002 Collection on glare (2002)

- 11.8. The CIE 146:2002 Collection on glare states:

“Disability glare is glare that impairs vision (CIE, 1987). It is caused by scattering of light inside the eye [...]. The veiling luminance of scattered light will have a significant effect on visibility when intense light sources are present in the peripheral visual field and the contrast of objects to be seen is low.”

“Disability glare is most often of importance at night when contrast sensitivity is low and there may well be one or more bright light sources near to the line of sight, such as car headlights, streetlights or floodlights. But even in daylight conditions disability glare may be of practical significance: think of traffic lights when the sun is close to them, or the difficulty viewing paintings hanging next to windows.”

Assessment Methodology and Significance Criteria

Scenarios Tested

- 11.9. For solar glare, the worst-case scenario is portrayed by the complete and operational Proposed Development, where all reflective facade materials have been installed and any covers, films or hoarding used during construction have been removed.
- 11.10. As construction progresses, and the facades of the Proposed Development are installed, the potential solar glare effects would be similar to those once the Proposed Development is complete and operational. It is therefore considered that the completed Proposed Development represents the worst-case assessment in terms of likely solar glare effects. The construction scenario has been assessed qualitatively, based on professional judgement.
- 11.11. As the Proposed Development is a phased application, there is the potential that changes in the intended construction programme may occur. As the Proposed Development comprises two buildings with the elevations of both buildings sharing the exact same orientation, if an effect occurs from Plot C1 without Plot C2 in place, once Plot C2 is implemented, the overall effect would be the same and vice versa. Therefore, due to the location of Plots C1 and C2 in relation to the sensitive viewpoints and the angles of the facades, it is unlikely that phased solar reflections would be generated in isolation that do not occur in the complete and operational Proposed Development scenario.
- 11.12. The most appropriate scenario is considered to be Scenario 5 (Existing Baseline + Phase A + Phase B + Phase C). The potential for temporary phased effects to arise in Scenario 2 (Existing Baseline + Phase A + Phase C) has been kept under review as the design has progressed and it is still considered that Scenario 5 is the only one that requires assessment for solar glare. Therefore, all effects would be appropriately identified, and if needed mitigated, via the completed development scenario (Scenario 5) which presents the worst-case scenario overall and the phased solar glare effects are not discussed further within this Chapter.
- 11.13. The following scenario has been technically assessed and is reported on in detail within this chapter of the ES:
- Scenario 5 (Existing Baseline + Phase A + Phase B + Phase C).

- 11.14. For Solar Glare, the worst-case scenario is portrayed by the Proposed Development in isolation. The cumulative effects have not been considered as neighbouring Committed Developments (i.e. those with an extant/valid planning permission) can block sunlight reaching the facades of the Proposed Development and/or obscure the Proposed Development from the viewpoints to be assessed and as a result, lessen the effects. This approach is common practice.
- 11.15. Baseline Developments (i.e. those with an extant/valid planning permission where construction works have started) that are visible from a sensitive receptor and would in all likelihood be fully built out before commencement of the Works, are included within the surrounding context as their completed form. The following Baseline Developments have been included within the assessment:
- London Road (125712/FO/2019);
 - No. 3 Circle Square (134288/FO/2022); and
 - IQ Echo Street (136874/FO/2023)

The Study Area

- 11.16. Sensitive receptors are considered road users at junctions and train/or tram drivers on tracks within the surrounding area. Viewpoints at road junctions and on train/or tram lines within 500 metres of the Site where the Proposed Development is visible within the driver's field of view have been identified and assessed. At distances greater than 500m from the Proposed Development, instances of solar glare would be unlikely to occur.
- 11.17. At each of the identified sensitive road locations, viewpoints are located at the minimum stopping distance for road users and at the driver's eye level with the focal point being a relevant traffic element, such as signals or incoming traffic. For train/or tram drivers, viewpoints are assessed where signals are visible or at representative intervals where the Proposed Development would be visible close to the direct line of sight for a substantial stretch of track. No tram lines have been identified that require assessment within the study area. Tram tracks are located adjacent to viewpoints LR2 and LR3, which sufficiently capture any potential effects that would impact tram drivers at this location.
- 11.18. The identified road junctions and rail viewpoints assessed are considered most sensitive in relation to solar glare due to a combination of the nature of the use and proximity to the Site, and therefore consideration has been given to several viewpoints at traffic junctions and train lines from which the Proposed Development will be visible. The locations assessed are shown in Appendix 11.2, Figure 02:
- PR1 – Piccadilly Road (Southbound) junction with Auburn St, Station Approach and London Rd;
 - PSA1 – Piccadilly Station Approach (Southbound) pedestrian crossing;
 - LR1 – London Road (Southbound) junction with Fairfield St;
 - LR2 – London Road (Southbound) pedestrian crossing;
 - LR3 – London Road (Southbound) junction with tram crossing;
 - MW1/MW2 – Mancunian Way (Westbound);
 - MW3 – Mancunian Way (Eastbound);
 - DS1 – Downing Street (Northbound) junction with Mancunian Way slip roads;
 - DS2 – Downing Street (Northbound) junction with Mancunian Way slip roads;
 - DS3 – Downing Street (Northbound) junction with Grosvenor St;
 - WR1 – Wadeson Road (Northbound) junction with Grosvenor St;
 - CS1 – Charles Street (Eastbound) junction with Sackville St;
 - CS2 – Charles Street (Eastbound) junction with Princess St;
 - GR1 – Granby Row (Eastbound) junction with Sackville St;

- E1-E3 – Eastbound Train Lines;
- W1, P13A, P14A-C – Westbound Train Lines via Platform 13 and 14.

Surveys and Data Sources

11.19. This Chapter is accompanied by the following appendices:

- Appendix 11.1 – Solar Glare Methodology. This appendix contains a detailed summary of the assessment methodology used for the solar glare assessment.
- Appendix 11.2 – Solar Glare Assessment. This appendix contains the technical analysis for all relevant viewpoints prepared to support the solar glare assessment.

Source of Effect

- 11.20. The façade treatment for the Proposed Development is understood to include large areas of glazing which could reflect sunlight within a driver's field of view at sensitive locations, resulting in potential effects in terms of solar glare.
- 11.21. The assessment of solar glare identifies the time of the day and year that solar reflections will be visible from the assessed viewpoints, as well as their relationship to a driver's line of sight. The assessment does not however, measure the intensity of the reflection but merely the occurrence and duration.
- 11.22. Drivers at each of the relevant road junctions are considered the sensitive receptors, where there are multiple directions of travel potentially affected, each direction of travel at the junction is considered a separate receptor as their effect significance may differ. For train tracks, the train drivers on the stretch of track are considered to be the sensitive receptor. The effect significance will be determined using professional judgement taking into consideration the duration of solar reflections, location of these in relation to a driver's line of sight, type of junction control and the probability of reflections occurring. The effect significance is given on a per location basis considering all viewpoints assessed for that location as well as any viewpoints that would not be affected by the Proposed Development.

Significance Criteria

- 11.23. A detailed summary of the assessment methodology can be found in Appendix 11.1, Solar Glare Methodology. Appendix 11.1 includes the methodology for determining demolition and construction effects as well as methodology for determining the operational effects.
- 11.24. The key terminology used to describe the magnitude of impact is as follows and is further described in the below sections of this chapter:
- Major;
 - Moderate;
 - Minor; and
 - Negligible.
- 11.25. There are no quantitative criteria within the BRE Guidelines or elsewhere regarding acceptable levels of solar glare.
- 11.26. Professional judgement has therefore been applied to assign the magnitude of impact for solar glare arising from the Proposed Development and to determine the criteria for assessing the significance of solar glare set out in Table 11.2.
- 11.27. The following guide is used to ascertain the possible initial magnitude of impact for each viewpoint assessed. Where reflections occur from multiple façades and from multiple buildings, an initial magnitude of impact is given for each instance of potential solar glare..

Table 11.2 - Criteria Used for Determining the Effect of Solar Glare

Significance Guidance	Possible Factors
Major	Solar reflections are visible within 5° of a driver's line of sight.
Moderate	Solar reflections are visible within 10° and 5° of the driver's line of sight occurring for a long period of time.
Minor	Solar reflections are visible within 30° to 10° or between 10° to 5° of the driver's line of sight for a short period of time.
Negligible	No reflections are visible or if visible all occur at angles greater than 30° from the driver's line of sight and so, as stated by the CIE, will be of "little significance"..
Note - mitigating factors such as alternative and unaffected signals/traffic lights and car visor angle may result in the assignment of significance which differs from the above.	

11.28. Consideration is then given to mitigating factors that could influence the likelihood of solar reflections resulting in an instance of solar glare, these may include:

- Sunlight availability probability;
- Area of façade off which reflections are visible;
- Period of time when reflections are visible;
- Angle at which reflections are visible from line of sight;
- Views of the Proposed Development being obscured for example by trees; and/or
- The time of day at which the solar reflection will occur for example during peak traffic times.

11.29. Effects in terms of solar glare can only be adverse (negative) in nature due to this not being a comparative assessment.

11.30. All road junctions and train tracks assessed have been identified as being of high sensitivity as an action is required by a driver that is a safety concern if their visibility is impaired by solar glare. In determining the overall effect at a junction, whilst consideration is given to both controlled and uncontrolled junctions, the later, those where a driver does not have a fixed viewpoint such as a traffic light or where no specific manoeuvres are required by a driver, are less likely to be impacted by solar glare this is a safety concern but are still considered high risk.

11.31. Effects classified as Moderate or Major in scale are considered to be 'significant'. Effects classified as Minor or Negligible in scale are considered to be 'not significant'.

Baseline Conditions

11.32. The solar glare assessment is undertaken on the worst-case scenario. Solar Glare is not a comparative assessment; the fact it may occur in the baseline does not necessarily justify its occurrence as a result of the Proposed Development. Therefore, the assessment considers the effect of the Proposed Development in absolute terms.

11.33. However, it should be noted that the Proposed Development will be located on a Site where its existing state is a part-4/part-16-storey building with small areas of glazing limited to the eastern and western elevations of the taller element. Whilst reflections may be visible in the baseline condition, owing to the size of the glazing it is unlikely significant reflections would occur from the existing building in situ. Solar glare from surrounding buildings is not assessed.

Identification and Evaluation of Likely Significant Effects

Construction Phase

- 11.34. The likely effects in relation to solar glare for the surrounding road users and train/tram drivers would vary throughout the demolition and construction works, starting from installation of the first glazed façade panels and gradually increasing as all reflective cladding is installed.
- 11.35. The effects during the demolition works are considered negligible. As construction works progress, and the facades of the Proposed Development are installed, the potential solar glare effects would be similar to those once the Proposed Development is complete and operational, as presented below. It is therefore considered that the completed Proposed Development represents the worst-case assessment in terms of likely solar glare effects.
- 11.36. As such, the overall effect in terms of solar glare would range from being **temporary negligible** effects during demolition, then gradually changing to post mitigation residual effects of negligible to **permanent, moderate adverse** and **significant**, once the Proposed Development is complete, as set out in the assessment of the Proposed Development scenario below.

Operational Phase

- 11.37. The full solar glare assessment is provided in Technical Appendix 11.2.
- 11.38. The assessment has been undertaken from nearby road and rail locations which are considered sensitive in terms of solar glare. For road locations, these include traffic junctions, pedestrian crossings and motorway locations. At locations where there is more than one traffic signal from which the Proposed Development is visible, several viewpoints may be tested (noted by the reference a, b, c etc.) in order to have a better understanding of the likely impact that the Proposed Development might have upon road users' responsiveness. This is specified in the discussion below, where appropriate.
- 11.39. Following a review of an extended area of investigation (approximately 500m radius from the Proposed Development), a total of 14 road locations and two train lines were assessed. The assessment considers the potential occurrence of solar reflections from the Proposed Development owing to its size and large areas of glazing on the façade at these locations. The duration of solar reflections as well as their proximity to a driver's line of sight have been considered within the discussion below.
- 11.40. The assessment has been undertaken in a worst-case scenario considering there is no cloud cover, so assuming the sun is shining for all days of the year for the full duration of daylight hours.
- 11.41. Of the total 14 road locations and two train lines, the Proposed Development is visible within the following five locations, but no reflections occur:
- PR1 – Piccadilly Road (Southbound) junction with Auburn St, Station Approach and London Rd;
 - PSA1 – Piccadilly Station Approach (Southbound) pedestrian crossing;
 - LR1 – London Road (Southbound) junction with Fairfield St;
 - LR2 – London Road (Southbound) pedestrian crossing; and
 - LR3 – London Road (Southbound) junction with tram crossing.
- 11.42. At these locations, the effect is considered to be **permanent, Negligible** and **not significant**. These locations are not discussed further within the Chapter.
- 11.43. Eight road locations have at least one viewpoint which sees the potential for solar reflections within 30° of a drivers' line of sight but greater than 10°. At these eight locations, the effect is considered to be **permanent, Minor Adverse** and **not significant**. These locations are listed below and are not discussed further within the Chapter:
- MW1/MW2 – Mancunian Way (Westbound);

- DS1 - Downing Street (Northbound) junction with Mancunian Way slip roads;
- DS2 – Downing Street (Northbound) junction with Mancunian Way slip roads;
- DS3 – Downing Street (Northbound) junction with Grosvenor St;
- WR1 – Wadeson Road (Northbound) junction with Grosvenor St;
- MW3 – Mancunian Way (Eastbound);
- CS2 – Charles Street (Eastbound) junction with Princess St;
- GR1 – Granby Row (Eastbound) junction with Sackville St;

11.44. At the remaining single road location and two train lines, reflections occur within 10° of a drivers' line of sight which require further consideration.

CS1 – Charles Street (Eastbound) junction with Sackville St

- 11.45. One viewpoint has been assessed at this junction, CS1. Viewpoint CS1 shows the view of drivers looking straight ahead as they approach the uncontrolled junction.
- 11.46. Table 11.3 provides a summary of the duration of potential reflections that could occur within a 10° drivers field of view, where they would occur within the field of view of drivers, from which element of the Proposed Development the reflections could occur and finally, an initial significance of effect is given for each instance of reflection, prior to consideration being given to factors such as those outlined in paragraph 11.28.

Table 11.3 - Summary of Potential Reflections within 10° for drivers on Charles Street (Eastbound) junction with Sackville St

Viewpoint	Elevation	Location within 10° of driver's line of sight	Times of day that reflections occur	Times of year that reflections occur	Initial Magnitude of Effect*
CS1	C1: Western	From 6°	16:00 – just after 17:00 GMT	Mid-February to mid-March and mid-September to mid-October	Moderate
All other reflections occur outside 10° so are considered Minor Adverse.					
*Prior to consideration of any mitigating factors outlined below.					

- 11.47. At this location, for the viewpoints assessed:
- There are no signals where visibility can be affected by reflections from the Proposed Development.
 - Solid façade elements would break up reflections and lower the intensity of any reflections that do occur.
 - The reflections occur in the late-afternoon during the mid-seasons when the solar intensity is low, therefore any reflections generated would be low intensity.
 - The probability of the sun shining at the times of day and year when reflections occur within 10° of a driver's line of sight is 10% - 40%.
 - The potential reflections occur above the driver's visor line, which would mitigate the effects when deployed.
- 11.48. Based on professional judgement, in consideration of the initial magnitude of potential effects (Table 11.3) and the factors outlined above (para 11.28), the overall effect in terms of solar glare to drivers at the Charles Street (Eastbound) junction with Sackville Street is considered to be **permanent, Minor Adverse** and **not significant**. Given the dynamic nature of traffic movement, the potential effects as reported would only occur momentarily when looking precisely at the affected traffic lights, 12 metres from the junction.

E1-E3 – Eastbound Train Lines

- 11.49. Three viewpoints have been assessed along the eastbound trainline with reflections occurring within 10° of a driver's direct line of sight on this track. E3 is the view of drivers furthest from the Proposed Development, with signals MP402 and MP404 visible in the distance, approximately 220m away. E2 shows the view of drivers further along the track, approximately 50m from signals MP402 and MP404. E1 shows the view of drivers as they are about to pass by the Proposed Development towards Manchester Piccadilly Station Platforms 13 and 14.
- 11.50. Table 11.4 provides a summary of the duration of potential reflections that could occur within a 10° drivers field of view, where they would occur within the field of view of drivers, from which element of the Proposed Development the reflections could occur and finally, an initial significance of effect is given for each instance of reflection, prior to consideration being given to factors such as those outlined in paragraph 11.28.
- 11.51. Reflections at viewpoint E1 are outside 10° of a drivers' line of sight and so this viewpoint has an initial viewpoint significance of effect of Minor.

Table 11.4 - Summary of Potential Reflections within 10° for train drivers on Eastbound track towards Manchester Piccadilly

Viewpoint	Elevation	Location within 10° of driver’s line of sight	Times of day that reflections occur	Times of year that reflections occur	Initial Magnitude of Effect*
E2	C1: Northern	From 8°	Sunrise – 05:00 GMT	Mid-April to mid-August	Moderate
	All other reflections occur outside 10° so are considered Minor Adverse.				
E3	C1: Western	From 7°	16:00 – 17:00 GMT	Mid-January to late-February and early-October to mid-November	Moderate
	C2: Western	From 8°	16:00 – 17:00 GMT	Mid-February to mid-March and mid-September to mid-October	Moderate
	All other reflections occur outside 10° so are considered Minor Adverse.				
*Prior to consideration of any mitigating factors outlined below.					

- 11.52. At this location, for the viewpoints assessed:

- The reflections occurring from the northern elevation are at a glancing angle and are broken up by solid façade elements, the resulting reflections are very thin strips that would not be capable of reflecting the full intensity of the solar disc, therefore the reflections occurring from the northern elevation would be low intensity.
- Solid façade elements would break up reflections from the western elevation and lower the intensity of any reflections that do occur.
- The reflections occur in the very early mornings during the summer months or in the late-afternoon in the mid-seasons when the solar intensity is low, therefore any reflections generated would be low intensity.
- The probability of the sun shining at the times of day and year when reflections occur within 10° of a driver's line of sight from the northern elevation is 10%, from the western elevation of C1 is 10% and from the western elevation of C2 is 10-40%.
- The sun path sits within the field of view of a driver at this location. Once implemented the Proposed Development will partially obscure the direct view of the sun in the afternoon. Any reflections visible from the Proposed Development would be significantly less intense than a direct view of the sun, as is currently experienced at this location. A large portion of the sun's path would remain visible at this junction with a greater intensity than the reflections that would be generated from the Proposed Development.
- The majority of the potential reflections occur above the driver's visor line, which would mitigate the majority of effects when deployed.

- 11.53. Based on professional judgement, in consideration of the initial magnitude of potential effects (Table 11.4) and the factors outlined above (para 11.28), the overall effect in terms of solar glare to train drivers on eastbound tracks towards Manchester Piccadilly is considered to be **permanent, Minor to Moderate Adverse** and **significant**. Given the dynamic nature of train movement travelling along a set of tracks, the potential effects as reported would only occur momentarily when at each of the precise viewpoints assessed and between just two hours of the day, on sunny days for just two months of the year.

W1, P13A, P14A-C – Westbound Train Lines via Platform 13 and 14

- 11.54. Five viewpoints have been assessed along the westbound trainline with reflections occurring within 10° of a driver's direct line of sight on this track. W1 is the view of drivers as they are about to pass by the Proposed Development just after departing Manchester Piccadilly Station Platform 14. P13a is the view of drivers at the end of Platform 13, with signal MP387 visible. Similarly P14a is the view of drivers at the end of Platform 14, with signal MP387 visible. P14b shows the view of drivers approaching the end of Platform 14 and P14c is the view of drivers mid-way along Platform 14.
- 11.55. Table 11.5 provides a summary of the duration of potential reflections that could occur within a 10° drivers field of view, where they would occur within the field of view of drivers, from which element of the Proposed Development the reflections could occur and finally, an initial significance of effect is given for each instance of reflection, prior to consideration being given to factors such as those outlined in paragraph 11.28.
- 11.56. Reflections at viewpoints P14a, P14b and P14c are outside 10° of a drivers' line of sight and so this viewpoint has an initial viewpoint significance of effect of Minor.

Table 11.5 - Summary of Potential Reflections within 10° for train drivers on Westbound track at Manchester Piccadilly and just after

Viewpoint	Elevation	Location within 10° of driver's line of sight	Times of day that reflections occur	Times of year that reflections occur	Initial Magnitude of Effect*
W1	C1: Northern	From 9°	17:00 – 18:00 GMT	Mid-February to mid-March and mid-September to mid-October	Moderate
	All other reflections occur outside 10° so are considered Minor Adverse.				
P13a	C1: Northern	From 8°	17:00 – 18:00 GMT	Mid-February to mid-March and mid-September to mid-October	Moderate
	All other reflections occur outside 10° so are considered Minor Adverse.				
*Prior to consideration of any mitigating factors outlined below.					

- 11.57. At this location, for the viewpoints assessed:
- All reflections visible along Platform 14 sit outside 10° of a drivers direct line of sight.
 - At viewpoint W1, reflections within 10° occur from just one window and are is a very thin strip which would not be capable of reflecting the full solar disc.
 - Reflections visible at P13a occur directly behind the signal, however drivers would be stationary when using this signal to commence their journey.
 - All reflections occurring from the northern elevation are at a glancing angle and are broken up by solid façade elements, the resulting reflections are very thin strips that would not be capable of reflecting the full intensity of the solar disc, therefore the reflections occurring from the northern elevation would be low intensity.

- The reflections occur in the early evening during the mid-seasons when the solar intensity is low, therefore any reflections generated would be low intensity.
- The probability of the sun shining at the times of day and year when reflections occur within 10° of a driver's line of sight from the northern elevation is 10%.
- The sun path sits within the field of view of a driver at this location. Once implemented the Proposed Development will partially obscure the direct view of the sun in the afternoon. Any reflections visible from the Proposed Development would be significantly less intense than a direct view of the sun, as is currently experienced at this location. A large portion of the sun's path would remain visible at this junction with a greater intensity than the reflections that would be generated from the Proposed Development.
- The majority of the potential reflections occur above the driver's visor line, which would mitigate the majority of effects when deployed.

11.58. Based on professional judgement, in consideration of the initial magnitude of potential effects (Table 11.5) and the factors outlined above (para 11.28), the overall effect in terms of solar glare to train drivers on westbound tracks at and departing Manchester Piccadilly is considered to be **permanent, Minor Adverse** and **not significant**. Given the dynamic nature of train movement travelling along a set of tracks, the potential effects as reported would only occur momentarily when at each of the precise viewpoints assessed and between just one hour of the day, on sunny days for just two months of the year.

Summary

11.59. Table 11.6 provides a summary of the overall solar glare effects ascribed to each assessed location following the assessment outlined above.

Table 11.6 - Summary of Overall Solar Glare Effects at Assessed Locations

Assessed Location	Assessed Location Description	Overall Solar Glare Effect	Significance
Road Locations			
PR1	Piccadilly Road (Southbound) junction with Auburn St, Station Approach and London Rd	Negligible	Not Significant
PSA1	Piccadilly Station Approach (Southbound) pedestrian crossing	Negligible	Not Significant
LR1	London Road (Southbound) junction with Fairfield St	Negligible	Not Significant
LR2	London Road (Southbound) pedestrian crossing	Negligible	Not Significant
LR3	London Road (Southbound) junction with tram crossing	Negligible	Not Significant
MW1/MW2	Mancunian Way (Westbound)	Minor Adverse	Not Significant
MW3	Mancunian Way (Eastbound)	Minor Adverse	Not Significant
DS1	Downing Street (Northbound) junction with Mancunian Way slip roads	Minor Adverse	Not Significant
DS2	Downing Street (Northbound) junction with Mancunian Way slip roads	Minor Adverse	Not Significant
DS3	Downing Street (Northbound) junction with Grosvenor St	Minor Adverse	Not Significant
WR1	Wadeson Road (Northbound) junction with Grosvenor St	Minor Adverse	Not Significant
CS1	Charles Street (Eastbound) junction with Sackville St	Minor Adverse	Not Significant
CS2	Charles Street (Eastbound) junction with Princess St	Minor Adverse	Not Significant
GR1	Granby Row (Eastbound) junction with Sackville St	Minor Adverse	Not Significant
Train Locations			
E1-E3	Eastbound Train Lines	Minor to Moderate Adverse	Significant
W1/P13a/P14a-c	Westbound Train Lines via Platform 13 and 14	Minor Adverse	Not Significant

Mitigation Measures

Construction Phase

- 11.60. It is not necessary to include temporary mitigation measures during the construction phase. All mitigation embedded within the design of the facades and mitigation measures recommended for the Operational Phase would apply to the construction phase also.

Operational Phase

- 11.61. Permanent, significant adverse (minor to moderate) effects are predicted to occur for a driver on one train line. Given the location of the Site and scale of the development, potential for reflections from the Proposed Development are unavoidable and the effects are at the lowest end of significant. It should be noted that the assessment considers a scenario whereby the sun shines on every day of the year to consider all potential circumstances in which reflections will occur (i.e. 'worst case'). According to the sunlight availability protractor, based on UK weather data, the sunshine probability will be significantly reduced and therefore the likelihood of the instances of reflections are reduced accordingly. The probability of the sun shining during the times of the year when significant potential reflections are expected to occur ranges from 10% to 40%.
- 11.62. Furthermore, the assessment does not include the sun itself within any viewpoints which would also cause very intense glare to drivers at many of the affected viewpoints. For the majority of viewpoints, the sun would be directly visible at other times of the day if the Proposed Development were not present as seen in the solar glare assessment in Appendix 11.2. In comparison, the reflections from the Proposed Development would appear less intense and would not cause significantly worse effects when compared with a direct view of the sun.
- 11.63. The assessment has been based on a worst-case scenario that assumes highly reflective glazing. It is recommended that the Visible Light Reflectance (VLR) is restricted for glazing on the western elevations of C1 and C2, which will be resolved within further detailed design stages subject to detailed testing post-planning to ensure the intensity of the reflections that may occur are within the intensity tolerances. Appropriate glazing specification in the areas identified would minimise the potential for glare and the significant effects that have been reported. It is recommended that suitability of the glazing selection should be confirmed via detailed solar glare intensity testing and should be secured via a condition. The residual effects would be reduced to Minor Adverse and not significant through the use of appropriately specified glazing.

Residual Effects

Construction Phase

- 11.64. The likely effects in relation to solar glare for the surrounding road users and train drivers would vary throughout the demolition and construction works, starting from installation of the first glazed façade panels and gradually increasing as all reflective cladding is installed. Once the glazed façade elements have been installed, the potential solar glare effects would be similar to those once the Proposed Development is complete and operational therefore the overall effect in terms of solar glare would range from being temporary negligible effects during demolition, then gradually changing to post mitigation residual effects of negligible to permanent, minor adverse and not significant, once the Proposed Development is complete.

Operational Phase

- 11.65. The likely significant effects of solar glare from the Proposed Development described above are considered a worst-case scenario. All solar glare effects are considered moderate to high sensitivity depending on whether it is a controlled junction or not, and the effects are permanent and long term.

Table 11.7 - Summary of Residual Effects for Solar Glare

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase				
Negligible or Minor adverse and not significant effects on Solar Glare	Road users at nearby road junctions		N/A	Negligible or Minor adverse and not significant effects on Solar Glare
	Train Drivers on nearby Westbound tracks			
Minor to Moderate adverse and significant effects on Solar Glare	Train Drivers on nearby Eastbound tracks	Para 11.63: Proposed Glazing VLR Specification for western elevations of C1 and C2 may need to be restricted subject to further detailed testing post-planning.	Mitigation to be designed and developed in detail, secured via planning condition.	Minor adverse and not significant effects on Solar Glare

Monitoring

11.66. None required.

Reference List

11.67. This ES Chapter has been prepared in reference to the following:

- Building Research Establishment (BRE) (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice, Third Edition.
- Commission Internationale De L'Eclairage (CIE), CIE 146:2002 & CIE 147:2002 - Collection on Glare, CIE, 2002.

12. Human Health

Introduction

12.1. This Chapter of the ES has been prepared by Buro Happold and assesses how the Proposed Development could directly and indirectly impact the key determinants of health; to identify those people most likely to be affected by the Proposed Development regarding health inequality; to identify measures to enhance the positive impacts and mitigate any negative effects of the Proposed Development on public health, and to establish responsibilities for delivering and monitoring these impacts.

12.2. The authors of this Chapter are:

	Lead Author	Reviewer
Name	Ellen Newman	Jue Wang
Company	Buro Happold	Buro Happold
Qualifications/Accreditations relevant to technical area inc. IEMA	MSc International Economics, Finance and Development BA Economics & Politics	MSc Environmental Economics and Climate Change BSc (Hons) Environment, Economics and Ecology
Years of technical experience (in technical area)	3	7
Number of EIA's delivered to date	4	25+

Assumptions and Limitations

12.3. Limitations include:

- The Health Impact Assessment (HIA) does not utilise significance criteria like other standard Environmental Statement (ES) chapters. Instead, it will be conducted based on the HUDU method, which focuses on evaluating health impacts through a structured framework tailored to urban development (see Assessment Methodology and Significance Criteria for more information). Given the lack of clear industry recognised methodology of health effects in EIA, particularly in respect of significance, the methodology is different to the other ES Chapters.
- The baseline conditions may change over time and this could influence the findings of the assessment, and could lead to the findings suffering from statistical time lag.

12.4. Assumptions include:

- The assessment presented in the Human Health ES chapter will be qualitative and will be based on the framework provided by the HUDU/NHS Planning for Health Rapid HIA Toolkit.

Relevant Legislation, Policy and Guidance

Legislation

12.5. There is no specific legislation relating to health.

Policy

National Planning Policy

National Planning Policy Framework (NPPF) (MHCLG, 2024)

- 12.6. The NPPF sets out the Government’s economic, environmental, and social planning policies for England. The social objectives include supporting “strong, vibrant and healthy communities.” These policies outline the Government’s vision of sustainable development, which should be interpreted and applied locally to meet local and community aspirations.
- 12.7. Chapters from the NPPF which are important for human health are:
- Chapter 8: Promoting healthy and safe communities: This sets out the requirement that planning policies and decisions should aim to provide healthy, inclusive, and safe places, which promote social interactions, are safe and accessible, and enable and support healthy lives.
 - Chapter 9: Promoting sustainable transport: outlines support for developments in sustainable locations, reducing congestion and emissions, improving air quality and public health, and pursuing opportunities to promote walking and cycling.
 - Chapter 12: Achieving well-designed places: describes the standards of good design, including the use of design measures that can promote safe, inclusive and accessible places and thereby improve health and wellbeing. Good design includes, for example, measures that mitigate and minimise light, noise and air pollution.

Regional Planning Policy

Places for Everyone (PfE) Joint Development Plan 2022 – 2039 (GMCA, 2024)

- 12.8. The Plan is a long-term plan for nine Greater Manchester districts (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan) for jobs, new homes, and sustainable growth. Policy JP-P6 is related to health and outlines the following:
- To help tackle health inequality, new developments will be required, as far as practicable, to: maximise their positive contribution to health and wellbeing; support healthy lifestyles; and be supported by a Health Impact Assessment for all developments that require an Environmental Impact Assessment;
 - Where appropriate, the provision of new or improved health facilities as part of new development, proportionate to the additional demand they would generate;
 - Enabling and continued enhancement and successful operation of hospitals; and
 - Facilitating greater integration of health and social care, and the provision of integrated wellness hubs, including the co-location of health, community and wellness services.

Local Planning Policy

Manchester Core Strategy 2012-2027 (MCC, 2012)

- 12.9. The Manchester Core Strategy document, also known as the Core Strategy Development Plan Document (DPD), is a key planning document that sets out the long-term spatial vision and strategic policies for the City of Manchester. It provides a framework for guiding development and shaping the city’s growth and regeneration.
- 12.10. Policy SP1 outlines spatial principles to guide strategic development in Manchester. All parts of the city should make a positive contribution to neighbourhoods of choice including making a positive contribution to the health, safety, and wellbeing of residents, regardless of any protected characteristics.

- 12.11. Policy H10 outlines guidelines for housing developments for people with additional support needs. In accordance with this, proposals for accommodation for people with additional support needs will be supported where it will contribute to the vitality and viability of the neighbourhood, and where there would not be a disproportionate stress on local infrastructure, including health facilities.
- 12.12. Other relevant policies for health include Policy EC1, employment and economic growth, and Policy T2, transport and accessibility.

Guidance

Planning Practice Guidance: Healthy and Safe Communities (MHCLG, 2022)

- 12.13. The Healthy and Safe Communities guidance was first published in 2014 and last updated in 2022, setting out guidance on promoting healthy and safe communities. Paragraph 001 of the guidance considers planning and health together in two ways: “in terms of creating environments that support and encourage healthy lifestyles, and in terms of identifying and securing the facilities needed for primary, secondary and tertiary care, and the wider health and care system (taking into account the changing needs of the population)”.
- 12.14. Paragraph 003 defines a healthy place as “one which supports and promotes healthy behaviours and environments and a reduction in health inequalities for people of all ages. It will provide the community with opportunities to improve their physical and mental health, and support community engagement and wellbeing”.

Health Equity in England: The Marmot Review 10 Years On (2020)

- 12.15. The Marmot Review (2010) argues that serious avoidable health inequalities exist across England and shows these inequalities to be determined by a wide range of socio-economic factors (Institute of Health Equity, 2010). Health is linked to both individuals and communities. Policy objectives include: giving children the best start in life; improve living standards; creating fair employment; and strengthening the impact of ill health prevention.
- 12.16. The Marmot Review 10 Years On report published in February 2020, strengthens the argument provided in the Marmot Review, showing that health inequalities in England are increasing (Institute of Health Equity, 2020a). Social and ethnic inequalities in health should be addressed to ensure better health outcomes for all. The report makes the case for a multi-disciplinary approach to achieve a reduction in health inequalities, which integrates health policies with housing, economic development and transport policies.

The Public Health England Strategy 2020-2025

- 12.17. This strategy sets out Public Health England’s priorities for the next five years and how it will work to protect and improve the public’s health. 10 key priorities have been identified in the strategy, and include:
- Priority 3: “Creating cleaner air – develop and share advice on how best to reduce air pollution levels and people’s exposure to polluted air”
 - Priority 5: “Best start in life – work to improve the health of babies, children and their families to enable a happy healthy childhood and provide the foundations of good health into adult life”
- 12.18. The importance of working towards a fairer society has been outlined, which means providing the foundations for everyone to have good physical and mental health. By investing in early years, it can offer good value for money and can ensure equality from an early stage, where most inequalities in health often begin.

Spatial Planning for Health (PHE, 2017)

- 12.19. This report provides evidence of links between spatial planning and health, focusing on five key built environment topics – neighbourhood design, housing, healthier food, natural and sustainable environment, and transport. Details on each topic can be found in Appendix A.

Health Impact Assessment in Spatial Planning (PHE, 2020)

- 12.20. This document provides a guide for local authority public health and planning teams setting out process and practice with regard to the wider determinants of health and wellbeing for plan-making and the planning application process. It identifies eight categories of health and wellbeing outcomes in planning: reduce health inequalities; improve mental health and wellbeing; improve diet and weight; improve musculoskeletal health; improve respiratory health; improve cardiovascular health; protect environmental health; and provide access to health and care infrastructure and services. The guide is mostly associated with the plan-making and associated strategic environmental assessment processes. It does include an annexe on integrating HIA in EIA and this does confirm the importance of a proportionate and justified approach.

Effective Scoping of Human Health in Environmental Impact Assessment (Institute of Environmental Management and Assessment (IEMA), 2022)

- 12.21. The guidance provides a framework that supports a proportionate approach that can apply to all scales and sectors of EIA. It confirms that a wider determinants approach should be taken by EIA scoping, and for health this means deciding on the relevant health issues that are likely and have the potential to significantly affect population health.
- 12.22. An EIA health chapter is required when either other EIA technical topics have been scoped in to assess likely and potential significant effects on human receptors, or there is a likely significant change for the health of a group of individuals due to the proposed project and in a wider determinant of health not covered by other technical EIA topics.

Mental Health and Wellbeing Strategy 2024-2029 (GM Integrated Care Partnership, 2024)

- 12.23. The Strategy addresses how the Greater Manchester Integrated Care Partnership has a responsibility to deliver the targets outlined in the NHS England's 10-year plan for mental health. This latest strategy builds on the 2016-2021 strategy and seeks to address how Manchester can face challenges head on and improve the mental health and wellbeing of people living in Greater Manchester.

Greater Manchester Strategy 2021-2031 (GMCA, 2021a)

- 12.24. This strategy sets out the long-term vision and priorities for the Greater Manchester area. It outlines the region's ambitions and objectives across various domains, including the economy, environment, transport, housing, health, and social issues.
- 12.25. The strategy recognises that changing demographics and an ageing population will present major challenges to improving population health and the need for significant innovation to transform the health and social care system. The strategy aims to tackle inequalities, including the widening gap in healthy life expectancy between areas within Manchester. The strategy aims to ensure easy access to all residents to high quality culture, outdoor, sport and leisure opportunities, which will bring significant health benefits to the population of Manchester. Through the strategy, a new Integrated Care System and an Integrated Care Board are being delivered which will replace the current Health and Social Care Partnership and provide a new delivery structure for health and care systems across Manchester.

Improving Health and Care in Greater Manchester: 2023-2028 Strategy (GM Integrated Care Partnership, 2023)

- 12.26. This strategy follows on from the 'taking charge' strategy from 2015, and sets out how the region intends to work together to improve the health of people in the city-region. The strategy sets out missions and priority actions, in response to the current challenges being faced in the city-region. This includes, but is not limited to, the following:
- Strengthen our communities: help people, families and communities feel more confident in managing their own health.
 - Helping people stay well and detecting illness earlier: collaborate to reduce smoking rates, increase physical activity, tackle obesity, and alcohol dependency. Also want to do more to identify and treat high blood pressure and other conditions that are risk factors to poor health.

- 12.27. The strategy also identifies the model for health and conditions for good lives. The model for health includes improving community wellbeing, increasing primary care networks and neighbourhood teams, and having adequate dental and community pharmacy services.
- 12.28. Further details on relevant legislation, policy and guidance can be found in Appendix 12.1.

Assessment Methodology and Significance Criteria

- 12.29. Buro Happold has used the assessment matrix set out within the Rapid HIA Tool, taking into account published data and information from a variety of sources, and applying professional judgement informed by relevant guidance to evaluate the health impacts of the scheme.
- 12.30. This HIA has considered how the Proposed Development may influence the physical and mental health and wellbeing of local residents and inhabitants of the proposed scheme considering the key determinants of health.

What is the HIA?

- 12.31. The 'Healthy and Safe Communities' guidance describes the Health Impact Assessment (HIA) as a useful tool to assess and address the impacts of development proposals (MHCLG, 2019).
- 12.32. The London Plan refers to the HIA as "a systematic framework to identify the potential impacts of a development proposal, policy or plan on the health and wellbeing of the population" and as a method to highlight any potential health inequalities that may arise from the Project.
- 12.33. The HIA has two overarching purposes:
- Assess the potential impact of a programme and/or development on a) population health and b) the distribution of population health;
 - Recommend ways to mitigate these impacts, by preventing negative impacts while promoting positive impacts.
- 12.34. There are three types of HIA:
- A 'full' HIA, which involves a comprehensive analysis of all potential health and wellbeing impacts;
 - A 'rapid' HIA, which is a less resource-intensive process and involves a more focused investigation of health impacts;
 - A 'desktop' HIA, which draws on existing knowledge and evidence, often using published checklists (NHS, 2019).
- 12.35. For the purpose of this report, due to the diverse nature of health determinants and health outcomes which are to be assessed, it is not possible to quantify the severity or extent of the effects that give rise to these health impacts. Therefore, the Rapid HIA Tool produced by the NHS Healthy Urban Development Unit (HUDU) has been selected as the most appropriate method to adequately assess the health impacts and outcomes of the Project (NHS, 2019a).
- 12.36. More details on assessing the outcomes for health and wellbeing are provided in Appendix B.

Rapid HIA Workshop Tool

- 12.37. The Healthy Urban Development Unit (HUDU) was created by the GLA in partnership with the NHS with the aim of maximising the opportunities to improve health and wellbeing and to narrow health inequalities. The unit's work includes assessing health and wellbeing impacts of new developments, and centres on the production of a HUDU 'checklist' of considerations to apply at the planning stage for new developments. Each item on the list is informed by a science base, good practice, and industry standards for health and wellbeing outcomes.
- 12.38. The Planning for Health 'Rapid HIA Tool' is produced by the HUDU to assess the health impacts of new developments, ensuring that the planning proposals have an overall positive rather than a negative impact, on health.
- 12.39. The 'Rapid HIA Tool' suggests the evaluation of potential health impacts under eleven topics or broad determinants, which include:

- Housing and design affordability
- Access to health and social care services and other social infrastructure
- Access to open space and nature
- Air quality, noise and neighbourhood amenity
- Accessibility and active travel
- Crime reduction and community safety
- Access to healthy food
- Social cohesion and inclusive design
- Access to work and training
- Minimising the use of resources
- Climate change

12.40. Further details on assessing the outcomes for health and wellbeing are included in Appendix 12.2.

Scenarios Tested

12.41. The assessment will test the following scenarios:

- Scenario 1: Baseline Conditions
- Scenario 5: Baseline + Phase A + Phase B + Phase C
- Scenario 6: Baseline + Phase A + Phase B + Phase C + Cumulative
- Scenario 7: Baseline + Phase A + Phase B + Phase C + IDM Masterplan + Cumulative

12.42. The assessment will not be assessing phases individually, as outlined in the Scoping Report, due to a lack of information available to be able to assess individual phases and their impact on human health. Scenario 5 will present the greatest impact of the Proposed Development on human health and the impacts of individual phases will be a lesser impact compared to Scenario 5. The assessment of construction and operational phases will be assessed together for each health determinant following the HUDU Rapid Health Impact Assessment guidance. Health impacts may be short-term, temporary related to construction or long-term related to the operation of the Proposed Development, this will be indicated in the details/evidence section (Appendix 12.d). Scenario 7 is being tested qualitatively, where information is available on cumulative schemes and the IDM Masterplan.

The Study Area

12.43. The geographical extent of the assessed impacts depends on the type of effect and the receptors. Effects will be considered during the construction phase and once the scheme is complete (operational). The red line boundary for the Site is shown in Figure 12.3.

Surveys and Data Sources

12.44. This Chapter is accompanied by the following appendices:

- 12.1: Guidance and Regulations

- 12.2: Assessing the Outcomes for Health and Wellbeing
- 12.3: Health Determinants and their Relevance to the Proposed Development
- 12.4: Assessment of Health Determinants

12.45. The assessment considered the potential consequences for health and wellbeing from the construction and operation of the proposed scheme and draws information from the following reports:

- Air Quality ES Chapter
- Noise and Vibration ES Chapter
- Transport ES Chapter
- Socio-economics ES Chapter
- Climate Change ES Chapter
- Design and Access Statement
- Sustainability Statement
- Crime Impact Statement
- Plot C RIBA Stage 2 Report
- Environmental Standards Statement and Energy Strategy
- Community Consultation responses
- Construction ES Chapter

12.46. No primary surveys have been collected for the assessment on health.

Source of Effect

- 12.47. The approach to assessing the human health effects of the Proposed Development are based on a socio-environmental model of health. The model defines health broadly and recognises that health and well-being are attributable, not just to health service intervention, but to a wide set of inter-related factors such as lifestyle, employment, education and income.
- 12.48. Best practice principles provided in the HUDU Rapid HIA Toolkit will form the basis for the approach to assessing impacts on health and wellbeing. The eleven topics or broad determinants recommended in the HUDU Toolkit are listed in the table below, together with the key potential health impacts associated with each and the relevance to the Proposed Development.
- 12.49. For this assessment, ten of the health determinants have been scoped in. The housing quality and design determinant has been scoped out due to there being no residential units in the Proposed Development, making it irrelevant. The full list of health determinants and their relevance to the Proposed Development are included in Appendix 12.3.

Significance Criteria

- 12.50. This HIA is a qualitative rather than quantitative assessment, due to the diverse nature of the health determinants and health outcomes assessed. Although this HIA describes the likely qualitative health impacts, it is not possible to quantify the severity or extent of the effects which give rise to these health impacts. As such, the potential impacts

during construction and operation are described as either positive, neutral, negative or uncertain, as outlined in Table 12.1.

Table 12.1: Impact categories for health impact assessment

Impact Category	Impact Symbol	Description
Positive	+	A beneficial impact is identified
Neutral	0	No discernible health impact is identified
Negative	-	An adverse impact is identified
Uncertain	?	Where uncertainty exists as to the overall impact

Baseline Conditions (Scenario 1)

- 12.51. To understand the potential for health impacts, it is important to establish the assessment baseline. This section focuses on the health determinants in the area surrounding the Site in order to provide a demographic context of the existing community locally. It then considers the baseline in terms of access to infrastructure and conditions relevant to the health of the potential occupants of the Proposed Development.

Future Baseline

- 12.52. If the development does not proceed, the future baseline (2027) is expected to remain largely unchanged from current conditions. The population in Manchester is projected to shrink by 2.1% from 2023 to 2027 (ONS, 2018), and therefore baseline conditions are expected to remain largely unchanged.

Population Profile

- 12.53. The population of Manchester was 579,917 in 2023, representing a 7.3% increase in five years, from the population in 2018 (ONS, 2024). The population of Manchester grew proportionately more than that in the North West region and England between 2018 and 2023, which saw growth of 3.9% and 3.2% respectively. ONS population projections estimate that the population of Manchester will be 580,842 by 2033, representing a 0.16% increase from the 2023 figure (ONS, 2020).
- 12.54. The proportion of the population of working age (aged 16-64) in Manchester was 70.8% in 2023. This was higher than the rate in the North West and England, which were 62.5% and 62.9% respectively. This figure is projected to remain fairly consistent, falling only to 70.1% in Manchester by 2033 (ONS, 2023a).
- 12.55. According to the ONS Census 2021, Manchester has a population density of 4772.7 (measured by number of usual residents per square kilometre). This is significantly higher than the population density across the North West, which is just 525.8, and England which is 433.5 (ONS, 2021). Of the 331 local authorities across the UK, Manchester ranks highly, being the 29th most densely populated local authority. The most densely populated local authorities above Manchester mainly fall within London, and Manchester is the most densely populated local authority in the North West.
- 12.56. Data from the 2021 Census shows that the ethnic minority population forms 43.2% of the population in Manchester. This is a significant increase from the proportion recorded in 2011, where 33.4% of the population were from ethnic minority backgrounds. The proportion of the population from an ethnic minority is much higher in Manchester compared to regional and national levels, where only 14.4% and 19.0% of the population respectively are from an ethnic minority (ONS, 2021). The largest minority ethnic group was Asian, Asian British or Asian Welsh, in both Manchester and the North West, comprising 20.9% and 8.4% of the population respectively (ONS, 2021).

Economic Profile

- 12.57. In 2023, the economic activity rate of those aged 16-64 was 74.5% in Manchester, which is lower than both the regional and national levels, which were 76.7% and 79.0% respectively. This level has increased slightly in Manchester

from 2020 where the economic activity rate was 73.3% (ONS, 2024). Employment rate of those aged 16-64 in Manchester lagged significantly behind the regional and national levels in 2020, where it was just 67.0%. The regional employment rate in 2020 was 74.0% and the national employment rate was 75.6%. However, Manchester has closed this gap, and in 2023, employment rate of the working age population had increased to 71.4%, compared to regional and national levels of 73.8% and 76.0% respectively.

- 12.58. In 2023, 60.3% of the population aged 16-64 in Manchester had a degree level qualification or above (Regulated Qualifications Framework (RQF) Level 4+). This is much higher than the regional level, which was 44.4%, and the national level which was 46.7%. The proportion of those aged 16-64 with no qualifications was 4.6% in Manchester, which is lower than the regional level, at 6.7% (ONS, 2024).

Health Profile

- 12.59. According to the 2021 Census, the proportion of Manchester's population that have very good health is 50.8% and 31.4% have good health. This is broadly in line with the North West where the levels are 47.7% and 32.7% for very good, and good health respectively. This is also higher than national levels which were 48.5% with very good health and 33.7% with good health. The proportion of the population that has bad or very bad health is just 6.0%, where the regional level is 6.2% and the national level is 5.2% (ONS, 2021).
- 12.60. The life expectancy for males in Manchester is 75.2 (one year range from 2023), which is below the North West life expectancy of 77.7 and below the national average of 79.3. Life expectancy for females is 79.9, which is also below the level in the North West, which has a female life expectancy of 81.7, and below the national average of 83.2 (OHID, 2024).
- 12.61. Child health in Manchester is below the national average in terms of infant mortality rate and prevalence of obesity. Infant mortality rate in Manchester for 2021-23 was 6.9 (rate per 1,000). This is higher than the regional average which was 4.6, and the national average of 4.1. The prevalence of obesity among year 6 pupils (aged 10-11 years) in Manchester in 2023/24 was 27.0%. This is higher than the average across the North West which was 23.3% and England which was 22.1% (OHID, 2024).
- 12.62. The percentage of children (under 16s) living in low-income households was 31.1% in Manchester in 2022/23. This is significantly higher than the regional average of 20.5% and the national average of 15.6% (OHID, 2024).
- 12.63. Under 75 mortality rate from all causes in Manchester in 2023 was 510.4 per 100,000, which is higher than the regional and national rate, which were 408.1 and 341.6 respectively. Under 75 mortality rate from circulatory diseases and from cancer were also higher in Manchester compared to the North West region and across England. The under 75 mortality rate from cardiovascular diseases was 112.6 and from cancer was 162.1 in 2023. The rates in the North West from cardiovascular diseases and cancer respectively were 93.8 and 134.5, and in England they were 77.4 and 120.8 (OHID, 2024).

Social Determinants

Deprivation and Health (MHCLG, 2019)

- 12.64. The Index of Multiple Deprivation (IMD) is a national dataset published by the Ministry of Housing, Communities & Local Government (MHCLG), which ranks local authorities and lower-level super output areas (LSOAs) in England from most deprived to least deprived. There are seven domains of deprivation, which combine to create the IMD. These domains are: income; employment; education; health; crime; barriers to housing & services; and living environment.
- 12.65. Manchester ranks poorly on the IMD, being the second most deprived local authority overall in the whole of England in 2019, and 43.3% (122 of 282 LSOAs) of its LSOAs are in the 10% most deprived, up from 41% (115 of 282) in 2015. Manchester was the most deprived local authority in 2015. Manchester performs poorly in terms of health deprivation and crime deprivation, ranking 5th and 1st respectively in 2019. However, it performs slightly better for other areas of deprivation, ranking 72nd for education and 55th for employment.
- 12.66. The Site falls within the Piccadilly ward in Manchester and the 055C LSOA. In 2019, this LSOA is in the 40% most deprived across England and is in the 10% most deprived for crime, barriers to housing and services, and living

environment. However, this LSOA is in the 10% least deprived LSOA for employment and income. This LSOA has improved since 2015, when it was in the 30% most deprived overall.

- 12.67. There are high levels of deprivation in the surrounding area of the Site. To the south of the Site, LSOAs are in the 10% or 20% most deprived, and to the north, east, and west of the Site, LSOAs are either in the 30% or 40% most deprived.

Lifestyle

- 12.68. Those who have a physically active lifestyle are at a lower risk of cardiovascular disease, coronary heart disease and stroke, compared to those who do not. According to the WHO, adults aged 18-64 should engage in at least 150 minutes of moderate-intensity activity per week (WHO, 2020). Anything above this level of physical activity is negatively correlated with the incidence of non-communicable diseases such as diabetes, obesity, hypertension and mental health disorders.
- 12.69. In Manchester, 62.1% of adults were considered active (at least 150 minutes of exercise per week), which is comparable with the North West region, and slightly below the average across England which was 63.4% in 2022/23. 10.4% of adults were fairly active (30-149 minutes of exercise per week), which is only slightly below the levels across the North West and England, which were 10.8% and 10.9% respectively. 27.5% of adults in Manchester are inactive (less than 30 minutes of exercise per week), which is slightly higher than the North West and England, which were 27.1% and 25.7% respectively (Sports England, 2022).
- 12.70. In the academic year 2023-24, 51.9% of young people (aged 5-16) across Manchester were considered active, which was higher than levels across the North West and England, which were 47.6% and 47.8% respectively. Manchester also had a slightly lower proportion of young people who were less active (28.0%) compared to the North West (30.1%) and England (29.5%) (Sport England, 2022).
- 12.71. Inequalities in active adults across Greater Manchester have been widening for some demographics. Since 2018/19, just one ethnic group has seen levels of inactivity decline – white other, by negative 2.4%. However, other groups have seen large increases in inactivity, with the most concerning being those from ‘Other’ or ‘Black’ ethnic backgrounds, where inactivity levels have increased by 18.6% and 16.6% respectively. Across Manchester local authority, the socio-economic inactivity gap has decreased by 1.2%, caused by inactivity increasing by 0.9% among higher socio-economic groups, and decreasing by 0.2% among lower socio-economic groups. However, the gap in inactivity between socio-economic groups still remains at 21.3% (GM, 2020).
- 12.72. The proportion of adults (18+) in Manchester who are overweight or obese was 63.3% in 2022/23, which is slightly lower than the average across the North West, which was 66.5%. The level across Manchester is also lower than the national average, which was 64.0% (OHID, 2024).
- 12.73. Smoking is strongly associated with lung cancer (as well as other cancers), chronic obstructive pulmonary disease (COPD) and heart disease. Children are particularly vulnerable to second-hand smoke, which is linked to approximately 300,000 GP consultations and 9,500 hospital admissions each year in the UK. This costs the NHS £23 million annually in the region (Royal College of Physicians, 2010). Smoking prevalence in Manchester among adults in 2022 was 11.9%. This is in line with the levels across the North West (11.8%), and England (11.6%) (OHID, 2024).

Disability Inequality

- 12.74. As per the Equality Act 2010, a person is considered to have a disability if they have a self-reported long-standing illness, condition, or impairment that causes difficulty when carrying out day-to-day activities. The proportion of the population of Manchester living with a disability which limits day-to-day activities a lot was 8.2% in 2021, and disabilities which limit day-to-day activities a little was 9.4%. These levels are closely comparable with regional and national levels (ONS, 2021).
- 12.75. In 2023, the unemployment rate for the working age population (aged 16-64) with a work-limiting disability was 11.7% and for those with a disability as defined by the Equalities Act (EA) was 8.7%. These unemployment levels are higher than regional and national levels. In the North West, unemployment rate for the population with a work-limiting disability was 8.3% and those with an (EA) disability was 6.4%, and for England, the unemployment rates were 7.3% and 5.8% respectively (ONS, 2023).

Infrastructure Baseline

Access to Healthcare Services

- 12.76. NHS Greater Manchester serves a total of 3,297,950 patients registered across 406 GP practices. There are a total of 2,107 GP FTEs across Greater Manchester, which equates to an average patient list size of 1,565 per FTE GP (NHS, 2025b).
- 12.77. The initial assessment indicates that there are seven GP practices situated within a 1.5km walking radius of the Proposed Development Site, shown in Table 12.2. The nearest GP practices are The Doc's Surgery located 0.5km from the Site, and Vallance Medical, located 0.8km from the Site.
- 12.78. The target set by the Department for Health (DfH) for registered patients per FTE GP is 1,800, which signifies available capacity. Three of the surgeries located within walking distance from the Site fall within this threshold – The Doc's Surgery, New Islington Medical Centre, and The Arch Medical Practice. Table 12.2 shows details of all the GPs within 1.5km of the Proposed Development (NHS, 2025a).

Table 12.2: General Practitioners within walking distance (NHS, 2025a & NHS, 2025b)

GP Practice	Distance (km)	Registered Patients	FTE GPs*	Patients per FTE GP
The Doc's Surgery	0.5	13,472	8	1,727
Vallance Medical	0.8	14,982	4	3,625
Brunswick Medical Practice	0.8	7,927	3	2,417
Cornbrook Medical Practice – Boundary Surgery	1.0	17,728	7	2,547
City Health Centre	1.1	15,697	5	3,393
New Islington Medical Centre	1.3	11,879	7	1,678
The Arch Medical Practice	1.4	23,230	13	1,789
Total		104,915	47	2,239

* Numbers may not add up due to rounding

- 12.79. As of February 2025, all of these practices are accepting new patients.
- 12.80. There are nine NHS dental practices within 1.5km walking distance from the Site: The Vallance Dental Centre (0.8km); City Centre Dentists (0.8km); mydentist, Stevenson Square (1km); Ocean Dental Implant and Aesthetic Clinic (1.1km); 207 Dental Care (1.1km); Bupa Dental Care (1.3km); New Cross Dental Surgery (1.3km); Manchester DP Ltd (1.3km); and Revive Dental Care Limited (1.3km) (NHS, 2024b).
- 12.81. In addition, the following secondary healthcare providers are situated within 5km of the Proposed Development:
- Several drug and alcohol addiction services are located nearby to the Site. The closest is the LGBT Foundation located 0.5km from the Site, which is part of the Manchester Drug and Alcohol Service and supports LGBT individuals affected by drugs or alcohol. Eclipse is located 1.3km from the Site and provides support to people aged 25 and under for drug and alcohol support.

Several opticians, including a Specsavers located 1.1km from the Site that also provide audiology services.

Seven contraception and sexual health clinics (NHS, 2024b)

- 12.82. Greater Manchester Integrated Care Partnership offers a range of services including living with long COVID, mental health support, and vaccinations, among others. The Greater Manchester mental health support hub provides resources for a number of different topics including eating disorders, talking therapy, bereavement, and suicide prevention. There are also a number of telephone numbers and links to external support platforms including SilverCloud, Kooth, Qwell, and the Greater Manchester Bereavement Service.

Open Space

- 12.83. An open space audit was conducted in 2022 in Manchester and identified that there are over 150 parks and significant areas of semi-natural and amenity open space in Manchester. The report highlights the importance of all communities being able to access high quality open space. There have been some new open spaces created recently, including Mayfield Park, and City River Park at Victoria North (MCC, 2023b).
- 12.84. The 2009 open space audit outlined the local standards for different types of open spaces, outlining the quantity standard measured by hectares per 1,000 population, and the accessibility standards measured by walking time and driving time away from the space. This criteria is applied to city parks, local parks, natural and semi natural open space, amenity green space, provision for children, provision for young people, and outdoor sports facilities.
- 12.85. In 2009, there were 19 local parks in Central Manchester, covering 45 hectares. Central Manchester is likely to experience the most population growth and therefore demand for open space, and the provision of sufficient open space will be most needed in this area due to the high density of housing. There is currently insufficient provision of open space in Central Manchester (MCC, 2009).
- 12.86. The MCC's local standards suggest that open space should be a 10-15 minute walk away. Approximately 300m away from the Proposed Development there is the newly developed Mayfield Park, which is the first city park in Manchester in over 100 years, and offers 6.5 acres of parkland including a kids play zone.

Table 12.3: Surrounding parks and open spaces (within 1.5km of the Site) (MCC, 2009; MCC, 2024)

Open Space typology	Distance guideline (walking/driving minutes)	Distance from Site (KM)	Distance from Site (approx. minutes walk or drive)	Park Name
City Parks	15 minute drive	0.3	7 minute walk	Mayfield Park
		0.5	8 minute drive	Ardwick Green Park
		1	10 minute drive	Pin Mill Brow
Local park and outdoor sports facilities	10 – 15 minute walk	0.5	13 minute walk	Gartside Gardens
Local Park	10 minute walk	0.2	3 minute walk	The Vimto Park
		0.4	6 minute walk	Sackville Gardens
		0.7	13 minute walk	All Saints Park
		0.7	14 minute walk	Piccadilly Gardens
		1.4	26 minute walk	St. John's Gardens

Open Space typology	Distance guideline (walking/driving minutes)	Distance from Site (KM)	Distance from Site (approx. minutes walk or drive)	Park Name
		1.4	24 minute walk	Parsonage Gardens
		1.5	29 minute walk	Ancoat's Green
Provision for Children	10 minute walk	0.4	11 minute walk	Medlock Play Area

Sports and Play Space Facilities

- 12.87. There are over 20 gyms within 2km of the Proposed Development, considered to be a typical walking distance to these types of facilities. Some of the closest gyms (within 1km) are: Gym 72 (Sackville Street); Anytime Fitness Manchester Central (Piccadilly Place); and Bannatyne Health Club (Whitworth Street).
- 12.88. These gyms and sports centres provide a range of services including gym space and weights, boxing and other martial arts facilities, swimming pools, sports hall facilities for games including badminton and basketball, football pitches, squash courts, and other sports facilities. In addition, Gartside Gardens has basketball and tennis courts.
- 12.89. There are several playgrounds within walking distance of the Site. The closest is Mayfield Park, situated approximately 300m from the Site.

Social Infrastructure and Community Facilities

- 12.90. Public libraries across Manchester City Centre are managed by MCC. There are five public libraries within 2km of the Site: Central Library (0.8km); City Library (0.9km); Z-arts Children's Library (1.6km); Hulme High Street Library (1.9km); and Moss Side Powerhouse library (2km).
- 12.91. The two closest community centres are Aquarius, and The Village Hall community centre. Aquarius run courses and clubs for the community including karate club, art classes, and dance classes. The Village Hall community centre is a similar facility, running a range of activities for the local community.
- 12.92. There are 15 churches within a 1.5km distance from the Site. The closest is Fabric Church which is approx. 500m from the Site. In addition, there are seven mosques within 1.5km of the Site. The nearest synagogue is approx. 1km away from the Site, with a larger cluster of synagogues located north of the city centre, approx. 4km from the Site.

Access to Work

- 12.93. About 74.5% of the working age population (16-64) in Manchester were economically active in 2023, which is lower than the rate across the North West and England, which were 76.7% and 79.0% respectively. This has however increased in Manchester since 2020, where the economic activity rate was 73.3%. Unemployment has fallen considerably in Manchester from 2020 to 2023, falling from 8.6% to 4.1%, but it still remains slightly higher than across the North West and England, where unemployment is 3.9% and 3.8% respectively.

Access to Healthy Food

- 12.94. There are several supermarkets and convenience stores within easy walking distance of the Proposed Development. The nearest is a Sainsbury's Local located approx. 200m from the Site. The nearest larger supermarket is Aldi, located just under 1km away from the Site.

Accessibility and Transport

- 12.95. The Site is accessible to pedestrians via footways surrounding the Site. There is a footway to the northeast which is 1.5m to 2m wide and goes southwards along the Proposed Development and at the southern extent there are signalised crossings to allow crossing of the A57(M) motorway slip road. The footway then continues along London

Road southwards. From the west, there are 3m wide footways along Altrincham Street and Sackville Street. Pedestrian access from the South is severed by the A57(M).

- 12.96. There is a cycle route on Sackville Street, but the infrastructure is not cohesive and is generally of poor quality. There is a lack of routes on the east-west axis around the Proposed Development, with only one short section along Altrincham Street. To the south along London Road, there is a segregated route that aligns with the pedestrian footway that is set back from the carriageway. At present, this is for northbound cycle traffic only. The Site has excellent public transport access, scoring an 8 on the Greater Manchester Accessibility Level (GMAL) scale (1 is the lowest level of accessibility and 8 is the highest). The Site is located within 100m of Manchester Piccadilly train station and its associated tram stop, and there are buses travelling both northbound and southbound along London Road.

Air Quality

- 12.97. An Air Quality Management Area (AQMA) has been declared across Manchester city centre owing to high levels of the concentration of NO₂ (nitrogen dioxide). The entirety of the Site is within the AQMA. Monitoring of air quality from monitoring Sites near to the Proposed Development show the annual mean concentrations of NO₂ were below AQO (air quality objective) levels at the majority of Sites in 2023. Overall, pollution concentrations have decreased over five years from 2018-2023. Among the monitoring Sites that began operating before 2020, the lowest concentrations were recorded in 2020, attributed to behavioural changes during the Covid-19 pandemic. There were slight increases in NO₂ concentrations from 2021 to 2022, but annual average concentrations in 2023 remain lower at all monitoring Sites compared to 2019 levels. Long-term and Short-term AQOs for PM₁₀ (particulate matter less than 10 micrometers or less in diameter) have been achieved at monitoring Sites since 2018, and a general decrease in annual concentrations has been observed in the recent five years. There are no industrial pollution sources within 500m of the Site.

Identification and Evaluation of Likely Significant Effects

- 12.98. Where an impact has been identified, actions have been recommended to mitigate any negative impact on health, or possible opportunities to enhance health benefits. It should be noted that in many cases, mitigation to reduce these impacts, or measures to enhance certain benefits, already form part of the Proposed Development and the assessment has considered these impacts as such. The complete assessment for each of the topics below is included in Appendix 12.4.

Access to Health and Social Care Services and Social Infrastructure

- 12.99. The Site does not currently include any existing social infrastructure, and social infrastructure and healthcare services will not be included in the Proposed Development. As the Proposed Development does not include any housing, there will not be any new residents in the local area as a result of the Proposed Development, and therefore it is unlikely to place additional pressure on healthcare services and social infrastructure in the surrounding area. The effect on the provision of social care services and social infrastructure will therefore be neutral. Community spaces are included in the Proposed Development including the Manchester Room located on the East side of the Proposed Development. This will encourage social interaction, which will help to improve mental health, therefore having a **positive effect** on human health.

Access to Open Space and Nature

- 12.100. The existing open space on the Site will be enhanced with the Proposed Development to form Sister Square, which will be a city-scale civic square which will be accessible for all. Sister Square has been designed to have several uses: it will include planted areas and retain existing trees to provide greenery around the Site, will have the capacity to host events, and it will feature a surface-level water feature. Sister Square also connects the Site with the wider SRF area, and there will be other accessible links around the Proposed Development to link to different levels of public realm and green space. Natural spaces will be spread across the whole Plot, and public realm between the Viaduct and Holloway Wall will create a pocket entrance court and improved setting for part of the revitalised Holloway Wall. Open space has been designed to be open and accessible for all, including an accessible route from the facade of C1 going down to Sister Square, and pedestrian links to make the public realm accessible from outside the Site. Lighting has also been designed to improve safety around the public realm. By providing open, accessible and well maintained

public realm and green spaces, the Proposed Development will have a **positive effect** on human health, by promoting physical activity, reducing stress, and improving mental wellbeing.

Air Quality, Noise and Neighbourhood Amenity

- 12.101. The effect of construction dust on human health has been scoped out of the ES, as per the Air Quality ES Chapter. However, a construction dust risk assessment is included in Appendix 8.2 as part of the Air Quality Assessment, and provided all recommended measures are inherently part of the development and considered embedded mitigation, the effect on human health will not be significant. This includes conducting inspections to monitor dust, avoiding the use of diesel or petrol-powered generators, and producing a Construction Logistics Plan to manage the sustainable delivery of goods and materials. The operation of the Proposed Development will generate additional traffic on the local road network, but the operational trip generation falls below EPUK and IAQM criteria (Environmental Protection UK and Institute of Air Quality Management), and effects on Human Health are considered **neutral**. The Proposed Development relies entirely on electric power, which will minimise potential air quality impacts.

Accessibility and Active Travel

- 12.102. The Proposed Development can be accessed via footways and cycle lanes around the Site, making the Site accessible for pedestrians and cyclists. This includes Altrincham Street which will create an enhanced east-west connection, as a principal pedestrian and cycle route through the SRF area. Cycling is also encouraged through cycle storage and changing rooms included in Phase A and Phase B. Encouraging walking and cycling has a positive effect on human health through promoting physical activity to, and around the Site. The Site is well connected to public transport, including train stations, tram stops, and bus stops, and is designed to be car free where possible. The access to public transport and car free design will have a positive effect on human health. The Site is also designed to be accessible for all, including through the design of buildings and accessibility considerations so everyone can access the public realm, which will have a **positive effect** on human health.

Crime Reduction and Community Safety

- 12.103. Crime reduction and community safety are considered throughout the design of the Proposed Development. Safety measures include lighting on pathways and public realm to improve visibility. The Proposed Development also features large buildings that will attract a large number of people and will make people feel secure through the critical mass of people around, and the redevelopment of the arches will provide active frontages in an area where there is currently no activity. These measures will have a positive effect on human health, by making people feel more safe and secure as they move around the Site. The Site also includes attractive, multi-use public spaces and buildings including Sister Square, and Flexible Use space inside the buildings. This includes community use space and the Collision Engine space which is designed to encourage mixing and collaboration among users of the buildings and members of the public. These spaces will encourage social interaction and gathering, which will have a **positive effect** on human health.

Access to Healthy Food

- 12.104. Food and beverage establishments could be included in the flexible use space in Phases A, B, and C. However, it is not known at this stage which food and beverage establishments may occupy these spaces and it is therefore not known whether they will sell healthy food, and avoid selling hot-food takeaways. The effect on human health is therefore **uncertain**.

Access to Work and Training

- 12.105. It is expected that Scenario 5 will support approximately 245 FTEs over an approximate 5-year build period, and some of these could be in association with construction training or apprenticeship schemes. Phase A is expected to create 634 net additional FTE jobs, Phase B will generate 1,028 FTEs, and Phase C will generate 27 jobs. These will improve financial stability, reduce stress, and improve mental wellbeing, therefore having a positive effect on human health. Office and commercial space are included across the Proposed Development, but it is not known at this stage which businesses will occupy these units. Some units may be occupied by local businesses, but this is not known and therefore has an **uncertain effect** on human health.

Social Cohesion and Inclusive Design

- 12.106. The Proposed Development includes a lighting strategy which will illuminate key landmarks, pathways, and vertical surfaces across the Site. This strategy aims to tie the area together and add to the brand identity of the Proposed Development. The Site will also connect with existing communities via pedestrian and cycle paths which connect to the Site, and accessibility improvements will be made including through a level change from Altrincham Street upper level down to Sister Square at the lower ground level. Social cohesion and connectivity will be improved through community use spaces throughout the Site, including the Manchester Room on the East side of the Proposed Development. Sister Square provides a space for outdoor community events, which could include film screenings, food festivals, or fitness classes. These will encourage social interaction which will improve mental health and wellbeing and therefore have a **positive effect** on human health.

Minimising the Use of Resources

- 12.107. The Site currently comprises the landscaped area known as the Bowling Green, the Barnes Wallis and Wright Robinson Building, Manchester Meeting Place, and Morton Labs. These are all associated with the former UMIST Campus (University of Manchester Institute of Science and Technology). The Site also contains the Grade II Holloway Wall and the Manchester South Junction and Altrincham Railway (MSJ&AR) Viaduct. The Proposed Development makes best use of the existing structures by revitalising the railway arches to include retail, food and drink space. However, the demolition of the buildings and construction of office blocks will increase the resources being used compared to the status quo, and therefore the effect is considered neutral. Opportunities have been proposed for recycling of materials, including the reuse of bricks, façade panels from Wright Robinson building, cobble pavers, glass blocks, and paving slabs. Sustainable materials have also been considered as well as the use of high quality and high durability materials to ensure longevity. Recycling will be maximised during the operational phase through dedicated storage space and facilities for each of the towers. Encouraging recycling can improve human health directly and indirectly by minimising the environmental impact, thereby having a positive effect on human health.

Climate Change

- 12.108. A fabric-first approach to the Proposed Development aims to minimise energy demand, and energy efficiency has been maximised with high-efficient air-source heat pumps for heating and cooling, and LED lighting. Photovoltaics have also been proposed for the roof of the C2 tower. Buildings around the Proposed Development have been designed to respond to summer and winter temperatures through using buildings materials that are optimised to reduce heat loss in the winter months and reduce heat gains in the summer months, and will reduce the heating and cooling requirements. A dense tree canopy will also be planted on Altrincham Street which will break down uncomfortable wind, and shade-tolerant planting will be used. The Proposed Development also enhances biodiversity, by allowing wildlife to move freely throughout Sister Square, and through the retention of trees across the Site. SuDS (sustainable urban drainage solutions) are used throughout the Proposed Development, including rain beds along Mill Lane, and unpaved surfaces maximised throughout to limit runoff. The overall effect of factors relating to mitigating climate change will result in a positive effect on human health.

Cumulative Effects

Scenario 6 (Baseline + Phase A + B + C + Cumulative)

- 12.109. This section considers the cumulative effects of the Proposed Development with other schemes with regard to health. For the build-out period of all cumulative schemes considered under this section, there is likely to be a cumulative effect on the health of local communities as a result of the various impacts of the cumulative schemes on identified health determinants. The main health impact of the cumulative schemes on the existing and future communities would be the additional demand for local infrastructure and services, as well as employment opportunities. Additional employment opportunities will have a positive effect on mental health, through providing greater financial security, and providing social connections through work.
- 12.110. The occupation of the cumulative schemes would introduce additional sensitivity receptors to the study area. Several applications (Apex Tower introducing a 26-storey residential tower for 72 apartments, and Ferrous building a 15-storey building for 107 apartments) are for significant levels of new residential development and associated infrastructure. These applications are generally supported by various social and community infrastructures. If negative

health impacts are identified, they will be addressed with either embedded mitigation or additional measures, resulting in a residual neutral effect on health. The cumulative effect on all aspects of the health assessed is considered to be neutral.

Scenario 7 (Baseline + Phase A + B + C + Cumulative + IDM Masterplan)

- 12.111. The assessment of Scenario 7 considers the full Proposed Development (Scenario 5), with the cumulative effects and the wider SRF area.
- 12.112. As outlined in the Socio-economic ES Chapter, Plot C will focus on office space, targeting knowledge-based service sector activities, whereas the wider SRF area will deliver floorspace with a greater emphasis placed on R&D and innovation spaces. Based upon indicative development parameters, the wider SRF area could deliver c.186,000sqm of innovation and office floorspace. Under Scenario 5, Plot C will provide nearly 50,000sqm, constituting approximately 30% of the SRF area. Whilst the additional floorspace from the wider SRF area has the potential to generate a substantial amount of additional employment, Scenario 7 is unlikely to be significant in relation to the potential employment generation associated with Scenario 6 (Scenario 5 plus cumulative developments).
- 12.113. The wider SRF area will be connected, open and accessible, and will introduce new shared open and play spaces in addition to those identified in Scenario 5 and Scenario 6. There is also the potential for the inclusion of local amenities in the wider SRF area, including healthcare and well-being facilities, local convenience shopping, and the addition of leisure, food and drink places where people can gather. The SRF will also enhance walking and cycling routes to and around the Masterplan Site, and will provide designated routes for wheelchair users, to allow access for people with all mobility needs. These will create a positive impact on health under Scenario 7, impacting physical and mental health, allowing for greater social cohesion, employment opportunities, and more physical activity.
- 12.114. Health impacts arising from air quality, noise, transport, and the other aspects covered in the assessment, will need to be explored further through health impact assessments for the respective planning applications for the other plots in the SRF area.

Mitigation Measures

Construction Phase

- 12.115. The key mitigation measure recommended for the construction phase is to follow the recommendations outlined in the Appendix 8.2 of the Air Quality ES Chapter, to minimise the impact of construction dust, and to prepare a Construction Environmental Management Plan, as outlined in the other ES Chapter (including noise and vibration).
- 12.116. Recommendations for enhancing health impacts have been included in the tables above where relevant for the construction period.

Operational Phase

- 12.117. No mitigation is needed for the operational phase in relation to human health. Recommendations for enhancing health impacts during the operational phase have been included in the tables in Appendix 12.3.

Residual Effects

Construction Phase

- 12.118. Residual effects during the construction phase after implementing the mitigation measures are provided in Table 12.5.

Table 12.4: Residual effects during operation

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Construction dust.	Local residents	Follow the recommendations outlined in Appendix 8.2 of the Air Quality ES Chapter.	Implementation as outlined in Appendix 8.2 of the Air Quality ES Chapter. Mitigation will be secured through a CEMP. A Construction Logistics Plan will further enhance the mitigation against construction dust. To be submitted and approved by the LPA as condition of planning permission prior to works taking place.	Negligible
Construction noise	Local residents	Follow recommendations outlined in the Noise and Vibration ES Chapter: Implementing an approved CEMP and BPM. Where construction is predicted to have a significant adverse effect, implementation of monitoring should be considered.	Adherence to BPM guidance and agreed methodologies in CEMP. Mitigation will be secured through a CEMP. to be submitted and approved by the LPA as condition of planning permission prior to works taking place.	Local, Temporary, Moderate or Minor Adverse

Operational Phase

12.119. No mitigation has been recommended for the operational phase in relation to human health. Residual effects during the operational phase are provided in Table 12.5.

Table 12.5: Residual effects during operation

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase				
No negative impacts have been identified for human health.	Local residents	n/a	n/a	n/a

Monitoring

12.120. No monitoring is recommended for the human health effects.

Reference List

12.121. This Chapter has been prepared in reference to the following:

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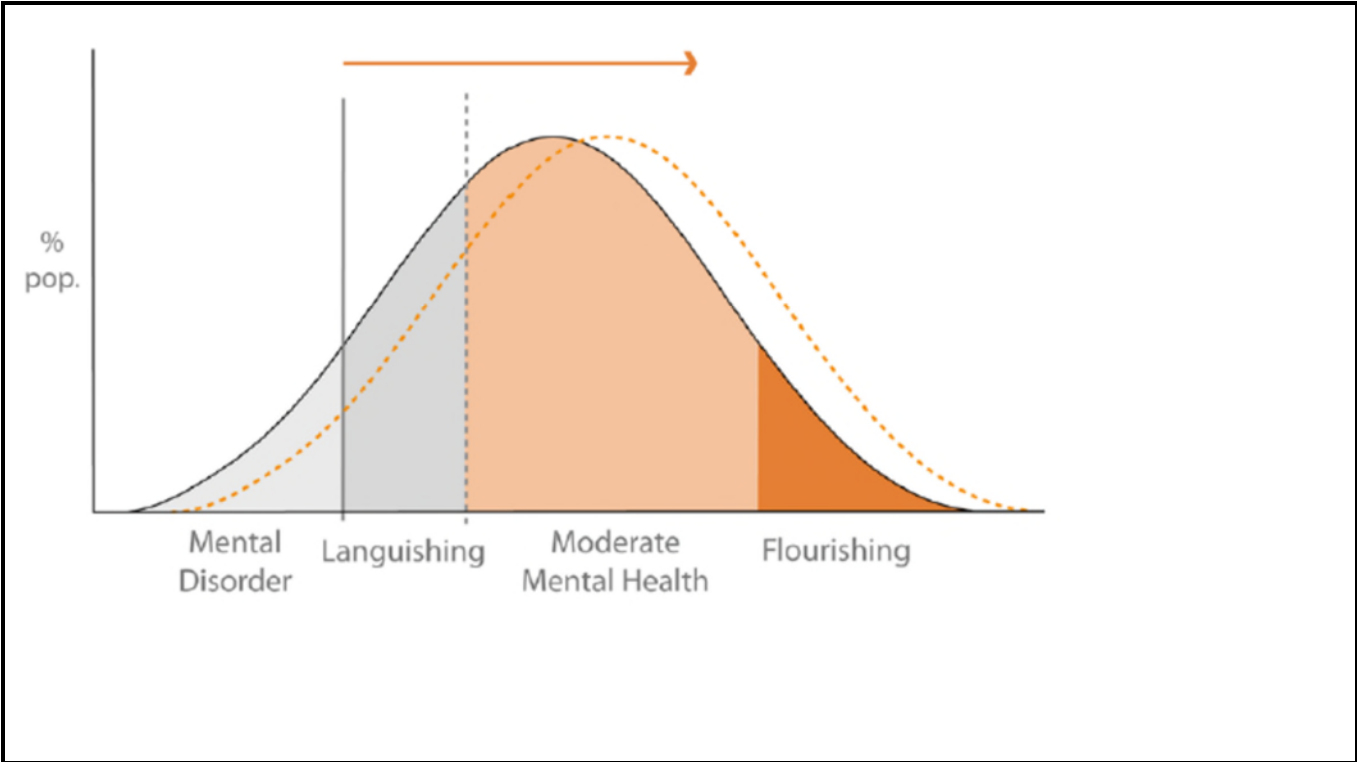


	Figure:	12.1		
	Title:	The Mental Health Spectrum (Hubbert, 2014)		
	Project:	Sister Plot C, Manchester		
	Date:	April 2025	Scale:	Not to Scale

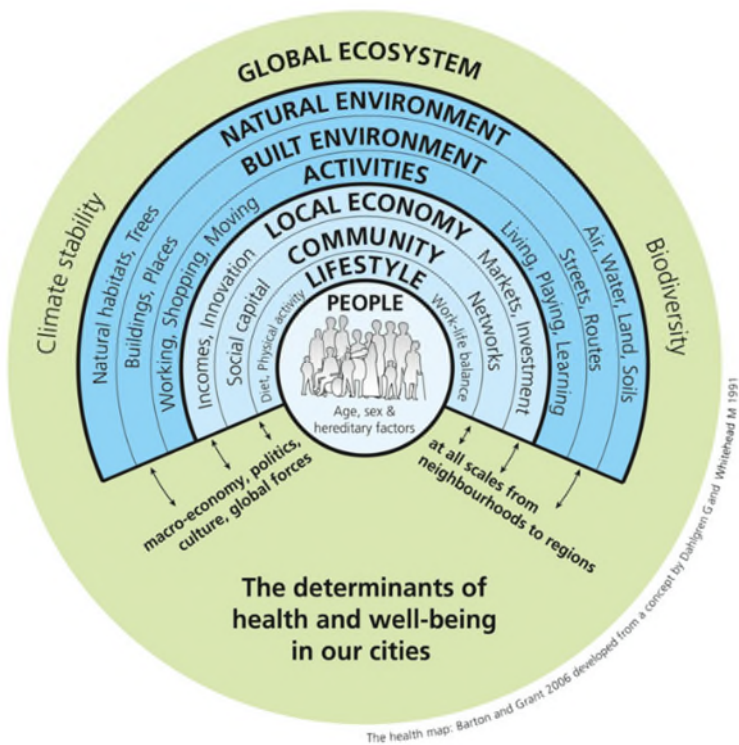


Figure:	12.2		
Title:	The Health Map (Barton & Grant, 2006)		
Project:	Sister Plot C, Manchester		
Date:	April 2025	Scale:	Not to Scale

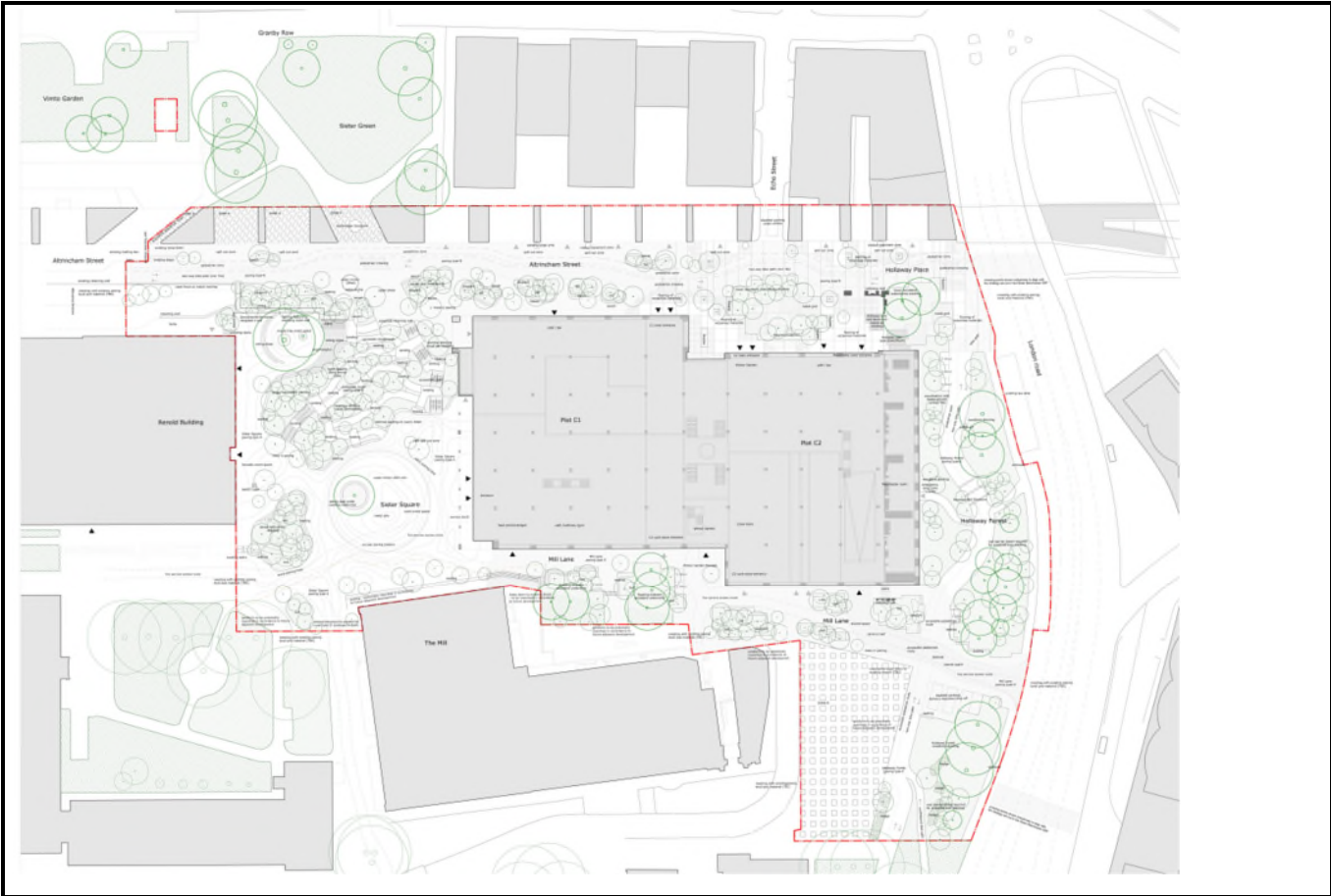


	Figure:	12.3		
	Title:	Red Line Boundary		
	Project:	Sister Plot C, Manchester		
	Date:	April 2025	Scale:	Scale

13. Socio-Economic

Introduction

- 13.1. This Chapter of the ES has been prepared by ekosgen, part of GC Insight, and assesses the likely Socio-Economic impacts of the Proposed Development upon the EIA Site and surrounding area during the construction and operational phases. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.

Table 13.0: Technical competence of chapter authors

	Lead Author	Reviewer
Name	Will Christiansen	Kirsten Powell
Company	ekosgen (part of GC Insight)	ekosgen (part of GC Insight)
Qualifications/Accreditations relevant to technical area incl. IEMA	BSc (Hons) Geography, MSc Real Estate, Member of the Institute of Economic Development	BA (Hons) Geography, Member of the Institute of Economic Development
Years technical experience (in technical area)	7	24
Number of EIA's delivered to date	25+	25+

Assumptions and Limitations

- 13.2. There are no specific significance criteria relating to the assessment of socio-economic effects. Therefore, the assessment is made against a benchmark of current socio-economic baseline conditions prevailing at and within relevant study areas, using professional judgement and experience of working in the technical area. Wherever possible socio-economic impacts are quantified through the application of industry best practice; however, where the quantification impacts is not possible then impacts are assessed in qualitative manner, using professional judgement and experience of working in the technical area.
- 13.3. The assessment of effects is carried out against the socio-economic baseline conditions as defined by the most recent official published data sources that, as with any data set, are subject to change.
- 13.4. The assessment of effects assumes that the Proposed Development would be constructed in accordance with the planning permission applied for.

Relevant Legislation, Policy and Guidance

Legislation

- 13.5. There is no relevant legislation in relation to the assessment of socio-economic effects.

Policy

National Planning Policy

- 13.6. The **National Planning Policy Framework** (NPPF) provides a summary of the Government's planning policies for England and how they should be applied.
- 13.7. In 2024, the Government launched a reformed NPPF, which among other things, included an increased emphasis on proactive support for sustainable economic growth, encouraging development of modern industries and infrastructure such as laboratories, gigafactories and digital infrastructure. Ultimately, improved digital infrastructure will help to support the growth of knowledge, creative and technology driven sectors.

- 13.8. Paragraph 8 states that achieving sustainable development means that the planning system has 3 objectives, which are interdependent and need to be pursued in mutually supportive ways:
- An economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
 - A social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
 - An environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.
- 13.9. Chapter 6 "Building a strong, competitive economy" provides insight into the expectations of developments. In paragraph 85, it states that areas should build on their strengths, counter any weaknesses and address the challenges of the future, particularly where Britain can be a global leader in driving innovation.

Regional Planning Policy

- 13.10. **Places for Everyone** is the long-term plan of nine Greater Manchester districts¹) for jobs, new homes and sustainable growth. The Places for Everyone Plan took effect and became part of the statutory development plan for each of the nine districts in March 2024. The plan sets out a strategic policy framework for the nine districts and helps these areas to meet their local housing and employment needs by identifying land and infrastructure. The plan outlines the role of the city centre as the most significant economic location in the country outside of London and the need for it to be strengthened significantly.
- 13.11. There is a strong focus in this plan on economic prosperity and the need to create new employment locations across the region so that all communities can contribute to, and benefit from, growth. Furthermore, it determines that Greater Manchester will need to continue to invest in the sites and critical infrastructure that will make it an even more attractive place for businesses to invest, bringing high-value, well paid jobs, to the city region.
- 13.12. Policy JP-Strat2 (City Centre) of the plan identifies Manchester city centre as the most significant economic location in the country outside of London. It determines that the city centre will continue to be the primary focus for business, retail and leisure activity in GM. Policy JP-J1 (Core Growth Area) supports long-term growth, identifying the importance of health innovation and life sciences clusters to support growth and allow GM to make the most of its high concentration of research assets and graduate pools. This policy also indicates that the city centre will provide land to accommodate c.1.7 million sqm of office floor space over the period 2022-2039.
- 13.13. The plan also emphasises maximising the use of brownfield land and urban spaces to support sustainable growth. This approach is intended to make efficient use of previously developed land and reduce the need for new greenfield development.

Local Planning Policy

- 13.14. The **Manchester Core Strategy (2012)** outlines the overall strategic direction for planning for Manchester over the plan period from 2012 to 2027 and aligns with national policies. The policies of the Core Strategy establish where major development and other forms of investment should be located to be sustainable, meet local needs and take full advantage of opportunities. A key spatial principle of the Core Strategy is that the regional centre of Manchester will be the focus for economic and commercial development, retail, leisure and cultural activity, alongside high-quality city living.
- 13.15. The 2024 addendum partially replaces some of the key Employment Land targets and locations previously determined in the Manchester Core Strategy by Places for Everyone policies.

¹ Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan

- 13.16. The **Manchester Local Plan** guides development within Manchester and is currently under review. Issues with the Local Plan, as identified in the review's consultation, included meeting net-zero targets, the future of movement around the city, design that prioritises health, creating jobs for a healthy and equal city, building on the strength of the universities, hospitals, digital and creative sectors, managing the growth of the city, protecting waterways and green spaces.

Guidance

- 13.17. The **ID (Sister) Manchester Strategic Regeneration Framework (2023)** sets out a vision for Sister Manchester as a place recognised internationally as one of the world's leading applied innovation districts at the heart of the one the most exciting global cities, all set within an abundantly green and vibrant new neighbourhood.
- 13.18. This vision is founded on several pillars, which include commitments to creating opportunities for Manchester residents through access to education, training and jobs and the project being an exemplar of urban regeneration.
- 13.19. It focuses on a series of place-based principles designed to shape positive development and place-making across the Sister Manchester area. Principles of greatest relevance to the Proposed Development include:
- Principle 1 (a Human Collider) focuses on how the development can bring together a diverse mix of people and companies within a vibrant place designed to maximise meeting space and inspire new ideas.
 - Principle 2 (Connected, Open and Accessible) focuses on connecting Sister Manchester to the city to create characterful routes and spaces which welcome people into the area.
 - Principle 6 (Curated Commons) focuses on delivering animated floor space activated by event, exhibitions and leisure opportunities for those living and working in and around Sister Manchester.
 - Principle 7 (Critical Mass) focuses on delivering buildings of scale which can accommodate over 10,000 workers Sister Manchester aims to deliver jobs to, which enhances Manchester's skyline and public realm spaces.
- 13.20. The **Guide to Development in Manchester – Supplementary Planning Document and Planning Guidance (2007)** sets out key design principles for the city. It sets the City Centre as a region of national and international importance and identifies Central Manchester as an 'Area of change'. These being areas of regeneration activity where there is an aim to broaden the mix of uses to accommodate new shopping and employment areas, provide jobs, services and local facilities and to improve sustainability by providing a mix of activities, buildings and facilities.

Assessment Methodology and Significance Criteria

Scenarios Tested

- 13.21. This Chapter considers the following scenarios:
- Scenario 1: Existing Baseline
 - Scenario 2: Existing Baseline + Phase A + Phase C
 - Scenario 3: Existing Baseline + Phase A + Phase C + Cumulative
 - Scenario 5: Existing Baseline + Phase A + Phase B + Phase C
 - Scenario 6: Existing Baseline + Phase A + Phase B + Phase C + Cumulative
 - Scenario 7: Existing Baseline + Phase A + Phase B + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative
- 13.22. Scenario 1 represents the existing baseline and so this is addressed in 'Baseline Conditions' helping to inform the sensitivity of socio-economic receptors. For the purposes of clarity, all baseline developments identified in Appendix 2.3 are considered relevant in the assessment of socio-economic effects and are considered when assessing the sensitivity of socio-economic receptors.
- 13.23. Scenarios 2 and 5 are addressed within the 'Identification and Evaluation of Likely Significant Effects' section. Scenarios 3, 6 and 7 are addressed within the 'Cumulative Effects' section. Scenarios 3 and 6 consider the cumulative

effects of the identified cumulative developments, all of which are considered relevant in the assessment of socio-economic effects, while scenario 7 considers both the cumulative developments along with the delivery of the wider SRF area.

- 13.24. In terms of the socio-economics discipline, the effects of Scenario 4 (Baseline + Phase A + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative) are likely to be similar to those generated under Scenario 7 and is therefore not considered in this chapter. Similarly, Scenario 8 (Baseline + Phase C) is not considered in this chapter on the basis that this scenario is unlikely to generate significant effects.

The Study Area

- 13.25. The anticipated effects of the Proposed Development and relevant receptors are set out in more detail in Table 13.1. The likely effects influence the geography over which the study area is considered. The effects of the Proposed Development are considered across the following geographies:
- Local level – the definition of the local study area/impact area can vary depending on the effect being assessed and any associated need to use bespoke catchments and/ or administrative spatial scales as set out within relevant local and regional policies. The Proposed Development is located within the Oxford Road Corridor (ORC) – an area running south from St Peter’s Square to Whitworth Park along Oxford Road, overlapping with the core of Manchester’s Central Business District. The ORC is Manchester’s Knowledge Quarter, home to a diverse array of knowledge-intensive organisations and businesses, operating in the areas of health, higher education, creative industries, advanced materials, low carbon, digital and financial services. Alongside, and overlapping with, the core of the city centre, it is a centre of significant economic importance to the wider city region and according to MCC the ORC consistently accounts for 20 per cent of Manchester’s economic output. For the purposes of some receptors, a bespoke geography comprising the city centre and the ORC is used as the local study/impact area (LIA). This is defined in terms of 2011 Lower Layer Super Output Areas (LSOAs) and is shown in Figure 13.1.²
 - District –MCC is identified as the administrative area in which the Proposed Development is located and the area in which housing and employment targets are set. For some receptors, the appropriate study area is the district level.
 - Sub-regional – Greater Manchester is predominantly considered when assessing temporary construction employment effects of the Proposed Development. For some receptors, the appropriate study area is the sub-regional level.

- 13.26. The geography applied to the assessment of each receptor is outlined in Figure 13.1 and Table 13.1.

Table 13.1: Geographical study areas

Effect	Receptor	Study Area(s)	Justification
Change in temporary employment during the construction stage	Individuals seeking construction employment	Sub-regional (Greater Manchester)	Construction labour is likely to be drawn from a wide geography across Greater Manchester.
Change in direct operational employment	Individuals seeking employment	LIA District (MCC)	The area comprising the city centre and the ORC is a significant contributor to both jobs and economic output within the context of Manchester. Employment/economy targets are set at district level.

² Manchester 018B, Manchester 018E, Manchester 019A, Manchester 019B, Manchester 019C, Manchester 022F, Manchester 054C, Manchester 054D, Manchester 054E, Manchester 055A, Manchester 055B, Manchester 055C, Manchester 055D, Manchester 055E, Manchester 057A, Manchester 057B, Manchester 057C, Manchester 060A, Manchester 060B, Manchester 060C, Manchester 060D

Effect	Receptor	Study Area(s)	Justification
Change in economic performance (GVA)	The local economy	District (MCC) Sub-regional (Greater Manchester)	The area comprising the city centre and the ORC is a significant contributor to both jobs and economic output within the context of Manchester and the wider city region. Employment/economy targets are set at district level. The nature and scale of the Proposed Development as a world-leading applied innovation District suggests that a sub-regional study area is also appropriate.
Change in annual fiscal contributions in the form of business rates contributions	MCC total business rates	District (MCC)	Business rates revenue is collected nationally with a proportion retained by the local authority.
Change in employment and skills opportunities and open space provision	Deprivation levels	LIA District (MCC)	Potential for the Proposed Development to impact upon deprivation levels locally and at the wider district level, by considering the impact on income deprivation, employment deprivation, crime deprivation and living environment as a result of creation of employment opportunities and new public realm.

13.27. In addition, national level data is also included within the baseline assessment, where relevant, to provide additional context and to help determine the sensitivity of baseline conditions in other geographies.

Surveys and Data Sources

13.28. This assessment relies on data provided by publicly available data sources, including:

- ONS Business Register and Employment Survey
- ONS Annual Population Survey
- ONS Regional gross value added (balanced) by industry: local authorities by ITL1 region
- ONS Annual Business Survey
- Valuation Office Agency Non-domestic Rating Lists
- Census 2021
- English Indices of Multiple Deprivation

Source of Effect

13.29. Table 13.2 sets out the assessment methodology for each of the identified effects.

Table 13.2: Assessment Methodology for Effects

Effect	Assessment Methodology
Change in temporary employment during the construction stage	<p>To estimate the impact of temporary employment supported as a result of the construction activity, the turnover per employee within the construction industry at the regional (North West) level is applied to forecast costs associated with the construction works for the Proposed Development and then divided by the expected duration of the construction works (in number of years) to provide the average number of construction workers per annum.</p> <p>It is acknowledged that whilst some construction workers may live locally, and their expenditure on household goods and services would also support employment in local businesses, it is also likely that construction workers will be drawn from within the wider region, depending on the roles available and contractors selected. On this basis, an estimate</p>

Effect	Assessment Methodology
	of the induced effects supported by the construction activity cannot be accurately quantified and therefore is not assessed.
Change in direct operational employment	<p>Direct employment impacts are calculated on the basis of the proposed schedule of commercial and employment supporting floorspace. Employment density benchmarks from the Homes and Communities Agency (HCA) are used to estimate the overall (gross) number of full-time equivalent (FTE) jobs that will be supported by each type of floorspace and are applied to the Net Internal Area (NIA) for the uses proposed on site.</p> <p>A series of additional adjustments are then applied to the direct job numbers to calculate the net additional jobs that can be supported on-site and more widely. These adjustments are based on best practice from the HCA in addition to professional experience, and include adjustments for displacement, leakage and deadweight. It is understood that the buildings occupying the Site have been vacant for at least five years therefore deadweight is assumed to be zero.</p> <p>In addition, allowances for indirect and induced multipliers are also applied to measure the off-site jobs supported by the direct (i.e. on-site) jobs created as a result of the Proposed Development. These include indirect (supply chain) impacts generated through spend by the on-site activities on the purchase of goods and/ or services for their day-to-day operations; and induced impacts associated with local expenditure as a result of those who derive income from the direct (i.e. on-site) and/ or supply chain (i.e. off-site) impacts generated by the Proposed Development. Multiplier assumptions applied are also based on guidance set out within the HCA Additionality Guide.</p>
Change in economic performance (GVA)	Economic impact will be generated as a result of the direct, indirect and induced jobs support by the Proposed Development in the form of Gross Value Added (GVA). This is calculated by applying GVA per FTE job benchmarks for Manchester to the estimated employment impacts and relevant job sectors generated by the Proposed Development.
Change in annual fiscal contributions in the form of business rates contributions	<p>The revenue to the local authority generated by proposed commercial uses is estimated having regard to average ratable value per square metre benchmarks (down to Lower Super Output Area level), published by the Valuation Office Agency (VOA). Benchmarks are applied to the level of floorspace (NIA) before a business rates multiplier (0.546) is applied to estimate the total business rates bill.</p> <p>Although university buildings on the Site have been vacant for at least five years, it is assumed that they will have still been business rates liable. In the absence of rates payable for the specific buildings through the VOA, as above, the average ratable value per square metre for 'Other' uses has been applied to the existing buildings floorspace (NIA). This provides an estimate of deadweight.</p>
Change in employment and skills opportunities and open space provision	The potential for the Proposed Development to effect deprivation levels is assessed qualitatively, using professional judgment. The assessment is framed around the Index of Multiple Deprivation (IMD) domains of deprivation that are most closely linked to issues around employment and skills (income domain) and the provision of open space (crime domain and living environment domain). It assesses qualitatively, using professional judgment, the extent to which the Proposed Development has the potential to affect aspects of the environment that contribute to these individual domains of deprivation.

Significance Criteria

- 13.30. The sensitivity of each receptor, outlined in Table 13.3, is evaluated as being high, medium, low, or negligible based on a review of the baseline position of each receptor, and where relevant, its performance against other benchmark areas. Where relevant, the importance of the receptor in local and regional policy terms is also considered in defining its sensitivity.

Table 13.3: Receptor sensitivity

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

- 13.31. The magnitude of impact experienced by each receptor is determined by considering the change from (future) baseline conditions, both before and (if required) after mitigation. The criteria used for the assessment of the magnitude of socio-economic impacts (both beneficial and adverse) are outlined in Table 13.4.

Table 13.4: Significance matrix

Magnitude of Impact	Criteria for Assessing Effect
Major	Total loss or major/substantial alteration to key elements/features of the baseline conditions such that the post development character/composition/attributes will be fundamentally changed.
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Minor	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character / composition / attributes of the baseline condition will be similar to the pre-development circumstances/situation.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

- 13.32. The nature of the effect is defined as either:

- Beneficial – an advantageous effect on the impact area; or
- Adverse – detrimental effects on the impact area; or
- Neutral – neither beneficial nor adverse.

- 13.33. The significance of the effect is based on the matrix set out in Table 13.5. Effects assessed as moderate or major are considered significant in EIA terms (and are shown in bold in Table 13.5). The matrix provides flexibility in assessing the significance of effects and allows for the application of professional judgment, where necessary, to determine whether an effect that straddles the minor-moderate threshold is assessed as being significant or not significant.

Table 13.5: Impact Significance Matrix

	High	Medium	Low
Major	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate or Minor Adverse/Beneficial
Moderate	Major - Moderate Adverse/Beneficial	Moderate Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate or Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial - Negligible
Negligible	Negligible	Negligible	Negligible

Baseline Conditions

Population and Labour Market

- 13.34. According to the 2021 Census, there were 38,580 people living across the LIA. If it assumed that the residents of all baseline developments are not included in this figure, then the baseline developments could increase the LIA resident population by a further c.8,000 (c.46,600). Of these residents 91% were working age (16 – 64 years), a proportion significantly higher than across Manchester (70%), the North West (63%) and England (63%).
- 13.35. According to the 2021 Census, of the residents aged 16 and above in the ORC, approximately 43% were economically inactive, above the benchmark areas of Manchester (41%), the North West (41%) and England (39%). This is likely due to a relatively large student population concentrated within this part of the city (44%, compared to 18% across Manchester, and 8% across the North West and England). Unemployment levels are lower in the LIA (6.4%) than across the wider Manchester area (7.4%), although both were above unemployment rates across Greater Manchester (5.6%), the North West (4.9%) and England (4.9%).
- 13.36. As of January 2025, 2.8% of working age residents across the LIA (1,160 residents) were claiming Universal Credit or Jobseekers Allowance, which is a rate significantly lower than across Manchester (6.8%), the North West (4.5%) and England (4.3%). For Greater Manchester as a whole, there were 97,765 claimants in January 2025, representing 5.3% of the total working age population.

Employment

- 13.37. According to the latest data (2023) from the Business Register and Employment Survey, approximately 248,000 jobs were located within the LIA, equivalent to 54% of all jobs across Manchester. If it assumed that the residents of all baseline developments are not included in this figure, then the baseline developments could increase LIA employment by a further c.1,600 jobs (c.250,000). Across Manchester, there were roughly 457,000 jobs.
- 13.38. Since 2018, the number of jobs has grown by 24% across the LIA, significantly higher than the growth experienced across all other benchmark areas (Manchester, 15%; North West, 6%; England, 5%).
- 13.39. Roughly 21% (51,000) of all employment within the LIA was within the Professional, Scientific and Technical sector, 12% (30,000) within the Business Administration and Support Services sector and 9% (23,000) within both Information & communication and Financial & insurance sectors. Notably, 80% of all employment in the Professional, Scientific and Technical sector within Manchester was located within the LIA.
- 13.40. Across the LIA approximately 1.2% of employment was within the Construction sector, this was equivalent to around 3,000 jobs. The proportion of employment within the Construction sector was higher across Manchester (2.3%), Greater Manchester (4.6%) the North West (5.3%) and England (5.1%).
- 13.41. At a Greater Manchester level, the construction sector supports around 67,000 jobs.
- 13.42. A Location Quotient (LQ) measures the relative specialisation of a sector by comparing the share of employment in a sector to the national benchmark. A LQ above 1 suggests relatively high levels of specialisation, and a LQ level below 1 suggests relatively low levels of specialisation. **Figure 13.2** summarises LQs for each benchmark geography and illustrates high levels of specialisation in the Financial & insurance sector (2.7), Professional, scientific and technical (2.1), Information & communication (2.0), Property (1.7) and Business administration & support services (1.4) within the LIA.
- 13.43. Employment growth between 2018 and 2023 across the LIA (13%) was significantly higher than the benchmark areas. Growth was driven by Professional, scientific & technical activities and the Information and communication sector (both +15,000). By contrast, the LIA saw a decline in employment in the Retail sector (-3,000), reflecting a trend witnessed across all benchmark areas.
- 13.44. **Figure 13.3** presents sector LQs against the respective growth percentage of employment. This illustrates the role of office-based service sectors in driving recent growth and specialization within the LIA.

- 13.45. Between 2018 and 2023, construction sector employment across the LIA increased by 500 (+20%). In comparison, employment in the sector grew by 15% across Greater Manchester between 2018 and 2023.

Economic Output (GVA)

- 13.46. As of 2022, Gross Value Added (GVA) across the LIA stood at approximately £17.7bn, equivalent to 56% of Manchester's overall output. Furthermore, output grew by 44% between 2017 and 2022, a growth rate which was significantly higher than across benchmark areas (Manchester, 39%; North West, 24%; England, 21%).
- 13.47. Productivity, calculated as GVA per full-time equivalent (FTE) worker, in the LIA stood at c.£70,000 in 2022, a 28% increase from 2017. Productivity was also higher than comparator areas, standing at c.£66,000 for Manchester, c.£62,000 for the North West and c.£71,000 across England.
- 13.48. Sectoral analysis of GVA output in 2022 can be undertaken at local authority level, where 45% of GVA was generated by office-based service sector jobs, including those in the Information and Communication (£2.5bn), Financial and Insurance (£4.7bn), Professional, Scientific and Technical (£4.4bn) and Administrative and Support Service activities (£2.3bn) sectors. GVA per FTE figures for office-based service sector roles across Manchester were significantly higher than the all-sector productivity average (c.£99,000 vs c.£85,000).
- 13.49. As of 2022, GVA output for the construction sector across Greater Manchester stood at £5.4 bn and GVA per FTE worker in the construction sector stood at c.£81,000 – above the all-sector productivity average of c.£73,000.

Business Rates

- 13.50. Given current macroeconomic conditions, cost of living challenges and the local authority funding landscape, the delivery of essential Council services nationwide are under increasing strain. In this context, local authority revenue plays an important role in the delivery of essential local services.
- 13.51. Since 2017, the Greater Manchester authorities have been part of a 100% business rates retention pilot scheme meaning that MCC retains all growth in its business rates base. The 2023/24 MCC Statement of Accounts suggests a net revenue budget of £385 million in business rates. Alongside wider support measures implemented nationally to businesses affected by the pandemic (including business loans, furlough and the self-employed income scheme), the Council has administered business rates relief which has led to a short-term reduction in revenue through business rates in the post-pandemic period.
- 13.52. Non-domestic business rates collected by the Valuation Office Agency (VOA) in 2023 showed an average rateable value per square metre of £102 for all sectors across Manchester, rising to £135 for office uses and £165 for retail uses.

Table 13.6 Business Rates: average rateable value (£) per square metre

	All	Retail	Office	Other
Manchester	102	165	135	112

Source: Valuation Office Agency, 2023

Deprivation

- 13.53. According to the Index of Multiple Deprivation (2019), 24% of LSOAs within the LIA ranked in the 10% most deprived nationally, indicating above average levels of deprivation. The LIA's performance across individual domains of deprivation can be summarised as follows:
- 24% of LSOAs were among the 10% most deprived nationally in terms of both the employment domain and income domain;
 - 57% of LSOAs were among the 10% most deprived nationally in terms of the crime domain; and
 - 48% of LSOAs were among the 10% most deprived nationally in terms of the living environment domain.

- 13.54. Overall, Manchester ranks 2nd out of all English local authorities (317 in total), where 1 is the most deprived. The spatial pattern of deprivation within the local authority area is illustrated in **Figure 13.4**. To the immediate east of the LIA there is a dense cluster of LSOAs ranked among the 10% most deprived nationally, indicating high levels of deprivation close to the Site.
- 13.55. In terms of individual domains of deprivation, Manchester ranks as follows:
- Employment: 51st most deprived;
 - Income: 12th most deprived;
 - Crime: 1st most deprived; and
 - Living environment: 40th most deprived.

Open Space

- 13.56. Within the Site's immediate vicinity there are several small parks and open spaces, including:
- Sackville Gardens (less than 5-minute walk)
 - Mayfield Park (6-minute walk)
 - Symphony Park (7-minute walk)
 - All Saints Park (9-minute)
 - Ardwick Green (9-minute walk)
 - Gartside Gardens (10-minute walk)
 - Piccadilly Gardens (11-minute walk)
- 13.57. The Site is well connected to green and open space, however, the Site's location in the city centre means that the majority of these are smaller spaces, squares and pocket parks. The exception to this is the 6.5 acre public park at Mayfield.
- 13.58. The current Manchester Blue and Green Infrastructure Strategy (2022) is in place to respond to commitments made in the City's Local Plan and Climate Change Action Plan. It demonstrates the Council's commitment to Green Spaces, with plans to spend £12.5 million on a large-scale Capital Park Investment Programme between 2021-25.

Receptor Sensitivity

- 13.59. Table 13.7 summarises the sensitivity of each of the receptors identified in the baseline.

Table 13.7 Receptor sensitivity

Receptor	Sensitivity	Study Area	Justification
Individuals seeking construction employment	Medium	Sub-regional (Greater Manchester)	A proportion of the temporary construction employment created as a result of construction activity could be expected to be filled by unemployed people (both skilled and unskilled) from across Greater Manchester. The claimant rate for Greater Manchester is higher than the regional and national averages.
Individuals seeking employment	Medium	LIA District (MCC)	Local employment growth will contribute to the overall economic growth and prosperity of the city centre and ORC which are strategic priorities at a MCC level. The sets out commitments for creating opportunities for Manchester residents through access to education, training and jobs. In Manchester, the claimant rate is higher than regional and national rates.

Receptor	Sensitivity	Study Area	Justification
Local economy	Medium	LIA District (MCC)	Local economic growth will contribute to the overall economic growth and prosperity of the city centre and ORC which are strategic priorities at both a MCC and Greater Manchester level. The SRF sets out an ambition to deliver a world leading applied innovation district. Direct employment will result in GVA effects across the local economy.
Contribution to local authority fiscal income	High	District (MCC)	Local authority revenue is essential in the delivery of local services and has experienced lower collection rates in recent years due to the impact of the COVID-19 pandemic. Business rates collection will help to deliver increased local authority revenue.
Deprivation levels	High	LIA District (MCC)	<p>Manchester ranks as one the most deprived English local authorities, according to the Indices of Multiple Deprivation. Whilst the city centre generally displays relatively lower levels of deprivation, the Site itself is located adjacent to a dense pocket of high deprivation to the east. Within the LIA there are notable pockets of deprivation within both employment and crime domains. The introduction of accessible employment opportunities and improvements to the public realm offer the potential to impact both local and district wide deprivation levels.</p> <p>Whilst the Site is well connected to green and open space, the Site's location in the city centre means that the majority of these are smaller spaces, squares and pocket parks. The Proposed Development will contribute towards the improvement of open space provision in the city centre with its improvements to the public realm and connectivity.</p>

Identification and Evaluation of Likely Significant Effects

Construction Phase

Scenario 2 (Baseline + Phase A + C) and Scenario 5 (Baseline + Phase A + B + C)

- 13.60. The construction of the Proposed Development will support a number of on-site and off-site employment opportunities within the construction sector.
- 13.61. Based upon the Applicant's cost plan (dated December 2024) the following is assumed in relation to construction cost estimates and build periods for Scenario 5:
- Phase A: c.£80m;
 - Phase B: c.£142m;
 - Phase C: £4m;
 - Total (all phases): c.£227m; 4.8-year build period
- 13.62. This level of investment over the construction period would support an average labour requirement of approximately 245 FTEs per annum (Scenario 5). This has been estimated having regard to the average construction industry turnover per FTE using data from the Business Register and Employment Survey and Annual Business Survey at the

regional (North West) level. For Scenario 2, the average annual labour requirement (derived via the same means as above) is c.110 FTEs per annum.

- 13.63. The construction of the Proposed Development is expected to support a broad range of job types and occupations, both on-site and off-site (including both direct and indirect / supply chain employment). On-site roles may include highly skilled professions (such as site surveyors) as well as lower skilled supply chain jobs (such as labourers). Off-site, activity could support various jobs within the supply chain, such as suppliers of building materials and architects.
- 13.64. The construction sector is relatively geographically mobile which suggests that while some construction workers may be local residents, whose spending on household goods and services would benefit local businesses, it is also likely that construction workers could be drawn from within the wider region, depending on the roles available and contractors selected. Due to this uncertainty, it is not possible to accurately estimate the indirect and induced effects on the Greater Manchester economy resulting from the construction activity, and therefore the induced effects are not assessed.
- 13.65. It is likely that a local labour agreement will be secured, if approved, via a planning condition prior to the commencement of development. This will provide a mechanism by which local (Manchester) residents will be prioritised for job opportunities both at the construction and operational stages.
- 13.66. The construction sector currently supports around 67,000 FTE jobs across Greater Manchester. The estimated annual construction jobs supported during the period of works (Scenario 5) represents 0.4% of all sub-regional employment in the construction sector. Given the small percentage, construction activity is not expected to result in a noticeable change in the baseline conditions at the sub-regional level, and as such, the magnitude of the impact is assessed to be negligible. The equivalent percentage for Scenario 2 is 0.2% and is therefore also judged to be negligible in magnitude.
- 13.67. With the sensitivity of the receptor assessed as medium, this would give rise to a direct, temporary, short term and negligible (not significant) effect (Scenario 5). The same finding would apply under Scenario 2.

Operational Phase

Scenario 2 (Baseline + Phase A + C) and Scenario 5 (Baseline + Phase A + B + C)

Employment

- 13.68. Plot C (the Proposed Development) represents an early phase of the wider SRF area to deliver a world-leading applied innovation district. The predominant use to be delivered on this plot will be office, targeting occupiers within the knowledge-based service sector economy. The Proposed Development will provide high quality, modern office accommodation with a focus on principles of resource efficiency and circular design, whilst also providing flexible, wellbeing-focused work environments that are increasingly being sought by occupiers and their employees. This plot will also bring forward ancillary flexible commercial floorspace, attracting occupiers within the foundational economy, such as retail, leisure and hospitality sectors.
- 13.69. The Proposed Development will make a positive contribution to the LIA and district employment levels as a result of the proposed on-site commercial floorspace. Table 13.8 sets out the gross and net additional employment impacts once additionality assumptions have been taken into consideration. Based on the assessment, it is estimated the Proposed Development (phases A, B and C – Scenario 5) in total will support approximately 4,530 gross direct FTEs, assuming that the floorspace is fully operational and occupied.

Table 13.8 Employment estimates

Use	Office		Flexible Commercial	
	Scenario 2 (Baseline + Phase A+C)	Scenario 5 (Baseline + Phase A+B+C)	Scenario 2 (Baseline + Phase A+C)	Scenario 5 (Baseline + Phase A+B+C)
Floorspace sqm (NIA)	17,076	49,981	4,222	4,457

Use	Office		Flexible Commercial	
	Scenario 2 (Baseline + Phase A+C)	Scenario 5 (Baseline + Phase A+B+C)	Scenario 2 (Baseline + Phase A+C)	Scenario 5 (Baseline + Phase A+B+C)
Employment density (sqm per FTE)	11.6 (high density office average)		20 (Retail and food & beverage)	
FTE jobs (gross)	1,472	4,309	211	223
Displacement factor	0.50 (medium)		0.50 (medium)	
Leakage factor	0.50 (high)		0.90 (low)	
Multiplier	1.44		1.38	
FTE jobs (net)	530	1,551	131	138

13.70. Different additionality factors are applied to each of the proposed commercial uses:

- **Office (knowledge-based service sector uses):** it is anticipated that levels of leakage are likely to be high (50%, in accordance with HCA Additionality Guidance) to reflect a large proportion of the benefits going to residents living outside of the target area (i.e. Manchester). This is supported by Census travel to work data which suggests that a third of people of working within Manchester 018B (a rough approximation for the Site) are Manchester (district) residents. A medium level of displacement is assumed (50%, as per HCA Guidance ready reckoners, where around half of the activity is expected to be displaced). This reflects the broad nature of the proposed office uses which could, in theory, be in alternative locations within the local impact area and wider district. In line with HCA Guidance, a composite multiplier for office interventions is applied (1.44). This captures the effects of indirect (supply chain) and induced (influenced through employee wage spending) employment supported by direct jobs.
- **Flexible commercial (retail/leisure/hospitality uses):** it is anticipated that levels of leakage are likely to be very low (10%, in accordance with HCA Additionality Guidance) to reflect a large proportion of the benefits going to residents living within the target area (i.e. Manchester). This is considered appropriate given the foundational nature of the uses proposed and the fact that employees are unlikely to travel further to access job opportunities. A medium level of displacement is assumed (50%, as per HCA Guidance ready reckoners, where around half of activity is expected to be displaced). This reflects the fact that the proposed foundational sector uses are not closely linked to the specific location of the Site and could theoretically be located elsewhere. This is moderated by the fact that high unemployment and claimant rates across Manchester suggest that additional foundational sector job opportunities could be more readily taken up by the labour market. In line with HCA Guidance, a composite multiplier for retailing interventions is applied (1.38). This captures the effects of indirect (supply chain) and induced (influenced through employee wage spending) employment supported by direct jobs.

13.71. Assuming that the floorspace is fully operational and occupied, the Proposed Development (Scenario 5) could support **1,690 FTE jobs (net)**. This level of employment generation represents 0.68% of the total employment levels in the LIA (c.250k) and 0.37% of jobs across Manchester (457k). These percentages decrease to 0.27% and 0.14% under Scenario 2.

13.72. The magnitude of change (Scenario 5) is assessed as minor at the LIA level and negligible at the district level. The magnitude of change for Scenario 2 is judged to be negligible in magnitude at both LIA and district levels.

13.73. With the sensitivity of the receptor assessed as medium, the significance of effect (Scenario 5) is assessed as direct, permanent, beneficial and of minor significance (not significant) at the LIA level and negligible at the district level and therefore not significant.

13.74. For Scenario 2, the significance of effect is assessed as negligible at both the LIA and district levels, and therefore not significant.

Local Economy

- 13.75. The on-site employment has the potential to support the LIA and district economy through GVA effects.
- 13.76. The following GVA per FTE benchmarks are applied:
- Office: c.£108k GVA per FTE – applied to all direct employment associated with office floorspace;
 - Flexible commercial: c.£71k GVA per FTE – applied to all direct employment associated with retail/leisure/hospitality floorspace;
 - All sector average: c.£93k GVA per FTE – applied to all indirect and induced employment.
- 13.77. Under Scenario 5, the direct employment has the potential to generate £128 million per annum in net additional GVA. When multiplier effects are considered, this rises to £175 million per annum. This represents an increase of 0.99% compared to the total LIA economy and 0.55% of the total Manchester economy. These percentages decrease to 0.39% and 0.22% under Scenario 2.
- 13.78. On the basis of increases in GVA, the magnitude of change (Scenario 5) is assessed as minor at the LIA level and negligible at the district level. The magnitude of change for Scenario 2 is negligible at both LIA and district levels.
- 13.79. With the sensitivity of the receptor identified as medium, the significance of effect (Scenario 5) is assessed as direct, permanent, beneficial and of minor significance (not significant) at the LIA level and negligible at the district level and therefore not significant.
- 13.80. For Scenario 2, the significance of effect is negligible at both LIA and district levels.

Local Authority Revenue

- 13.81. It is assumed that the buildings that currently occupy the Site are liable to pay business rates, despite having been vacant. In the absence of available information from the VOA's property search, to estimate deadweight the total net internal area of the existing buildings has been used to generate estimates of the potential existing business rates liability.
- 13.82. The entire Site provides just over 11,000 sqm (NIA) across four buildings that would be liable for business rates. It is assumed that student accommodation at the Wright Robinson building would not be liable. Based upon the application of the average rateable value per square metre (using data from the Valuation Office Agency) for properties in Manchester within the 'Other' category (which includes educational uses) and a standard business rates multiplier, the estimated total business rates for existing buildings is £0.68 million (Scenario 5).

Table 13.9 Existing buildings – business rates estimates

	Phase A	Phase B	Phase C	Total
Existing buildings (sqm NIA)	5,062	6,127	-	11,190
Average rateable value / sqm (£)	112			
Business rates multiplier	0.546			
Estimated business rates (£m)	£0.31	£0.37	-	£0.68

- 13.83. The level of potential increased revenue from business rates as a result of delivering on-Site commercial floorspace is estimated based upon benchmarks in the rateable value per square metre for office and retail properties at the district level (using data from the Valuation Office Agency). After accounting for a business rates multiplier (0.546), the uplift is estimated at £3.4 million per annum (Scenario 5).

Table 13.10 Proposed Development – business rates estimates

Use	Office		Commercial/Retail	
	Scenario 2	Scenario 5	Scenario 2	Scenario 5
Proposed floorspace (sqm NIA)	17,076	49,981	4,222	4,457
Average ratable value / sqm (£)	135		165	
Business rates multiplier	0.546			
Estimated business rates (£m)	£1.26	£3.68	£0.38	£0.40
Total (less deadweight) (£m)	£0.95	£3.00	£0.38	£0.40
Scenario 2 total (£m)	£1.33			
Scenario 5 total (£m)	£3.40			

13.84. The level of additional office floor space provided by the Proposed Development (Scenario 5) is equivalent to approximately 2.5% of the total stock of office floor space across Manchester (based on Valuation Office Agency data for 2023). This decreases to 0.9% of the total for Scenario 2. In total, the estimated business rates uplift (Scenario 5) represents 1.2% of the total ratable value for all office and retail properties across Manchester. For Scenario 2, this decreases to 0.5%.

13.85. On this basis, and applying professional judgment, it is assessed that the potential increase in local authority revenue represents a minor magnitude of change (Scenario 5) and negligible for Scenario 2. With the sensitivity of the receptor identified as high, this gives rise to a direct, long term and minor beneficial (not significant) effect (Scenario 5). For Scenario 2, the significance of effect is negligible.

Change in Deprivation Levels

13.86. The Proposed Development has the potential to affect deprivation levels at the LIA and district level through a combination of providing inclusive employment opportunities for local residents and through improvement to the public realm.

13.87. An integral part of the Sister Manchester vision is to create opportunities for Manchester residents through access to education, training and jobs. As illustrated above (Table 13.8), in addition to jobs created in the knowledge-based service economy, the Proposed Development (Scenario 5) has the potential to generate c.140 FTE jobs within foundational sectors such as retail, leisure and hospitality. Job opportunities within these sectors are more likely to be accessible to a broader section of the resident population within the LIA and Manchester, due to lower entry-level skills requirements and with greater opportunity for part-time working. This level of employment represents only a very small percentage of Manchester's existing foundational economy. For instance, this level of employment represents 0.5% of employment within Manchester's retail sector.

13.88. It is likely that a local labour agreement will be secured, if approved, via a planning condition prior to the commencement of development. This will provide a mechanism by which local residents will be prioritised for job opportunities both at the construction and potentially at the end user phase.

13.89. The improvement of the local environment will be achieved through the following:

- ID Square – the development of a city-scale civic square.
- Hollaway Place – an entry point / gateway into the SRF area at the northeastern corner. The public realm between the Viaduct and Hollaway Wall will create a pocket entrance court and improved setting for part of a revitalised Hollaway Wall.

- Altrincham Street – the creation of an enhanced key east-west connection, as a principal pedestrian and cycle route through the SRF area. This includes enhancements such as the widening of the existing route. Altrincham Street will improve connectivity from Piccadilly Station and Mayfield through to the Oxford Road Corridor and be enlivened by the re-activation of the railway arches.

- 13.90. The delivery of these public realm interventions, and particularly the creation of a new, city-scale civic square will enhance the local environment. Design measures that are frequently associated with public realm interventions, such as passive surveillance (for instance, the introduction of active ground floor commercial uses), will promote a safer local environment and deter opportunities for crime and anti-social behaviour.
- 13.91. Overall, it is judged that the Proposed Development's (Scenario 5) contribution to addressing deprivation levels would be minor in magnitude. The magnitude is also assessed as minor for Scenario 2. With the sensitivity of the receptor identified as high, and through the application of professional judgement, this gives rise to a direct, long term and minor beneficial (not significant) effect (Scenarios 2 and 5) at the LIA level and district level.

Cumulative Effects

Scenario 3 (Baseline + Phase A + C + Cumulative), Scenario 6 (Baseline + Phase A + B + C + Cumulative) and Scenario 7 (Baseline + Phase A + B + C + Cumulative + IDM Masterplan)

- 13.92. Within the discipline of Socio-Economics, all cumulative developments identified have the potential to interact with the Proposed Development and are considered here.
- 13.93. Collectively, the cumulative developments have the potential to deliver:
- c.2,300 new homes;
 - c.4,400 student bedspaces;
 - c.88,000 sqm office floorspace;
 - c.130,000 sqm of flexible commercial and retail floorspace;
 - c.400 new hotel beds.
- 13.94. The assessment of cumulative effects (Scenarios 3 and 6) adopts a similar approach to the main assessment presented above. Given the breadth of cumulative developments identified it is considered that a proportionate approach is to adopt a consistent approach to assessment across different socio-economic effects. The assessment is necessarily approximate to provide a sense of the scale of impact relative to the baseline position alongside the Proposed Development.
- 13.95. The assessment of Scenario 7 requires consideration of the Proposed Development (Scenario 5) plus cumulative developments alongside the potential impacts of the wider SRF area. Unlike the focus of Plot C proposals on office space, targeting knowledge-based service sector activities, it is understood that later phases of Sister will deliver floorspace with a greater emphasis placed on R&D and innovation space. Based upon indicative development parameters, Sister could deliver c.168k sqm of innovation and office floorspace.
- 13.96. As assessed above, Plot C (the Proposed Development) will provide nearly 50,000 sqm (Scenario 5) and so constitutes approximately 30% of the SRF area total. Whilst the additional 70% of office/innovation floorspace has the potential to generate a substantial amount of additional employment, this is unlikely to be significant in relation to potential employment generation associated with Scenario 6 (Scenario 5 plus cumulative developments). A similar logic is extended to the effects on the local economy (through GVA), to the effects of annual fiscal contributions (through business rates) and to the effects of employment and skills opportunities and open space provision.
- 13.97. On this basis, it is assumed that the effects of Scenarios 6 and 7 would be indistinguishable in terms of their significance.
- 13.98. Table 13.11 considers the cumulative effects of the Proposed Development (Scenarios 3, 6 and 7).

Table 13.11 - Cumulative Assessment

Effect	Comment	Magnitude of change	Assessment of Significance
Change in temporary employment during the construction stage	<p>Given the scale of development across all cumulative developments identified alongside the Proposed Development, although not quantified, it is reasonable to assume that this would lead to a substantial increase in the requirement for construction labour at the sub-regional (Greater Manchester) level. This has the potential to generate increased demand for labour as well as substantial levels of opportunity within the construction sector.</p> <p>A recent publication by RICS UK suggests that the construction sector is improving in terms of activity and that looking forward, indicators are upbeat. Given the anticipated scale of construction activity across the cumulative developments in comparison with the overall level of construction activity across Greater Manchester, the magnitude of impact is assessed as moderate.</p>	Moderate (Scenarios 3, 6 and 7)	Direct, short term, Moderate Beneficial (significant) (Scenarios 3, 6 and 7)
Change in direct operational employment	Through the application of the same methodology and assumptions as applied in the main assessment, it is estimated that alongside the Proposed Development, cumulative developments could generate in the order of 7,500 net additional jobs (Scenario 3), rising to c.8,500 in Scenario 6. This level of employment creation would represent c.3% of employment at the LIA level and 1.5% at the district level (Scenario 3) and 3.5% at the LIA level and 2% at the district level for Scenario 6. For both scenarios and both impact areas, this is considered to represent a minor magnitude of change.	Minor (Scenarios 3, 6 and 7)	Direct, long term, Moderate Beneficial (significant) (Scenarios 3, 6 and 7)
Change in economic performance (GVA)	Through the application of the same methodology and assumptions as applied in the main assessment, it is estimated that alongside the Proposed Development, cumulative developments could generate in the order of £0.75 billion GVA (Scenario 3), rising to £0.85 billion in Scenario 6. This level of economic output would represent c.4.5% of LIA GVA and 2.5% of district GVA (Scenario 3) and c.5% at the LIA level and 3% at the district level for Scenario 6. For both scenarios and both impact areas, this is considered to represent a minor magnitude of change.	Minor (Scenarios 3, 6 and 7)	Direct, long term, Moderate Beneficial (significant) (Scenarios 3, 6 and 7)
Change in annual fiscal contributions in the form of business rates contributions	The local authority revenue generated by all cumulative developments cannot be estimated accurately and in a proportionate way. However, given the quantum of new commercial floorspace and new homes to be delivered through cumulative developments, it is likely that this would lead to a sizeable uplift in local authority revenue through business rates and council tax income. This is likely to represent a moderate magnitude of change.	Moderate (Scenarios 3, 6 and 7)	Direct, long term, Moderate Beneficial (significant) (Scenarios 3, 6 and 7)
Change in employment and skills opportunities and open space provision	The extent to which all cumulative developments will contribute towards alleviating deprivation levels through the provision of employment and skills opportunities and through the provision of open space cannot be assessed quantitatively. As outlined above, collectively the cumulative developments will bring forward c.130k sqm for flexible commercial/retail uses. Applying broad assumptions about this floorspace it is estimated that this could generate c.4k jobs under both Scenario 3 and 6. It is anticipated that employment opportunities associated with these uses would	Minor (Scenarios 3, 6 and 7)	Direct, long term, Moderate Beneficial (significant) (Scenarios 3, 6 and 7)

Effect	Comment	Magnitude of change	Assessment of Significance
	<p>be accessible to a broader range of residents within the LIA and district, with generally lower entry-level skills and qualification requirements and with greater flexibility in terms of part-time options.</p> <p>The extent of potential additional public realm and amenity space provision under all cumulative developments is not quantified but most if not all schemes will provide internal and external amenity space in addition to new areas of public realm that will enhance liveability and the connectivity between public spaces within this part of the city centre. In so doing, the schemes will contribute towards an improvement of the public realm, making the area safer through greater levels of activation and natural surveillance and deter opportunities for crime.</p> <p>Applying professional judgement, it is assessed that the magnitude of change would be minor for both Scenarios 3 and 6.</p>		

Mitigation Measures

Construction Phase

13.99. No significant adverse effects are identified during the construction phase.

Operational Phase

13.100. No significant adverse effects are identified during the operational phase.

Residual Effects

Construction Phase

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Change in temporary employment during the construction stage	Individuals seeking construction employment	N/A	N/A	<p>Scenarios 2 and 5 – Temporary, short term and negligible (not significant) (Scenario 2 and 5)</p> <p>Scenario 6 – Direct, short term, Moderate Beneficial (significant)</p>

Operational Phase

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Change in direct operational employment	Individuals seeking employment	N/A	N/A	<p>Scenario 2 – permanent, negligible (not significant) at both the LIA and district levels.</p> <p>Scenario 5 – permanent, minor beneficial (not significant) at the LIA level; Permanent, negligible (not significant) at the district level.</p> <p>Scenario 6 – permanent, direct, long term, Moderate Beneficial (significant) at LIA and</p>

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
				district levels.
Change in economic performance (GVA)	Local economy	N/A	N/A	Scenario 2 – permanent, negligible (not significant) at both the LIA and district levels. Scenario 5 – permanent, minor beneficial (not significant) at the LIA level; Permanent, negligible (not significant) at the district level. Scenario 6 – permanent, direct, long term, Moderate Beneficial (significant) at LIA and district levels.
Change in annual fiscal contributions in the form of business rates contributions	Contribution to local authority fiscal income	N/A	N/A	Scenario 2 – permanent, negligible (not significant) Scenario 5 – permanent, minor beneficial (not significant) Scenario 6 – permanent, direct, long term, Moderate Beneficial (significant)
Change in employment and skills opportunities and open space provision	Deprivation levels	N/A	N/A	Scenario 2 – permanent, minor beneficial (not significant) Scenario 5 – permanent, minor beneficial (not significant) Scenario 6 – permanent, direct, long term, Moderate Beneficial (significant) at local and district levels.

Monitoring

13.101. No monitoring is recommended during the construction or operational phase.

Reference List

13.102. This ES Chapter has been prepared in reference to the following:

- Homes and Communities Agency (2015) Employment Density Guide
- Homes and Communities Agency (2014) Additionality Guide
- Manchester City Council (2022) Manchester Blue and Green Infrastructure Strategy
- Manchester Core Strategy (2012)
- MHCLG (2019) English Indices of Multiple Deprivation
- 'Investing In Success' Manchester Economic Strategy (2023)
- National Planning Policy Framework (2024)
- Office for National Statistics (2023) Business Register and Employment Survey
- ONS Annual Population Survey (2024)

- ONS Regional gross value added (balanced) by industry: local authorities by ITL1 region (2022)
- ONS Annual Business Survey (2022)
- Places for Everyone Plan, GMCA, (2023)
- Royal Institute of Chartered Surveyors (2023) RICS, Q1 2023, UK Construction Monitor
- Valuation Office Agency (2023) Non-domestic Rating Lists

Figures

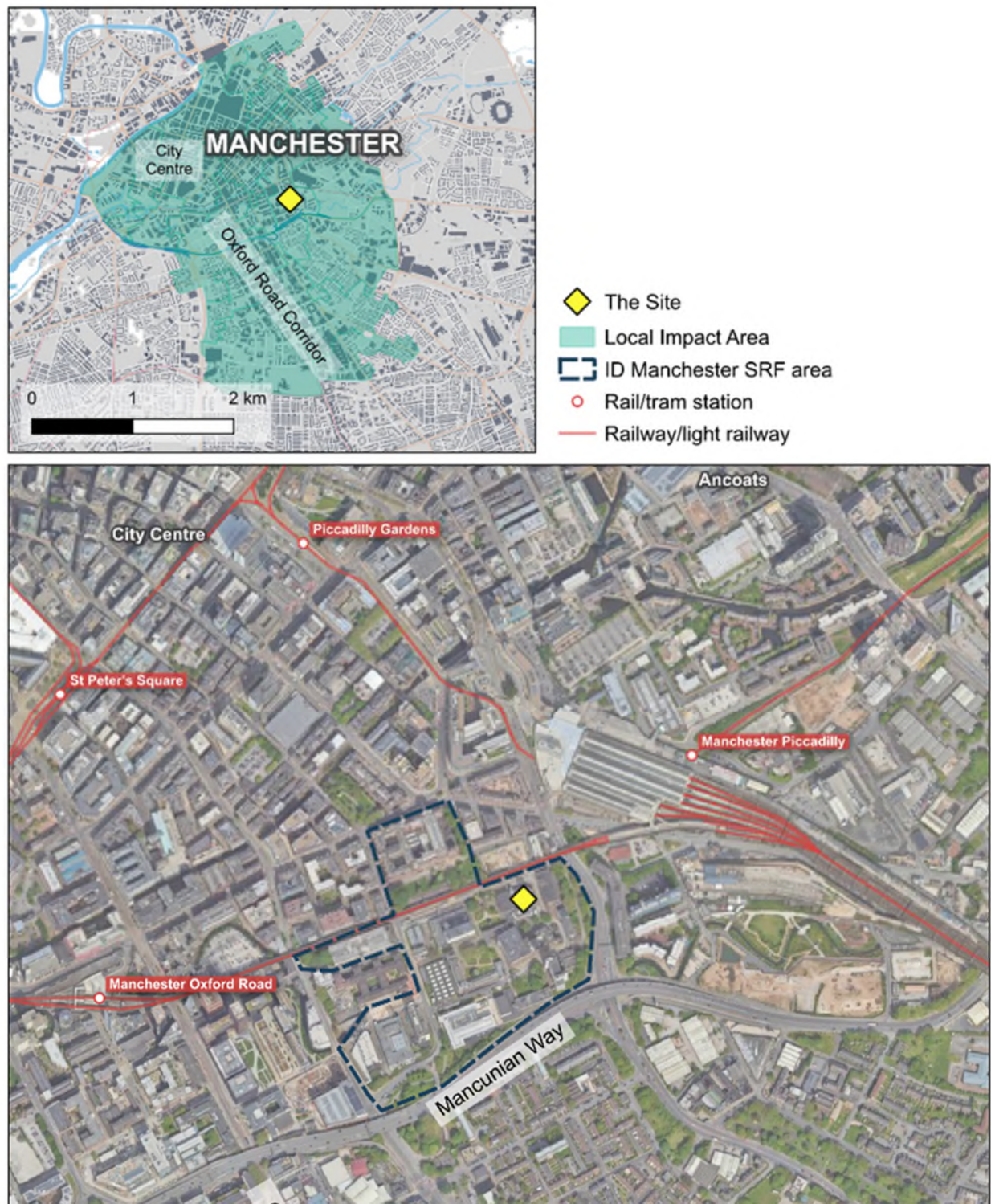


Figure:	13.1		
Title:	Local Impact Area and Site Location		
Project:	Sister Plot C, Manchester		
Date:	March 2025	Scale:	To Scale

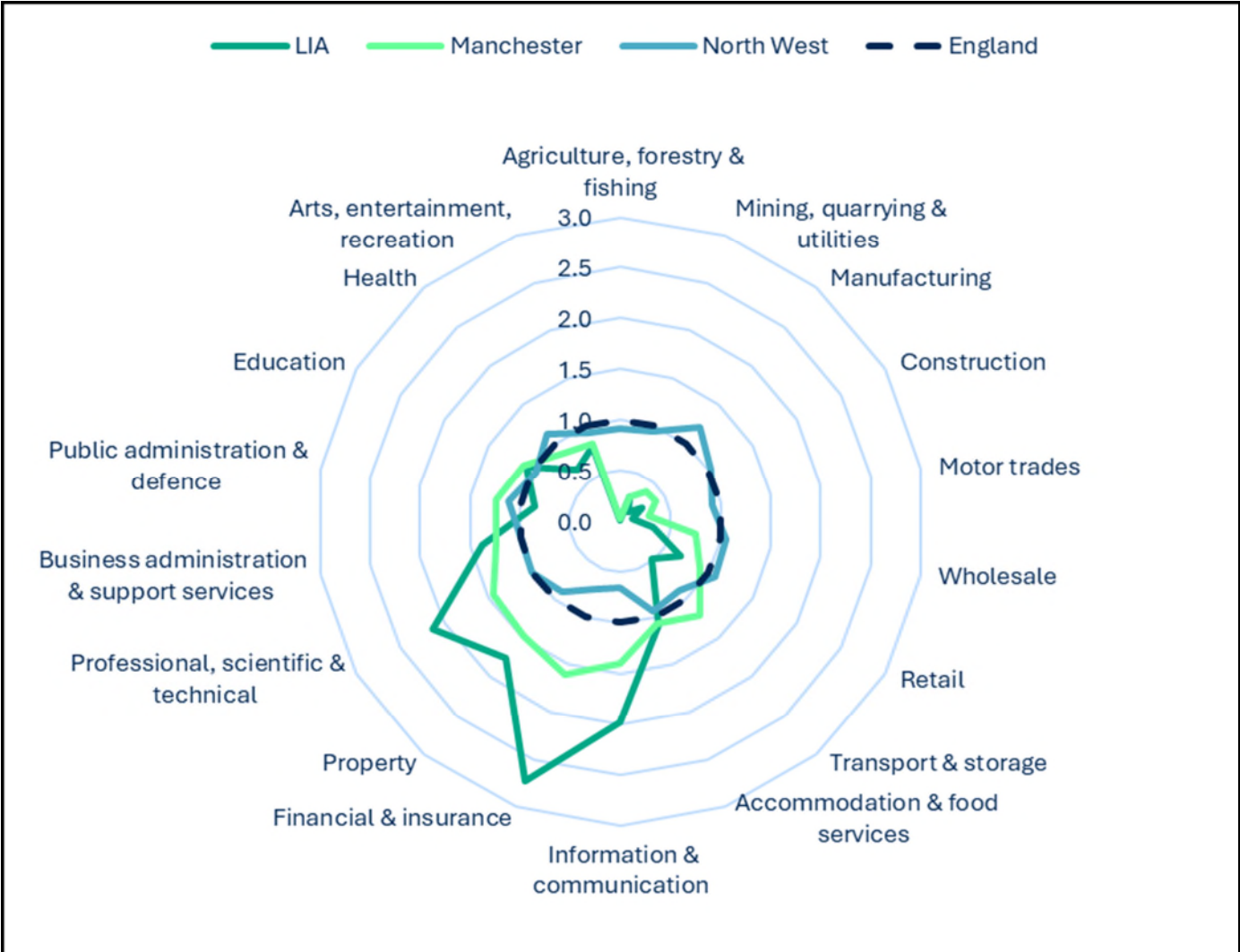


	Figure:	13.2		
	Title:	Employment Specialisation in the LIA		
	Project:	Sister Plot C, Manchester		
	Date:	March 2025	Scale:	Not To Scale

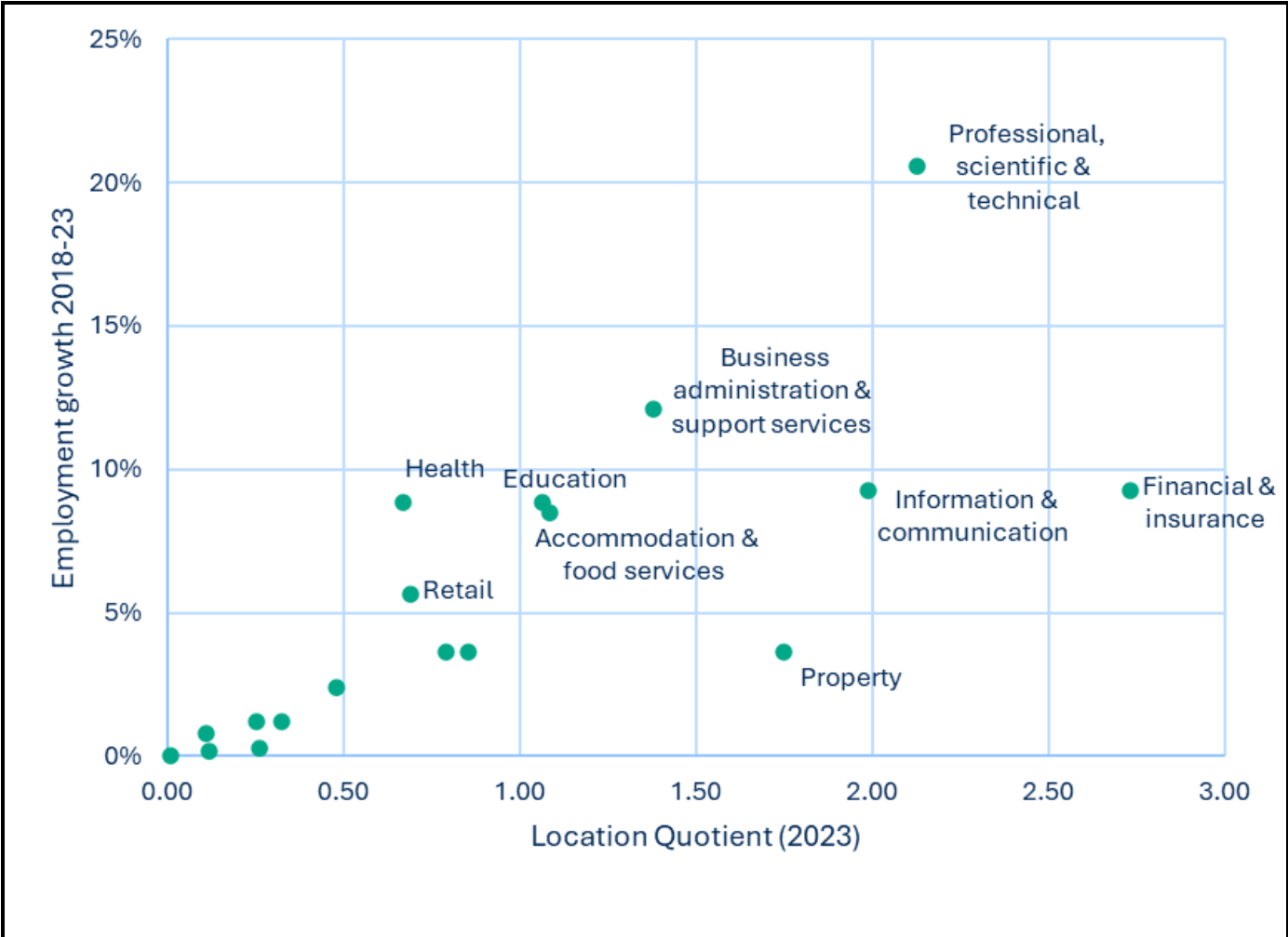


	Figure:	13.3		
	Title:	Employment growth measured against LQ (LIA)		
	Project:	Sister Plot C, Manchester		
	Date:	March 2025	Scale:	Not To Scale

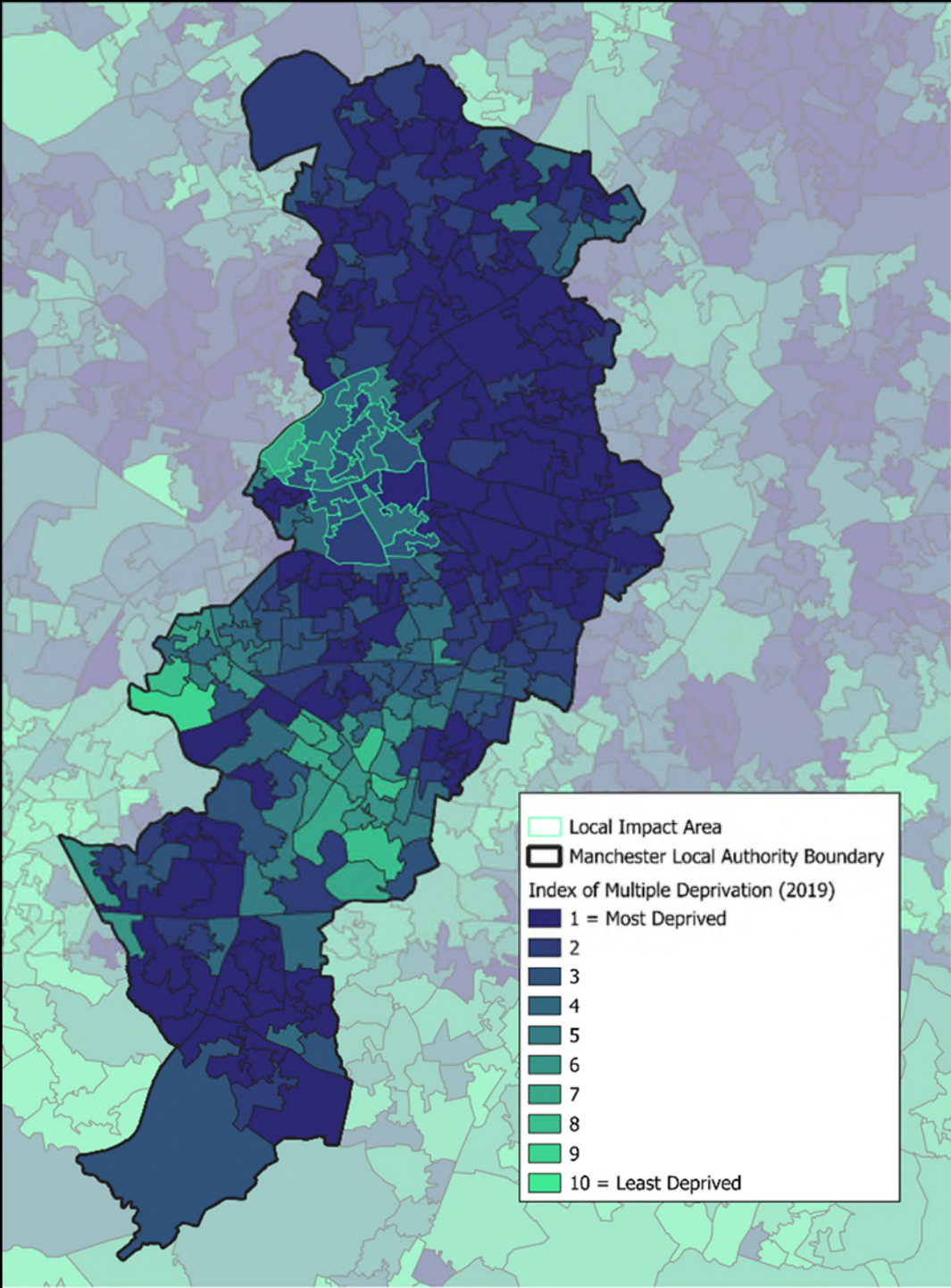


	Figure:	13.4		
	Title:	Index of Multiple Deprivation, 2019		
	Project:	Sister Plot C, Manchester		
	Date:	March 2025	Scale:	To Scale

14. Transport

Introduction

- 14.1. This Chapter of the ES has been prepared by Civic Engineers and assesses the likely Transport impacts of the Proposed Development upon the Site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted. This Chapter is accompanied by seven technical appendices, a Construction Traffic Information (Appendix 14.1), Construction Stage Impacts (Appendix 14.2), Operational Stage Impacts (Appendix 14.3), Cumulative Assessment (Appendix 14.4), IDM Masterplan Assessment with Cumulative Trips (Appendix 14.5), Scoping in/out of Cumulative Site (Appendix 14.6) and Fear and Intimidation Construction Stage Calculations (Appendix 14.7). The Transport Assessment and Framework Travel Plan form Appendix 1.8 and I respectively.

Table 14.1- Authorship Information.

	Lead Author	Reviewer
Name	Joel Sorsby	Emily Ingham
Company	Civic Engineers	Civic Engineers
Qualifications/Accreditations relevant to technical area inc. IEMA	Sustainability in Transport MSc	MEng Civil and Environmental Engineering
Years technical experience (in technical area)	3	11
Number of EIA's delivered to date	2	20

Assumptions and Limitations

- 14.2. To calculate the distribution of vehicle trips originating from The Proposed Development, commuting data derived from a 2011 NOMIS dataset (dataset WUE0EW) has been used. This data is limited by its age but is considered appropriate for this assessment.
- 14.3. Assumptions about traffic generated during the Demolition and Construction Stage have been provided by the Applicants.
- 14.4. Details of cumulative traffic have been taken from the Transport Assessments or Environmental Statements of the respective developments, accessed via MCC's public access.
- 14.5. Details of traffic generated by Sister have been taken from the SRF The SRF states parameters of 1,500 homes and 2 million sq. ft. of commercial space will be contained within the development. The assumed categorisation of the commercial uses of the site mirrors the proportion of commercial uses that is proposed at Plot C of the development.
- 14.6. This results in 120,138 sqm. of commercial space with 3.4% of this being allocated to café and restaurant space, 2.7% as gym space and 93.8% as office space.

Relevant Legislation, Policy and Guidance

Legislation

- 14.7. The Highways Act 1980: This act sets out the legal framework for the creation, maintenance, and management of public highways in the UK. It governs how roads, footpaths, and related infrastructure are regulated by authorities.

- 14.8. The Environment Act 2011: This act is relevant to transport as it empowers local authorities to address air quality issues caused by traffic emissions, promoting sustainable and low-emission transport solutions.

Policy

National Planning Policy

- 14.9. National Planning Policy Framework (2024): Chapter 9 is of primary relevance to the transport element of the development. This chapter focuses on promoting sustainable transport, and a review is provided in the Transport Assessment at Appendix 14.8.

Regional Planning Policy

- 14.10. Places for Everyone (2024): Policies JP-C1, JP-C3, JP-C4, JP-C5, JP-C8 and JP-14 are of relevance to the transport element of the development, and a review is provided in the Transport Assessment at Appendix 14.8.

Local Planning Policy

- 14.11. Manchester Core Strategy (2024 Addendum): Policies T1 (Sustainable transport), T2 (Accessible areas of opportunity and need), SP1 (Spatial Principles) and DM1 (Development Management) are of relevance to the transport element of the development.

Guidance

- 14.12. IEMA Guidelines: Environmental Assessment of Traffic Movement (2023): Provides guidance for the assessment of traffic and movement associated with all development projects subject to EIAs. The guidance aims to identify areas where the project can reduce reliance on vehicles.
- 14.13. Greater Manchester Transport Strategy 2040: includes right mix aspirations of 50% of journeys to be by sustainable modes by 2040, and also a target to reduce baseline traffic by 8% by 2040.
- 14.14. ID Manchester Strategic Regeneration Framework (2023).
- 14.15. MCC's Guide to Development in Manchester Planning Guidance (2007): This document emphasizes the integration of sustainable transport into new developments, prioritizing walking, cycling, and public transport over private car use. It encourages high-quality design that supports accessibility, reduces car dependency, and enhances connectivity within and around Manchester.
- 14.16. City Centre Transport Strategy to 2040: The strategy sets a long-term vision for a cleaner, greener, and more accessible Manchester city centre by prioritizing active travel and public transport. It aims to reduce car trips by 50%, enhance pedestrian and cycling infrastructure, and improve public transport efficiency to support inclusive economic growth and climate goals.
- 14.17. Travel Plans, Transport Assessments and Statements: This national guidance outlines when and how developers should prepare transport assessments, statements, and travel plans to ensure developments are accessible and promote sustainable transport.
- 14.18. The Guidelines for the Environmental Assessment of Traffic and Movement: This document provides a framework for evaluating the environmental impacts of traffic-related changes, emphasizing the need to assess areas with sensitive receptors, manage traffic flow increases, and ensure sustainable transport solutions in development planning.
- 14.19. A detailed review of the above policy and guidance is provided in the Transport Assessment at **Appendix 14.8**.

Assessment Methodology and Significance Criteria

Scenarios Tested

- 14.20. The following scenarios are included in the assessment of Traffic and Transport effects of the Proposed Development.

- Scenario 1: Baseline Conditions (existing site as of May 2025 including developments defined within the Baseline section of the committed development schedule in Appendix 14.2)
- Scenario 5: Baseline + Phase A + Phase B + Phase C
- Scenario 6: Baseline + Phase A + Phase B + Phase C + Cumulative
- Scenario 7: Baseline + Phase A + Phase B + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative

- 14.21. Scenario 5, transport impacts of Plot C will be assessed as well as the associated construction activities, Scenario 6 is differentiated by the inclusion of cumulative trips surrounding the site and Scenario 7 transport impacts will be assessed as it describes the operational traffic from the Site as well as the surrounding SRF area.
- 14.22. The submitted EIA Screening and Scoping (dated 20 February, included at Appendix 2.1) did not include testing of Scenarios 5 and 6, however, MCC highway officers, in the Scoping Opinion requested analysis of construction traffic arising from the Proposed Development (Scenario 5 – construction phase only) and the cumulative impact with other committed and future developments (Scenario 6-operational phase only), therefore these Scenarios have now been included.
- 14.23. Scenarios which included only partial development of the scheme (e.g. Phase A and Phase C only (Scenario 2)), have not been assessed, as the full Proposed Development (Phase A, Phase B and Phase C) provides the most robust assessment of the impact on traffic and transport.

Trip Generation Methodology

- 14.24. The following trip generation methodology has been used to derive vehicle trips during the Demolition and Construction Stage and the Operational Stage:
- **Demolition and Construction Stage:** information has been provided by the operator, ID Manchester Ltd, which is included at Appendix 14.2 All vehicles are assumed to arrive from London Road south and leave via Sackville Street and Princess Street.
 - **Operational Stage:** the change in Annual Average Daily Traffic Flow (AADT) is used to define impacts. This uses the peak hour development flows presented in the Transport Assessment converted to AADT. The peak hour flows (PHF in Table 14-2) have been converted to Annual Average Daily Traffic flows (AADF in Table 14-2) for the purposes of this assessment using the following factors taken from the DfT's Traffic Appraisal Manual (1991) ¹. These trips are then distributed on the highway network using NOMIS data. LDVs and taxis arrive from London Road south and leave via London Road north. HDVs arrive from London Road south and leave via Sackville Street.
 - **Cumulative Assessment:** the table at Appendix 14.6 sets out which of the Cumulative Sites have been scoped in/out of this assessment. For the sites scoped in, data has been taken from the respective Transport Assessments and Environmental Statements available on the planning file.
 - **Assessment of full SRF area:** the SRF² sets out parameters for 1,500 apartments and up to 2m sqft (190,000sqm) commercial, which would be 120,000sqm when Plot C is excluded. The land use of commercial has been assumed to be split as per Plot C, i.e. 1.7% café, 1.7% restaurant, 2.7% gym and the remainder office. Each plot is assumed to have an equal proportion of the total apartments and commercial land uses. The apartments are assumed to have a parking space for 5% of homes, and the car trip rates from TRICS has been reduced to 5% to respond to this. Trips have then been distributed as shown in the table at Appendix 14.5 using the assumptions of vehicle routing from the SRF, presented in Table 14-2 below.

¹ Traffic Appraisal Manual (TAM); Manual of Recommended Practice for Traffic Forecasting in Scheme Appraisal Trunk Road. Department of Transport, Assessments, Policy and Methods Division, 1991

² Available at

https://www.manchester.gov.uk/download/downloads/id/29071/id_manchester_area_of_the_oxford_road_corridor_framework_pdf.pdf

Table 14. 2: Factors Used for Conversion of Peak Hour Vehicle Flow (PHF) to Annual Average Daily Traffic Flow (AADF)

Conversion of Hourly Flow	Examples of Receptor					
Magnitude of Change	Main Urban		Inter Urban		Recreational Inter-Urban	
	Factor	Coeff*(%)	Factor	Coeff*(%)	Factor	Coeff*(%)
AAHF to PHF	2.63	(11)	2.825	(15)	3.890	(23)
AAWF to AADF	0.943	(3)	0.979	(4)	1.015	(4)

Source: Traffic Appraisal Manual (TAM); Manual of Recommended Practice for Traffic Forecasting in Scheme Appraisal Trunk Road. Department of Transport, Assessments, Policy and Methods Division, 1991

Notes: AAHF is assumed to be AADF ÷ 24

AAWF is the Average Annual Weekday Flow (Monday – Friday)

*Coefficient of variation

The Study Area

- 14.25. The study area relevant to this Chapter broadly involves the highway network surrounding the site.
- 14.26. The initial study area was defined as links which would receive an increase in AADT (Annual Average Daily Traffic) of 100 or more during either the demolition and construction stage or the operational stage.
- 14.27. The approach to further define the study area, to understand links where effects should be assessed in more detail, uses Rules 1 and 2 defined by the IEMA Guidelines.
- 14.28. IEMA Guidelines state that ‘following the determination of a study area, it is recommended the competent traffic and movement expert applies two broad rules of thumb as criteria to assist in delimiting the scale and extent of the environmental assessment’:
 - Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%).
 - Rule 2: Include highway links of high sensitivity where traffic flows have increased by 10% or more.

Surveys and Data Sources

- 14.29. This Chapter is accompanied by the following appendices:
 - 14.1 – Construction Traffic Information
 - 14.2 – Construction Stage Impacts
 - 14.3 – Operational Stage Impacts
 - 14.4 – Cumulative Assessment
 - 14.5 – IDM Masterplan Assessment with Cumulative Trips
 - 14.6 – Scoping in/out of Cumulative Sites
 - 14.7- Fear and Intimidation Construction Stage Calculations
 - 14.8 – Transport Assessment
- 14.30. To assess the baseline Annual Average Daily Traffic (AADT) along each road surrounding the Proposed Development, DfT count points have been utilised, these are shown in the table at Appendix 14.2.

- 14.31. TRICs software has been used to estimate the number of trips that will be generated by the Proposed Development. Each land use within Plot C has a separate trip rate, the categories selected from the TRICs survey database were:
- 06K- Cafes
 - 06B- Restaurants
 - 07K- Gyms
 - 02A- Offices
- 14.32. As the Proposed Development is car-free, the vehicle categories that are relevant for Plot C are Taxis, LGVs and OGVs.
- 14.33. To distribute the trips generated by the Proposed Development onto the surrounding highway network, NOMIS data has been used. Specifically, the WUEOW dataset was used as a proxy for what the anticipated transport patterns of people working at Plot C.

Source of Effect

- 14.34. The effects which will be considered in this ES Chapter are as follows:
- Severance of Communities
 - Non-motorised User Delay
 - Non-motorised User Amenity
 - Fear and Intimidation on and by Road Users
 - Road User and Pedestrian Safety

Severance of Communities

- 14.35. The IEMA Guidelines paragraph 3.13 states that *“severance is the perceived division that can occur within a community when it becomes separated by major transport infrastructure.”*
- 14.36. The measurement for assessing severance is difficult to predict as according to the Guidelines for the Environmental Assessment of Traffic and Movement, 2023: *“the correlation between the extent of severance and the physical barrier of a road is not clear and there are no predictive formulae which give simple relationships between traffic factors and levels of severance.”*
- 14.37. Nevertheless, the IEMA Guidelines refers to the Department for Transport’s 1983 Manual for Environmental Appraisal³ and suggests using the range of indicators for determining the magnitude of change in severance of communities as set out in Table 14. 3.

Table 14. 3: Magnitude of Change.

Sensitivity	Examples of Receptor
Magnitude of Change	Change in Traffic Flow
No Change	No Change
Negligible	< 30%
Low	30% - 60%
Medium	60% - 90%
High	> 90%

³ Manual for Environmental Appraisal. Department of Transport, 1983

- 14.38. However, it is noted that caution will be observed when applying these thresholds to very low baseline flows which are unlikely to experience severance impacts even with high percentage changes in traffic.

Non-motorised User Delay

- 14.39. The IEMA Guidelines note that a change in the volume, composition and/or speed of traffic may affect the ability of a person to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend on the general level of pedestrian activity, visibility and general physical conditions of the development site. The guidelines do not set any thresholds for assessing non-motorised user delay, recommending instead that assessors use their judgement to determine whether non-motorised user delay constitutes a significant effect. In densely populated areas with highly sensitive, receptors, it may be necessary to quantify the number of pedestrians impacted.
- 14.40. There is a relationship between non-motorised user delay and increased traffic volume. On this basis the significance of the change in traffic magnitude on Severance of Communities is used as a suitable measure of the significance of the change in traffic magnitude on non-motorised user delay.

Non-motorised User Amenity

- 14.41. With respect to 'Non-motorised User Amenity' this is described in the IEMA Guidelines as 'relative pleasantness of a journey'. It is affected by traffic flow, traffic composition, footway width and separation from the carriageway. The IEMA 1993 Guidelines suggested a tentative threshold for judging the significance of a change in pedestrian amenity where the traffic flow (or the HGV component) is halved or doubled. The 2023 Guidelines suggests that thresholds are expressed as a starting point and have been adopted in considering the significance of effect. However, the IEMA Guidelines state that any assessment of amenity should pay full regard to specific local conditions.

Fear and Intimidation on and by Road Users

- 14.42. A further environmental impact that affects people is the fear and intimidation created by all moving objects. This can include motorcycles, cars, lorries, and buses, and it also has to consider other modes of travel, including horses, cycles, mobility scooters, e-scooters and e-cycles if appropriate. The extent of fear and intimidation is dependent on heavy vehicle composition, the speed vehicles are passing and proximity of traffic to people.
- 14.43. There is no commonly agreed guidance on the thresholds for estimating levels of danger and in the absence of such, the updated IEMA Guidelines put forward a weighting system to help assessors provide a first approximation of the likelihood of pedestrian fear and intimidation. This is assessed based on the degree of hazard to pedestrians by average traffic flow, 18-hour heavy vehicle flow and average speed over an 18-hour day in miles/hour. The degree of hazard is assessed with reference to the established thresholds, and a score provided for each combination on a highway link under consideration (see Table 14. 4).

Table 14. 4: Fear and Intimidation Degree of Hazard Levels of Fear and Intimidation.

Average traffic flow over 18-hour day –all vehicles / hour 2-way (a)	Total 18-hour heavy vehicle flow (b)	Average vehicle speed (c)	Degree of hazard score
+1,800	+3,000	->40	30
1,200–1,800	2,000–3,000	30–40	20
600–1,200	1,000–2,000	20–30	10
<600	<1,000	<20	0

- 14.44. The total score from all three elements is combined to provide a 'level' of fear and intimidation for all three elements. The thresholds suggested in the IEMA Guidelines are set out in Table 14. 5.

Table 14. 5: Levels of Fear and Intimidation.

Level of fear	Total hazard score (a) + (b) + (c)
Extreme	71+
Great	41-70
Moderate	21-40
Small	0-20

- 14.45. The magnitude of impact is approximated with reference to the changes in the level of fear and intimidation from baseline conditions as set out in Table 14. 6, taken from the IEMA Guidelines.

Table 14. 6: Fear and Intimidation Magnitude of Impact.

Magnitude of Impact	Change in step/traffic flows from baseline conditions
High	Two step changes in level
Medium	One step change in level, but with >400 vehicle increase in average 18hr average two-way all vehicle flow; and/or >500 hv increase in total 18hr hv flow
Low	One step change in level, with <400 vehicle increase in average 18hr average two-way all vehicle flow; and/or <500 hv increase in total 18hr hv flow
Negligible	No step changes

Road User and Pedestrian Safety

- 14.46. The IEMA Guidelines highlight that professional judgement will be needed to assess the implications of local circumstance or factors which may increase or decrease the risk of collisions, e.g. junction conflicts. The IEMA Guidelines encourage assessors to review the baseline conditions to identify any collision clusters and assess the effects of additional development traffic for all users (including vulnerable groups).

Table 14. 7: Road User and Pedestrian Safety Indicator Thresholds.

Magnitude of Change	Change in traffic flow
No Change	No Change
Negligible	< 30%
Low	30% - 60%
Medium	60% - 90%
High	> 90%

Significance Criteria

- 14.47. The sensitivity of affected receptors will be considered on a scale of high, medium, low or negligible. Table 14- 8 sets out the criteria used to assess the sensitivity of receptors on each link in the study area.

Table 14- 8: Sensitivity Criteria.

Sensitivity	Examples of Receptor
High	<p>The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance.</p> <p>Defined as road links and junctions with school, nursery or playground; retirement/care homes; lack of adequate footways, lack of crossings, network congested and over capacity; collision cluster zones</p>
Medium	<p>The receptor/resource has moderate capacity to absorb change without significantly altering its present character, or is of high importance.</p> <p>Defined as road links and junctions with hospitals, surgeries, clinics, shopping areas, parks/recreation grounds; narrow footways.</p>
Low	<p>The receptor/resource is tolerant of change without detriment to its character, is of low or no local importance.</p> <p>Defined as road links and junctions with few residential properties with direct frontage to the highway link being used as a construction traffic route - Workplaces with direct frontage to highway link being used as construction route.</p>

- 14.48. If a link is identified as having receptors which are of high sensitivity the impacts are assessed in more detail if there is a change in AADT of 10% or more (Rule 2 of the IEMA Guidelines).
- 14.49. All other links in the study area will have impacts assessed in more detail if there is a change in AADT or HDV of 30% or more (Rule 1 of the IEMA Guidelines).
- 14.50. The significance of an environmental impact is determined by the interaction of magnitude and sensitivity, whereby the impacts can be positive or negative. The impact Significance Matrix is set out in Table 14.9.

Table 14.9: Impact Significance Matrix.

Magnitude of Impact	Criteria for Assessing Effect
Major	Total loss or major/substantial alteration to key elements/features of the baseline conditions such that the post development character/composition/attributes will be fundamentally changed.
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Minor	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character / composition / attributes of the baseline condition will be similar to the pre-development circumstances/situation.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

- 14.51. Where appropriate, the significance of effect will be classified as being direct/indirect effects, secondary, cumulative, short/medium/long term, permanent/temporary and beneficial/adverse effects arising from The Proposed Development.
- 14.52. Effects which are major or moderate will be considered significant in this assessment. Effects which are minor or negligible will not be considered significant.

Table 14- 9: Sensitivity definitions.

Magnitude	Sensitivity		
	High	Medium	Low
Major	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate or Minor Adverse/Beneficial
Moderate	Major - Moderate Adverse/Beneficial	Moderate Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate or Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial - Negligible
Negligible	Negligible	Negligible	Negligible

Effects Not Requiring Further Assessment

- 14.53. Large/hazardous loads are not generally associated with the construction of mixed-use commercial developments, as movements are primarily by HGV and Light Good Vehicles (LGVs) / Medium Good Vehicles (MGVs). The requirements for any such loads requiring access during construction will therefore be limited. A methodology statement will be included within the Construction Environmental Management Plan (CEMP) to be presented and agreed with the Local Highway Authority and HSE, where appropriate. This CEMP will be conditioned. Such a statement would include the details of trained operators, provision of appropriate audio / visual aids and / or proximity devices where operator visibility is restricted and the designation of dedicated loading / unloading areas.
- 14.54. For operation of the Proposed Scheme, due to the uses proposed, the Proposed Development would not require the transportation of large or hazardous loads.
- 14.55. Therefore, effects related to large/hazardous loads are not considered significant and are not considered further.

Baseline Conditions

Pedestrian Access

- 14.56. Existing accesses into the Proposed Development include a footway along the A6 (London Road) to the north-east of The Proposed Development. This footway (1.5m to 2.0m wide) crosses a cycle lane and a carriageway to reach The Proposed Development boundary. Following this footway southwards, it becomes segregated from the carriageway and is routed adjacent to a cycle lane on the eastern side of The Proposed Development. At the southern extent of The Proposed Development along this route, signalised crossings are in place to allow the crossing of the A57(M) motorway slip road. This footway then continues along London Road southwards.
- 14.57. From the west, there are 3m wide footways along the southern side of Altrincham Street as well as routes through the existing campus originating from Sackville Street. Pedestrian access from the south of The Proposed Development is currently severed by the A57(M), with pedestrians being routed into The Proposed Development via Sackville Street or London Road.

Cycle Access

- 14.58. Cycle routes surrounding The Proposed Development include a short section of on-carriageway lanes on Sackville Street that lead to a segregated lane through Sackville Street Junction. Cycling infrastructure along Sackville Street itself is not cohesive and generally of a poor quality. There is a lack of routes on the east-west axis around The Proposed Development, with only a short section of on-carriageway lane along Altrincham Street being present.
- 14.59. This lane leads to London Road, which has a 20m section of on-carriageway cycle lane routing to the north. To the south along London Road, there is a segregated route that aligns with the pedestrian footway that is set back from the carriageway. At present, this cycle lane is for northbound cycle traffic only, with a dropped kerb and signage indicating that cyclists travelling northbound along the A6 should use the lane to continue northwards.

Public Transport Access

- 14.60. The site has excellent public transport access, it sits within an area that scores an 8 on the Greater Manchester Accessibility Level (GMAL) scale. GMAL is a rating of public transport accessibility that rates places on a scale of 1-8 with 1 being the lowest level of accessibility and 8 being the highest. The scores are determined by proximity to services as well as frequency and quality of service.
- 14.61. The site is located within 100m of Manchester Piccadilly train station, which has an associated tram stop that facilitates access to the wider Manchester transport network. Moreover, there are bus stops going northbound and southbound along London Road immediately to the east of the site.

Identification and Evaluation of Likely Significant Effects

Construction Phase

Scenario 5: Baseline + Phase A + Phase B + Phase C

- 14.62. To understand the impact of the Proposed Development during its Demolition and Construction Stage, the AADT and HDV movements in the study area in Scenario 5 (Baseline + Phase A + Phase B + Phase C) have been assessed and compared against movements in Scenario 1 (Baseline Conditions). This is presented at Appendix 14.2.
- 14.63. As shown in Appendix 14.2 there is one link which will experience either an AADT or HDV increase of 30% or more during the Construction Phase (Rule 1):
- Link 18, Princess Street, HDV increase of 50.8% (from 83 per day to 125 per day), noting increase in AADT is 1.7%.
- 14.64. There are also no links of high sensitivity which experience an AADT increase of 10% or more during the Construction Phase (Rule 2).
- 14.65. The above assessment forms the basis for evaluating all effects for the remainder of this Construction Phase section, for all effect types, except 'Road User and Pedestrian Safety' which uses a different metric as explained in Paragraph 14.46 above.
- 14.66. The effects are now addressed in turn for this link.

Severance of Communities

- 14.67. On Link 18, Princess Street, the magnitude of change will be Minor. The sensitivity of this link is High, due to the Echoes Day Nursery located adjacent to the link. There will be a direct, temporary **Minor Adverse** effect which is **not significant**.

Non-motorised User Delay

- 14.68. Non-motorised user delay is assessed as per Severance of Communities, and therefore:
- Link 18, Princess Street, there will be a direct, temporary, **Minor adverse** effect which is **not significant**.

Non-motorised User Amenity

- 14.69. The 2023 IEMA Guidelines suggests that the widely accepted thresholds (see below) are expressed as a starting point and therefore they have been adopted in considering the significance of effect. However, the IEMA Guidelines state that any assessment of amenity should pay full regard to specific local conditions, therefore further analysis is presented below.
- 14.70. The threshold for considering significance of a change in Non-motorised User Amenity is where AADT (or HDV) on a road link is halved or doubled.
- 14.71. There is an increase in HDV AADT of 50.8% on Link 18, Princess Street. As this increase is not a doubling or halving or the existing AADT, it is **Minor** and **not considered as significant**.

Fear and Intimidation on and by Road Users

- 14.72. During the Construction Phase, there will be additional vehicular traffic travelling to / from the Site associated with the construction workforce, deliveries of materials, etc. Increases in traffic can potentially result in increases in fear and intimidation.
- 14.73. The extent of fear and intimidation is dependent on heavy vehicle composition, the speed vehicles are passing and proximity of traffic to people- this is based on the criteria and process set out in Table 14. 4, Table 14. 5 and Table 14. 6.
- 14.74. There is no significant change from the baseline flows on Link 18 when the construction traffic is added. The magnitude of impact is **Negligible** and **not significant** as there is No Step Change in the Level of Fear. Appendix 14.7 provides further detail.

Road User and Pedestrian Safety

- 14.75. During the Construction Phase, there will be additional vehicular traffic travelling to / from the Site associated with the construction workforce, deliveries of materials, etc. Increases in traffic can potentially result in reductions in safety.
- 14.76. To assess the impact of Construction Phase traffic on Road User and Pedestrian Safety the IEMA Guidelines recommend reviewing where existing collision clusters exist and then assessing the implications when development traffic is added. No collision clusters have been identified on the link which exceeds Rule 1, Link 18, Princess Street, therefore effects and **Negligible** and **Not significant**.

Operational Phase

Scenario 5: Baseline + Phase A + Phase B + Phase C

- 14.77. To understand the impact of the Proposed Development during its Operational Stage, the AADT and HDV movements in the study area in Scenario 5 (Baseline + Phase A + Phase B + Phase C) have been assessed and compared against movements in Scenario 1 (Baseline Conditions). This is presented at Appendix 14.3.
- 14.78. As shown in Appendix 14.3 no links experience either an AADT or HDV increase of 30% or more during the Operational Stage (Rule 1) or an AADT increase of 10% or more, which is the threshold for links of high sensitivity, during the Operational Stage (Rule 2).
- 14.79. Therefore, effects will be **Negligible** and therefore **Not significant**, and do not require further assessment.

Cumulative Effects

- 14.80. The table at Appendix 14.6 sets out which cumulative schemes have been scoped in and out of the assessment.

Construction

Scenario 6: Baseline + Phase A + Phase B + Phase C + Cumulative

- 14.81. Construction traffic will not be considered as a part of Scenario 6.

Operational

Scenario 6: Baseline + Phase A + Phase B + Phase C + Cumulative

- 14.82. To understand the impact of the cumulative schemes, including Proposed Development during the Operational Stage, the AADT and HDV movements in the study area in Scenario 6 (Baseline + Phase A + Phase B + Phase C + Cumulative) have been assessed and compared against movements in Scenario 1 (Baseline Conditions). This is presented at Appendix 14.4
- 14.83. As shown in Appendix 14.4 no links experience either an AADT or HDV increase of 30% or more during the Operational Stage (Rule 1).
- 14.84. Three links will experience an AADT increase of 10% or more, which is the threshold for links of high sensitivity, during the Operational Stage (Rule 2). Therefore, those three links have been investigated further to understand their sensitivity, as presented in Table 14. 10.

Table 14. 10: Cumulative Assessment – links with increase in AADT of 10% or more

Link Ref	Link	Change in AADT	Sensitivity of Link	Reason
1	London Road North of new access	28.4%	Medium	Will have new recreation area as part of development
3	London Road South of new access	16.1%	Medium	Will have new recreation area as part of development
10	London Road north of Fairfield Street	27.8%	Negligible	Does not have any of the receptors or features which would make it High, Medium or Low

- 14.85. As shown in Table 14. 10, the links experiencing more than a 10% increase in AADT when comparing Scenario 6 to Scenario 1 have a sensitivity of Medium or Negligible. As the links are not of High sensitivity, Rule 2 of the IEMA Guidelines is not met, the impacts will be **Medium to Negligible** and **Not significant**, and further assessment is not required.

Scenario 7: Baseline + Phase A + Phase B + Phase C + IDM Masterplan + Cumulative

- 14.86. To understand the cumulative impact of Plot C, the wider IDM Masterplan and Cumulative Schemes during the Operational Stage, the AADT and HDV movements in the study area in Scenario 7 (Baseline + Phase A + Phase B + Phase C + IDM Masterplan (future surrounds/future phases) + Cumulative) have been assessed and compared against movements in Scenario 1 (Baseline Conditions). This is presented at Appendix 14.5.
- 14.87. As shown in Appendix 14.5 no links experience either an AADT or HDV increase of 30% or more during the Operational Stage (Rule 1).
- 14.88. Three links will experience an AADT increase of 10% or more, which is the threshold for links of high sensitivity, during the Operational Stage (Rule 2). As per the Cumulative assessment presented above, the three links where AADT increases by more than 10% (Links 1, 3 and 10) have a sensitivity of **Medium or Negligible**. As the links are not of High sensitivity, Rule 2 of the IEMA Guidelines is not met, the impacts will **not be significant**, and further assessment is not required.
- 14.89. To calculate the trips generated by the full IDM masterplan, the methodology described in paragraph 14.20 has been used.

Mitigation Measures

Construction Phase

- 14.90. A Construction Environment Management Plan (CEMP) will be secured through a planning condition, and which will include / set out the following:
- A construction logistics / traffic management plan; and
 - Construction travel plans, to encourage construction workers to use sustainable modes of travel.
- 14.91. As part of the CEMP and the above plans, the following specific measures will be implemented:
- Off-Site roads to remain clean and clear of debris at all times during the works;
 - Signage will be provided for all construction work traffic such that the traffic impacts of the development do not compromise the safety and operation of the local highway network or pedestrians or other road users' safety;
 - Appropriate signing of the delivery routes to ensure vehicles use the approved routes to / from the Site;
 - Installation of temporary warning signs, where appropriate, in the vicinity of the accesses both for vehicles and other road users;
 - Set up of the temporary accesses to ensure that vehicles have appropriate visibility;
 - Implementation of segregated routes to separate construction workers / traffic and future Site users;

- Creation of delivery vehicle holding areas on-Site;
- Temporary traffic management for short periods when the delivery of abnormal / oversized loads may cause an obstruction to the public highway;
- Use of traffic marshals, where appropriate;
- Wheel washing facilities for departing vehicles; and
- Where possible, hoarding during the construction stage will not entirely cover footways / cycle routes. However, if this is necessary then alternative safe routes will be provided. Clear advertising will also be provided for any routes that are closed, and signposting will be provided for suitable alternative routes. If any temporary diversions for pedestrian / cyclist routes are required on the adjacent roads, these will be discussed and agreed upon with MCC.

Operational Phase

- 14.92. A Travel Plan (to be secured through a planning condition) will be produced to inform occupiers of the Proposed Development of sustainable transport options to and from Plot C.

Residual Effects

Construction Phase

- 14.93. No significant effects have been identified on Traffic and Transport in the Demolition and Construction Stage of the Proposed Development, nor when committed developments or the wider IDM masterplan are taken into consideration.

Table 14. 12: Construction Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Negligible	Severance of Communities, Non-motorised User Delay, Non-motorised User Amenity, Fear and Intimidation on and by Road Users, Road User and Pedestrian Safety	Mitigation measures captured within CEMP to be agreed with LPA and Highways prior to works taking place.	CEMP to be submitted and approved by the LPA as a condition of planning permission, prior to works taking place.	Negligible, Not Significant

Operational Phase

- 14.94. No significant effects have been identified on Traffic and Transport in the Operational Stage of the Proposed Development, nor when committed developments or the wider IDM masterplan are taken into consideration.

Table 14. 13: Operational Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase				
Negligible	Severance of Communities, Non-motorised User Delay, Non-motorised User Amenity, Fear and Intimidation on and by Road Users, Road User and Pedestrian Safety	N/A	N/A	Negligible, Not Significant

Reference List

14.95. This ES Chapter has been prepared in reference to the following:

- The DfT's Traffic Appraisal Manual (1991)
- Manual for Environmental Appraisal. Department of Transport, 1983
- IEMA Guidelines: Environmental Assessment of Traffic Movement (2023)

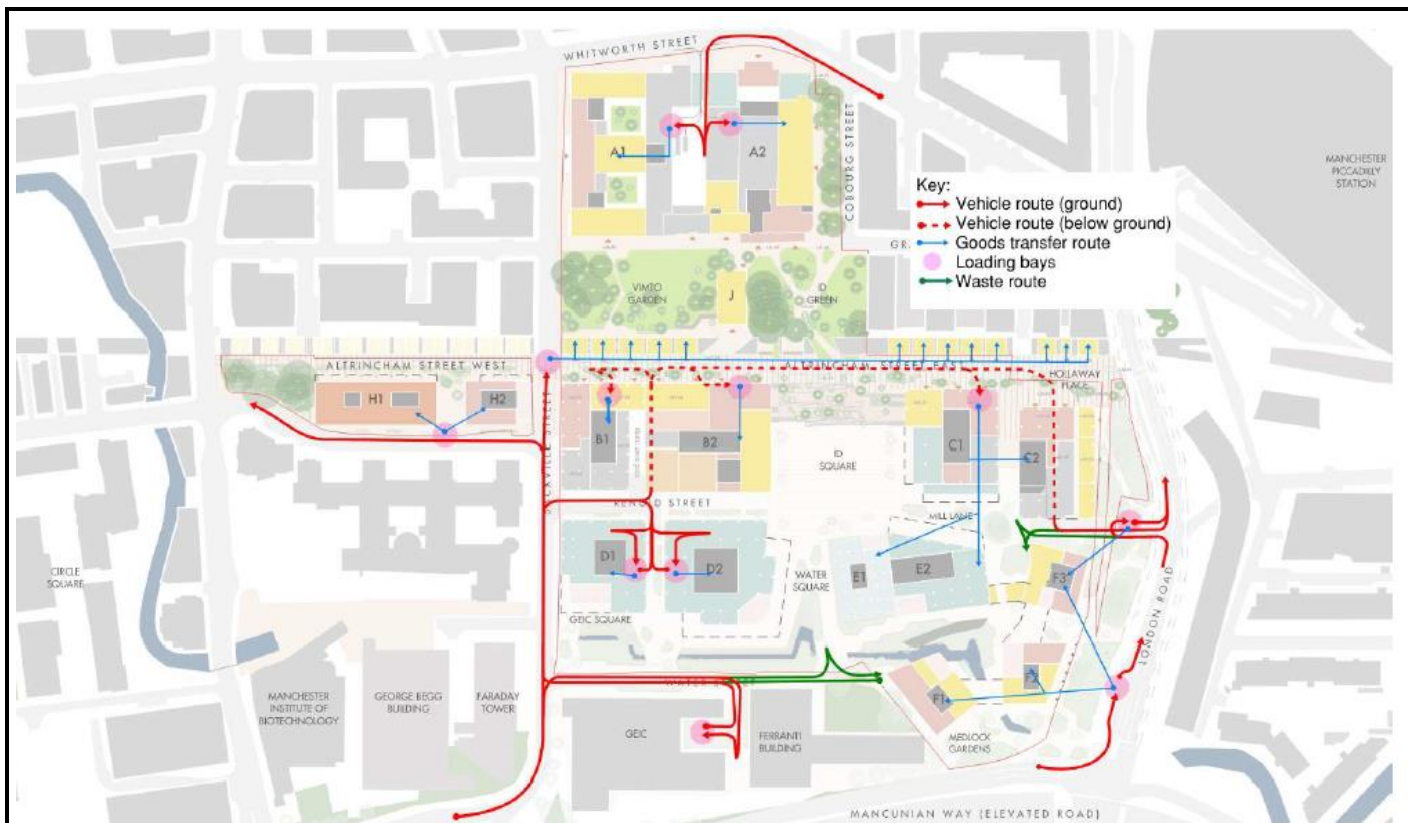


	Figure:	14-1		
	Title:	Assumed vehicle access to sub-plots at IDM		
	Project:	SISTER PLOT C, MANCHESTER		
	Date:	April 2025	Scale:	N/A

15. Daylight, Sunlight and Overshadowing

Introduction

- 15.1. This Chapter of the ES has been prepared by GIA and assesses the likely significant effects of the Proposed Development with respect to daylight, sunlight and overshadowing. This chapter also describes the methods used to assess the effects; the baseline conditions against which the assessments have been undertaken; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.
- 15.2. The authors of this Chapter have the following qualifications and experience:

Table 15.0- Authorship Information.

	Lead Author	Reviewer
Name	Nicola Hensey	Michael Beatty
Company	GIA	GIA
Qualifications/Accreditations relevant to technical area incl. IEMA	LLB (Hons)	BSc (Hons) MRICS
Years technical experience (in technical area)	17	11
Number of EIA's delivered to date	35+	20+

Assumptions and Limitations

- 15.3. Where actual room layouts were available on the planning portal, these have been considered in regard to the modelling of the internal layouts within the existing surrounding properties.
- 15.4. Floor levels have been assumed for adjoining properties assessed, where access has not been obtained. This dictates the level of the working plane which is relevant for the NSL assessments.

Relevant Legislation, Policy and Guidance

Legislation

- 15.5. There is no legislation that governs daylight, sunlight and overshadowing. The criteria for assessment relating to daylight, sunlight and overshadowing is covered by national and local policy in addition to BRE guidance as set out below.

Policy

National Planning Policy

National Planning Policy Framework (NPPF) (2024)

- 15.6. The NPPF highlights the Government's recognition that increased flexibility is required on daylight and sunlight in response to the requirement for higher density development by stating that *"when considering applications for*

housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site (as long as the resulting scheme would provide acceptable living standards)”

Planning Practice Guidance (PPG) (2019 and regularly updated as a ‘live’ resource)

- 15.7. Paragraph: 006 Reference ID: 66-006-20190722 – Effective use of land within the PPG states that *“All developments should maintain acceptable living standards. What this means in practice, in relation to assessing appropriate levels of sunlight and daylight, will depend to some extent on the context for the development as well as its detailed design. For example, in areas of high-density historic buildings, or city centre locations where tall modern buildings predominate, lower daylight and sunlight levels at some windows may be unavoidable if new developments are to be in keeping with the general form of their surroundings.”*

Local Planning Policy

Manchester Core Strategy (2012-2027)

- 15.8. Policy DM1 – Development Management – States that all developments should have regard to the effects on amenity including privacy, light, noise, vibration, air quality and odours.
- 15.9. Policy EN2 – Tall Buildings – States that, by their very size, tall buildings can have a significant impact on the local environment and its micro-climate. It is therefore expected that this impact be modelled and that submissions for tall buildings also include appropriate measures to create an attractive, pedestrian friendly local environment.

Guidance

Building Research Establishment (BRE) ‘Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice’, Third Edition, 2022 (the BRE guidelines)

- 15.10. The BRE guidelines provides advice on site layout planning to achieve good sunlighting and daylighting within buildings, and in the open spaces between them. It is intended for use by building designers, developers, consultants and Local Planning Authorities (LPAs). The advice it gives is not mandatory and should not be used as an instrument of planning policy. On page 4 (Summary) it states that *“It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location.”*
- 15.11. It also states at paragraph 1.6 that *“... the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. In special circumstances the developer or planning authority may wish to use different target values... in an area with modern high-rise buildings, a higher degree of obstruction maybe unavoidable if new developments are to match the height and proportions of existing building”*

Assessment Methodology and Significance Criteria

Scenarios Tested

- 15.12. The following scenarios have been assessed and are reported within this Chapter:
- Scenario 1 - Baseline Conditions (existing Site as of February 2025 including developments defined within the Baseline section of the committed development schedule in Appendix 2);
 - Scenario 2 - Baseline + Phase A (demolition of existing structures and buildings and construction of Building C1 and associated landscaping and works) + Phase C (Viaduct change of use and associated works); and
 - Scenario 5 - Baseline + Phase A + Phase B (demolition of existing structures and buildings and construction of Buildings C1 & C2 and associated landscaping and works) + Phase C.
- 15.13. It should be noted that, in order to accord with the agreed scoping, Phase C has been included within the above scenario definitions but, as Phase C will not result in any changes in surrounding massing, Phase C will not affect the assessment results.

- 15.14. It should also be noted that, since the EIA Screening and Scoping the following committed developments previously identified (and relevant to the daylight, sunlight and overshadowing assessment for the Proposed Development) are now under construction:
- 12 - IQ Echo Street; and
 - 1 – London Road.
- 15.15. At the time of preparing the EIA Screening and Scoping, scenario 3 and scenario 6 were scoped in, however as there are no committed developments which are of sufficient massing and sufficiently proximate to the Site to have an in combination effect with the Proposed Development, these scenarios are no longer required.

The Study Area

- 15.16. The BRE Guidelines suggest that residential properties have the highest requirement for daylight and sunlight and states that *“the guidelines are intended for use for rooms in adjoining dwellings where light is required, including living rooms, kitchens and bedrooms.”*
- 15.17. The scope of residential properties that have been assessed has been determined through professional judgement, considering their orientation and proximity to the Proposed Development.
- 15.18. The following properties and areas of amenity space are defined as sensitive receptors and will be considered due to their proximity to the Site, and their use:
- Fletcher House
 - 8 Fairfield Street
 - Lambert Hall
 - Fairfield House
 - Bulls Head
 - IQ Echo Street
 - IQ Echo Street Courtyard 1
 - IQ Echo Street Courtyard 2
 - Vimto Park
- 15.19. These properties are identified in the drawings contained at Appendix 15.1.
- 15.20. The assessment has considered other residential properties which may have a view of the completed Proposed Development but, due to the distance and orientation from the Proposed Development, their daylight and sunlight amenity levels are unlikely to be adversely affected. They have not, therefore, been assessed in detail.

Surveys and Data Sources

- 15.21. This Chapter is accompanied by the following appendices:
- Appendix 15.1 – Drawings of the following assessment scenarios:
 - Scenario 1 - Baseline
 - Scenario 2- Phase A + Phase C
 - Scenario 5 – Phase A + Phase B + Phase C
 - Appendix 15.2 – Daylight and Sunlight Results for the following assessment scenarios:
 - Baseline v Phase A + Phase C
 - Baseline v Phase A + Phase B + Phase C

- Appendix 15.3 – Overshadowing Results for the following assessment scenarios:
 - Baseline v Phase A + Phase C
 - Baseline v Phase A + Phase B + Phase C

Source of Effect

- 15.22. The assessment of daylight, sunlight and overshadowing effects is based principally on the amount of visible sky before and after the construction of a new development.
- 15.23. The Building Research Establishment (BRE) recommends the following assessment methodologies:
- Daylight
 - Vertical Sky Component (VSC); and
 - No Sky Line (NSL) Method.
 - Sunlight
 - Annual Probable Sunlight Hours (APSH).
 - Overshadowing
 - Sun Hours on Ground (SHOG)
- 15.24. The technical analyses carried out to inform the daylight, sunlight and overshadowing assessments have been undertaken by creating a digital three-dimensional (3D) model of the existing Site and Proposed Development.
- 15.25. The 3D model uses Waldrum Diagrams to establish the VSC and 3D geometric calculations for daylight distribution. This model (which is orientated to north by the use of Ordnance Survey (OS) information) enables the path of the sun to be tracked throughout the year to establish the shadow cast by the existing and proposed buildings and thus calculate the sun hours on ground in each scenario.
- 15.26. In accordance with the BRE Guidance, only those surrounding properties which have windows facing towards the Site were included in the assessment. If a nearby property has no windows facing the Site, these properties would not be affected by the Proposed Development in terms of light.
- 15.27. Only outdoor amenity spaces which are proximate enough to the Proposed Development for any shadow cast by it to reach them have been included in the assessments.

Daylight

Vertical Sky Component (VSC) Method

- 15.28. The VSC method of assessment is defined in the BRE Guidelines as the *"ratio of that part of illuminance at a point on a given vertical plane that is received directly from a CIE standard overcast sky, to illuminate on a horizontal plane due to an unobstructed hemisphere of this sky"*.
- 15.29. This ratio is the percentage of the total unobstructed view that is available, once obstructions (e.g. the Proposed Development), are placed in front of the point of view.
- 15.30. The assessment is calculated from the centre of a window on the outward face and measures the amount of light available on a vertical wall or window following the introduction of visible barriers, such as buildings. The VSC has been calculated using a 'Waldrum Diagram'.
- 15.31. The Waldrum Diagram is effectively a snapshot taken from that point of the sky in front of the window, together with all relevant obstructions to it, i.e. the buildings. For calculation purposes, trees may be ignored unless they form dense continuous belts.
- 15.32. Due to the limitations of peripheral vision, the maximum VSC value is almost 40% for a completely unobstructed vertical wall or window. In terms of assessment criteria, the BRE Guidelines state that *"if the VSC, with the*

development in place, is both less than 27% and less than 0.8 times its former value, occupants of the existing building will notice the reduction in the amount of skylight”.

No Sky Line (NSL) Method

- 15.33. The BRE Guidelines provide that where room layouts are known, the effect on the daylight distribution can be calculated by plotting the NSL.
- 15.34. The NSL method is a measure of the distribution of daylight at the ‘working plane’ within a room. The ‘working plane’ means a horizontal ‘desktop’ plane 0.85m in height for residential properties. The NSL divides those areas of the working plane which can receive direct sky light from those which cannot. If a significant area of the working plane lies beyond the NSL (i.e. it receives no direct sky light), then the distribution of daylight in the room will be poor and supplementary electric lighting may be required.
- 15.35. The potential effects of daylighting distribution in an existing building can be found by plotting the NSL in each of the main rooms. For houses, this will include living rooms, dining rooms and kitchens. Bedrooms should also be analysed, although the BRE state that they are less important. The BRE Guidelines identify that if the area of a room that does receive direct sky light is reduced to less than 0.8 times its baseline value, then this would be noticeable to its occupants. It is, therefore, implied that an NSL of at least 80% would be considered satisfactory.
- 15.36. In regard to deep rooms which are lit by windows on one side, the BRE Guidelines states *“If an existing building contains rooms lit from one side only and greater than 5m deep, then a greater movement of the no sky line may be unavoidable”* (paragraph 2.2.10).

Diffuse Daylight

- 15.37. Paragraph 2.2.23 of the BRE Guidelines states that *“...the diffuse daylighting of the existing building may be adversely affected...if either:*
- the VSC measured at the centre of an existing main window is less than 27%, and less than 0.80 times its former value
 - the area of the working plane in a room which can receive direct skylight is reduced to less than 0.80 times its former value.”
- 15.38. This assessment process is summarised in Figure 20 of the BRE Guidelines, Decision Chart: diffuse daylight in existing buildings, which can be seen in Figure 15.1.

Sunlight

Annual Probable Sunlight Hours (APSH) Method

- 15.39. Sunlight is measured using a sun indicator which contains 100 spots, each representing 1% of APSH. Therefore, where no obstruction exists the total annual probable sunlight hours for Manchester would be 1392, and each spot equates to 13.92 hours of the total annual sunlight hours.
- 15.40. The number of spots is calculated for the Baseline and Proposed Development scenarios during the year and also during the winter period, and a comparison made between the two. This provides a percentage of APSH for each of the time periods for each window assessed.
- 15.41. Paragraph 3.2.3 of the BRE Guidelines states *“To assess loss of sunlight to an existing building, it is suggested that all main living rooms of dwellings, and conservatories, should be checked if they have a window facing within 90° of due south...Normally loss of sunlight need not be analysed to kitchens and bedrooms, except for bedrooms that also comprise a living space, for example a bed sitting room in an old people’s home”*
- 15.42. Regarding existing surrounding receptors, the BRE Guidelines provide that a window may be adversely affected if a point at the centre of the window receives less than 25% of the APSH, including at least 5% of the APSH during the winter months (21 September to 21 March), or less than 0.8 times its baseline sunlight hours during either period, or if there is a reduction in total APSH which is greater than 4%.

- 15.43. As is often the case, it is not possible to determine the room uses within each of the neighbouring properties, nor is it clear which window should be considered as the 'main windows'. Therefore, unless the rooms use is known through plans, all the rooms with windows facing the Site and within 90 degrees of due south have been considered in the assessment. Windows that do not face within 90 degrees of due south do not have a realistic expectation of direct sunlight, due to their orientation and the sunlight path in the northern hemisphere.

Overshadowing

Sun Hours on Ground (SHOG) Method

- 15.44. The method for assessing hours in sun is the 'sun-on-ground indicator'. The assessment applies to both to new and existing gardens/amenity areas, which are affected by new developments. The BRE Guidelines suggest that the Spring Equinox (21st March) is a suitable date for the assessment. Using specialist software, the path of the sun is tracked to determine where the sun would reach the ground and where it would not.
- 15.45. The BRE Guidelines recommend that at least half of a garden or amenity area should receive at least 2 hours of sunlight on March 21st or the area which receives 2 hours of direct sunlight should not be reduced to less than 0.8 times its former value (i.e. there should be no more than a 20% reduction).

Summary of Criteria for Daylight, Sunlight and Overshadowing

- 15.46. The daylight, sunlight and overshadowing assessment criteria are summarised in Table 15.1.

Table 15.1 Summary of Daylight, Sunlight and Overshadowing Assessment Criteria

Assessment Method	BRE Criteria
VSC	A window may be adversely affected if its VSC measured at the centre of the window is less than 27% and less than 0.8 times its former value.
NSL	A room may be adversely affected if the daylight distribution (NSL) is reduced beyond 0.8 times its existing area.
APSH	A window may be adversely affected if a point at the centre of the window received for the whole year, less than 25% of the APSH including at least 5% of the APSH during the winter months (21 September to 21 March) and less than 0.8 times its former sunlight hours during either period, and for existing neighbouring buildings, if there is a reduction in total APSH which is greater than 4%.
SHOG	An area of outdoor amenity space may be adversely affected if less than 50% of its total area is unable to benefit from at least 2 hours of sunlight on 21st March and if the reduction in sunlight is greater than 20% of the baseline level.

Significance Criteria

Sensitivity of Identified Daylight & Sunlight Receptors

- 15.47. It is important that the location and nature of the Site and surroundings are considered when determining the significance of any impacts identified. The BRE Guide is very clear that the targets provided are not mandatory. The location of the development could be deemed to be special circumstances in which the planning authority may wish to use different target values. This scope and view should also be followed through to the sensitivity of the surrounding receptors. There should be an expectation that a higher degree of obstruction is inevitable in an area with modern high-rise buildings. This point is also made in the NPPF and NPPG.
- 15.48. For these reasons, the surrounding receptors may have a lower sensitivity to change in an urban location than those located in suburban, less dense areas. Sensitivity classification is assigned on how the proposed receptor is able to accommodate or adapt to the effect of the development. These are summarised in Table 15.2

Table 15.2 Summary of Receptor Sensitivity levels

Sensitivity	Examples of Receptor
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance.
Medium	The receptor/resource has moderate capacity to absorb change without significantly altering its present character, or is of high importance.

Low	The receptor/resource is tolerant of change without detriment to its character, is of low or local importance.
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- 15.49. The existing residential receptors and outdoor amenity spaces surrounding the Site are in a developing city centre location where there is an expectation for a higher density of development. All of the daylight, sunlight and overshadowing sensitive receptors are, therefore, considered to be of medium sensitivity.

Magnitude of Change

- 15.50. The initial numerical criteria for determining the magnitude of change is based on the percentage alterations shown in Table 15.3

Table 15.3 Daylight, Sunlight and Overshadowing Magnitude of Change

Magnitude of Change	Percentage Alteration from Baseline
Negligible	0-20%
Minor	20-29.9%
Moderate	30-39.9%
Major	40%+

- 15.51. Appendix F of the BRE guidelines provides an alternate baseline VSC value for city centre regions of 18% rather than the 27% referenced through the body of the document which is the level of VSC to be expected in an environment where the neighbouring construction angle is around 25 degrees i.e. a more suburban location.
- 15.52. 18% is 67% of 27%. 67% of the BRE target value for NSL (80%) is 53.6% Therefore, as the Proposed Development is in a more urban location, if the changes in VSC and/or NSL should breach the standard BRE guidelines beyond a minor extent, the magnitude of change is still considered to be of minor provided that the windows either experience no change or retain 18% VSC and the rooms retain at least 53.6% NSL.

Significance of Effect

- 15.53. The significance of any identified environmental effects is determined by the assessment of the magnitude of change against their sensitivity of the receptor. Table 15.4 illustrates how the sensitivity of the receptors and the magnitude of any change combine to indicate potential significance.

Table 15.4 Daylight, Sunlight and Overshadowing Significance of Effect

Magnitude of Change	Sensitivity of Receptor		
	High	Medium	Low
Major	Major Adverse / Beneficial*	Major Adverse / Beneficial*	Moderate-Minor Adverse / Beneficial
Moderate	Moderate Adverse / Beneficial*	Moderate Adverse / Beneficial*	Minor Adverse / Beneficial
Minor	Moderate-Minor Adverse / Beneficial	Minor Adverse / Beneficial	Minor-Negligible
Negligible	Negligible	Negligible	Negligible

* Significant in terms of EIA regulations

- 15.54. When assigning significance criteria for daylight and sunlight effects, professional judgement has been used. Consideration has been given to the proportion of rooms/windows affected, as well as the percentage alterations, absolute changes, sensitivity of the receptor, and any other relevant factors. There may be mitigating factors such as location and nature of development, balconies, overhangs or design features which may also affect the determination of assigning the criteria.

Baseline Conditions

15.55. In accordance with the Cumulative Developments included at Appendix 2.3, the Existing Baseline assumes the completion of the following currently under construction buildings:

- 12 - IQ Echo Street (assessed due to proximity); and
- 1 – London Road (massing only).

15.56. Drawings of this assessment scenario can be found in Appendix 15.1.

Daylight & Sunlight

15.57. A total of 884 windows facing the Site serving 500 rooms within 6 buildings were assessed for VSC and NSL (daylight) and 142 rooms containing a living room element were assessed for APSH (sunlight) within the 6 buildings which are material for consideration in sunlight terms ie their windows are orientated to within 90 degrees of due south.

15.58. The full Baseline daylight and sunlight results can be found in Appendix 15.2 and are summarised in Table 15.5 below.

Table 15.5 – Baseline levels of VSC, NSL & APSH within the surrounding sensitive receptors

Address	Total No. Windows That Meet VSC Criteria		Total No. Rooms That Meet NSL Criteria		Total No. Rooms That Meet APSH Criteria	
	Total	Pass	Total	Pass	Total	Pass
Fletcher House	47	1	14	3	13	1
8 Fairfield Street	7	1	5	1	1	0
Lambert Hall	160	0	137	2	7	1
Fairfield House	185	30	112	38	28	12
Bulls Head	3	1	2	2	1	0
IQ Echo Street	482	310	230	223	92	92
Total	884	343	500	269	142	106

15.59. Out of the 884 windows assessed for VSC daylight, 343 (39%) meet or exceed the BRE recommended criteria. For NSL, 269 (54%) of the 500 rooms assessed meet the BRE recommended criteria. For sunlight, 106 (75%) of the 142 rooms assessed meet the BRE criteria for both Winter and Annual APSH.

15.60. Overall, there is a reasonable level of baseline daylight and sunlight compliance considering the city centre context of the Site and the height and density in the immediate locality.

Overshadowing

15.61. The full Baseline overshadowing results can be found in Appendix 15.3 and are summarised in Table 15.6 below.

Table 15.6 - Baseline levels of SHOG within the surrounding sensitive receptors

Area Name	Area benefitting from 2 hours of SHOG on 21st March	Meets SHOG Criteria?
Vimto Park	97.11%	Yes
IQ Echo Street Courtyard 1	55.74%	Yes
IQ Echo Street Courtyard 2	92.11%	Yes

- 15.62. All sufficiently proximate areas of outdoor amenity space will benefit from BRE compliant levels of SHOG in the baseline scenario.
- 15.63. If the Proposed Development was not constructed, the baseline daylight, sunlight and overshadowing levels would remain the same as there are no 'natural' factors that would influence baseline conditions, only human induced changes (i.e., development). The site is, however, seen as a redevelopment opportunity and so, in reality, it would be unlikely for the baseline to remain as it is indefinitely. With respect to human induced changes, any development could influence the baseline conditions of varying degrees, as any drivers for change in baseline conditions would be linked to massing and layout of the surrounding context.

Identification and Evaluation of Likely Significant Effects

Construction Phase

- 15.64. Owing to the evolving and changing nature of construction activities, the assessment of potential effects during construction of the Proposed Development on daylight, sunlight and overshadowing to surrounding properties and areas of amenity space have not been modelled.
- 15.65. Since the potential daylight, sunlight and overshadowing effects relating to construction works will vary throughout the construction programme and gradually increase to the potential effects identified for the completed Proposed Development, the interim construction effects will not be assessed quantitatively as it is considered that the completed Proposed Development represents the worst-case assessment in terms of likely daylight and sunlight.
- 15.66. During the construction phase, the daylight, sunlight and overshadowing effects will gradually change from negligible in the baseline position to that described below in the Operational Phase with the Proposed Development in place. For these reasons, the Construction Phase will not be discussed further in this report.

Operational Phase

Daylight & Sunlight –Scenario 2: Baseline + Phase A + Phase C

- 15.67. The outputs of the computer modelling for both daylight and sunlight is provided in full within Appendix 15.2, with the key metrics provided in Tables 15.7 to 15.10 below.
- 15.68. A total of 884 windows facing the Site serving 500 rooms within 6 buildings were assessed for VSC and NSL (daylight) and 142 rooms containing a living room element were assessed for APSH (sunlight) within the 6 buildings which are material for consideration in sunlight terms i.e. their windows are orientated to within 90 degrees of due south.
- 15.69. The breakdown of the Existing Baseline results compared to the Proposed Development for each of the individual buildings forming part of this assessment are discussed in more detail below.

Table 15.7 - Summary of VSC Results

Address	Total No. of windows	No. of windows that meet BRE Guidelines Negligible	Below BRE Guidelines - Magnitude of Change		
			Minor	Moderate	Major
Fletcher House	47	47	0	0	0
8 Fairfield Street	7	7	0	0	0
Lambert Hall	160	160	0	0	0
Fairfield House	185	185	0	0	0
Bulls Head	3	3	0	0	0
IQ Echo Street	482	341	41	55	45
Totals	884	743	41	55	45

Table 15.8 - Summary of NSL Results

Address	Total No. of rooms	No. of rooms that meet BRE Guidelines Negligible	Below BRE Guidelines - Magnitude of Change		
			Minor	Moderate	Major
Fletcher House	14	14	0	0	0
8 Fairfield Street	5	5	0	0	0
Lambert Hall	137	137	0	0	0
Fairfield House	112	112	0	0	0
Bulls Head	2	2	0	0	0
IQ Echo Street	230	176	14	7	33
Totals	500	446	14	7	33

Table 15.9 - Summary of Annual Sunlight Results

Address	Total No. of rooms	No. of rooms that meet BRE Guidelines Negligible	Below BRE Guidelines - Magnitude of Change		
			Minor	Moderate	Major
Fletcher House	13	13	0	0	0
8 Fairfield Street	1	1	0	0	0
Lambert Hall	7	7	0	0	0
Fairfield House	28	28	0	0	0
Bulls Head	1	1	0	0	0
IQ Echo Street	92	92	0	0	0
Totals	142	142	0	0	0

Table 15.10 - Summary of Winter Sunlight Results

Address	Total No. of rooms	No. of rooms that meet BRE Guidelines Negligible	Below BRE Guidelines - Magnitude of Change		
			Minor	Moderate	Major
Fletcher House	13	13	0	0	0
8 Fairfield Street	1	1	0	0	0
Lambert Hall	7	7	0	0	0
Fairfield House	28	28	0	0	0
Bulls Head	1	1	0	0	0
IQ Echo Street	92	92	0	0	0
Totals	142	142	0	0	0

15.70. In situations where the construction of the Proposed Development would result in VSC, NSL and APSH alterations to the windows and rooms within a property which are all within the BRE guidelines, the effect of the Proposed Development upon the daylight and sunlight amenity to that property is considered to be negligible.

- 15.71. Of the 6 properties assessed, the effect of the Proposed Development upon the daylight and sunlight amenity within the 5 properties listed within Table 15.11 would be **negligible (not significant)**.

Table 15.11 - Properties with a Negligible Daylight and Sunlight effect

Properties with a Negligible Daylight and Sunlight effect	
Fletcher House	Fairfield House
8 Fairfield Street	Bulls Head
Lambert Hall	

- 15.72. The remaining property (IQ Echo Street) is discussed in detail below:

IQ Echo Street

- 15.73. A total of 482 windows serving 230 rooms were assessed for daylight within this building. The 92 rooms with Site facing windows orientated to within 90° of due south were assessed for sunlight.

VSC Daylight

- 15.74. 341 (71%) of the 482 windows assessed would meet the BRE's criteria and so experience a negligible magnitude of VSC change.
- 15.75. Based on the initial numerical criteria for determining the magnitude of change detailed in Table 15.3 the magnitude of VSC change to 41 (9%) of the 141 affected windows is minor. The magnitude of VSC change to 55 (11%) of the remaining 100 affected windows is moderate. The magnitude of VSC change to the remaining 45 (9%) of windows is major.
- 15.76. With the exception of 45 single aspect bedrooms, which all have low (between 9% and 12%) baseline VSC levels due to their recessed location, the levels of baseline VSC to the windows facing the Site are uncharacteristically high for an urban location due to the relatively undeveloped nature of the Site. The construction of the Proposed Development would reduce these to more contextual levels. Despite this, there would be a reasonable level of retained VSC with, for context and including the aforementioned bedrooms, the average retained VSC being 25%.

NSL Daylight

- 15.77. 176 (77%) of the 230 rooms assessed would meet the BRE's criteria and so experience a negligible magnitude of NSL change.
- 15.78. Based on the initial numerical criteria for determining the magnitude of change detailed in Table 15.3 the magnitude of NSL change to 14 (6%) of the 54 affected rooms is minor. The magnitude of NSL change to 7 (3%) of the remaining 40 affected rooms is moderate. The magnitude of NSL change to the remaining 33 (14%) of rooms is major.
- 15.79. Again, with the exception of the 45 single aspect bedrooms that are in recessed locations and so have a 'blinkered' view over the Site, despite the magnitude of NSL change to some of the rooms, there would be a reasonable level of retained NSL with, for context and including the aforementioned bedrooms, the average retained NSL being 81%.

Diffuse Daylight

- 15.80. 131 (57%) of the 230 rooms assessed would meet the BRE's criteria shown in Figure 15.1 and so experience a negligible magnitude of diffuse daylight change.
- 15.81. In accordance with the significance criteria described above, 47 (20%) of the remaining 99 rooms will experience changes in VSC and/or NSL which amount to a minor magnitude of diffuse daylight change.

- 15.82. 4 (2%) of the remaining 52 rooms (all LKDs) are all served by 3 windows, one of which has a low (13% to 14%) baseline VSC level against the BRE recommended 27%. The less than 5% absolute VSC changes therefore disproportionately present themselves as moderate magnitude of percentage of baseline changes when, in reality, the changes are unlikely to be noticeable. The remaining windows retain between 25% and 28% VSC and the rooms retain NSL to between 94% and 96% of the rooms' areas. The magnitude of diffuse daylight change within these 4 rooms is therefore considered to be minor.
- 15.83. 3 (1%) further rooms (all LKDs) are again all served by 3 windows, of which 2 have uncharacteristically high (33% to 34%) baseline VSC levels for windows in an urban location and which are reduced to VSC levels of between 16% to 18% with the Proposed Development in place. The magnitude of VSC change to the other window is BRE compliant ie negligible. The rooms retain NSL to between 73% and 97% of the rooms' areas. The magnitude of diffuse daylight change within these 3 rooms is therefore also considered to be minor.
- 15.84. The remaining 45 (20%) rooms (all bedrooms) have low (between 9% and 12%) baseline VSC levels due to their recessed locations. The less than 5.9% absolute VSC changes therefore present themselves as moderate to major magnitudes of VSC change. Similar magnitudes of NSL change will also be experienced. The overall level of diffuse daylight to these rooms is considered to be moderate.
- 15.85. In view of the fact that the more materially affected rooms are bedrooms which, by virtue of their usage, have a lesser requirement for daylight and the fact that they are in transient rather than permanent residential usage, the overall magnitude of diffuse daylight change is considered to be minor.

Daylight Effect

- 15.86. The sensitivity of this receptor is considered to be medium. The overall magnitude of daylight change is considered to be minor. The effect of the Proposed Development upon the daylight within this property is, therefore, considered to be **minor adverse (not significant)**.

APSH Sunlight

- 15.87. Any changes to the sunlight amenity within the 92 rooms material for assessment will be fully BRE compliant. The magnitude of APSH change is, therefore, negligible.

Sunlight Effect

- 15.88. The sensitivity of this receptor is considered to be medium. The magnitude of APSH change is negligible. The effect upon sunlight amenity within this property is therefore considered to be **negligible (not significant)**.

Overshadowing – Scenario 2: Baseline + Phase A + Phase C

- 15.89. The outputs of the computer modelling for overshadowing is provided in full within Appendix 15.3, with the key metrics provided in Table 15.12 below.
- 15.90. The breakdown of the Existing Baseline results compared to the Proposed Development for each of the areas of amenity space forming part of this assessment are discussed in more detail below.

Table 15.12: Summary of March SHOG Assessment Results

Area Name	Area benefitting from 2 hours of SHOG on 21st March (Baseline)	Area benefitting from 2 hours of SHOG on 21st March (Proposed)	Change in SHOG	Meets SHOG Criteria?
Vimto Park	97.11%	97.11%	0%	Yes
IQ Echo Street Courtyard 1	55.74%	1.33%	98%	No

Area Name	Area benefitting from 2 hours of SHOG on 21st March (Baseline)	Area benefitting from 2 hours of SHOG on 21st March (Proposed)	Change in SHOG	Meets SHOG Criteria?
IQ Echo Street Courtyard 2	92.11%	6.47%	93%	No

- 15.91. Any changes to the level of shadow falling upon Vimto Park will be fully BRE compliant and so it will experience a negligible magnitude of March SHOG change.
- 15.92. There will be major magnitudes of March SHOG change to both of the IQ Echo Street Courtyards.
- 15.93. At paragraph 3.3.16 of the BRE guidelines it states that *“If a particular space is only used at certain times of day or year...it is instructive to plot shadows for those specific times.”* The SHOG effect during the summer months, when these spaces are more likely to be used by the building occupant, has also been assessed. The results of this assessment are shown in Table 15.13.

Table 15.13: Summary of June SHOG Assessment Results

Area Name	Area benefitting from 2 hours of SHOG on 21st March (Baseline)	Area benefitting from 2 hours of SHOG on 21st March (Proposed)	Change in SHOG	Meets SHOG Criteria?
Vimto Park	99.97%	99.97%	0%	Yes
IQ Echo Street Courtyard 1	98.76%	98.76%	0%	Yes
IQ Echo Street Courtyard 2	65.73%	65.73%	0%	Yes

- 15.94. There will be no change to the level of shadow falling upon Vimto Park & the two IQ Echo Street Courtyards. These areas will, therefore, experience negligible magnitudes of June SHOG change.
- 15.95. The above analysis results show that, whilst the March SHOG assessment results show that the IQ Echo Street Courtyards will not be adequately sunlit throughout the year, during the summer months, when these areas are more likely to be used, at least 66% of all areas will be able to benefit from at least 2 hours of SHOG.
- 15.96. The overall magnitude of SHOG change to the IQ Echo Street Courtyards is considered to be minor. The magnitude of SHOG change to Vimto Park is negligible.

Overshadowing Effect

- 15.97. The sensitivity of the overshadowing receptors is considered to be medium.
- 15.98. The magnitude of SHOG change to Vimto Park is considered to be negligible. The effect of the Proposed Development upon the level of SHOG on this area is, therefore, considered to be **negligible (not significant)**.
- 15.99. The overall magnitude of SHOG change to IQ Echo Street Courtyard 1 is considered to be minor. The effect of the Proposed Development upon the level of SHOG on this areas is, therefore, considered to be **minor adverse (not significant)**.
- 15.100. The overall magnitude of SHOG change to IQ Echo Street Courtyard 2 is considered to be minor. The effect of the Proposed Development upon the level of SHOG on this areas is, therefore, considered to be **minor adverse (not significant)**.

Daylight & Sunlight – Scenario 5: Baseline + Phase A + Phase B + Phase C

- 15.101. The outputs of the computer modelling for both daylight and sunlight is provided in full within Appendix 15.2, with the key metrics provided in Tables 15.15 to 15.18 below.
- 15.102. The breakdown of the Existing Baseline results compared to the Proposed Development for each of the individual buildings forming part of this assessment are discussed in more detail below.

Table 15.15 - Summary of VSC Results

Address	Total No. of windows	No. of windows that meet BRE Guidelines Negligible	Below BRE Guidelines - Magnitude of Change		
			Minor	Moderate	Major
Fletcher House	47	47	0	0	0
8 Fairfield Street	7	7	0	0	0
Lambert Hall	160	160	0	0	0
Fairfield House	185	168	13	4	0
Bulls Head	3	3	0	0	0
IQ Echo Street	482	246	36	74	126
Totals	884	631	49	78	126

Table 15.16 - Summary of NSL Results

Address	Total No. of rooms	No. of rooms that meet BRE Guidelines Negligible	Below BRE Guidelines - Magnitude of Change		
			Minor	Moderate	Major
Fletcher House	14	14	0	0	0
8 Fairfield Street	5	5	0	0	0
Lambert Hall	137	137	0	0	0
Fairfield House	112	102	2	6	2
Bulls Head	2	2	0	0	0
IQ Echo Street	230	160	15	11	44
Totals	500	420	17	17	46

Table 15.17 - Summary of Annual Sunlight Results

Address	Total No. of rooms	No. of rooms that meet BRE Guidelines Negligible	Below BRE Guidelines - Magnitude of Change		
			Minor	Moderate	Major
Fletcher House	13	13	0	0	0
8 Fairfield Street	1	1	0	0	0
Lambert Hall	7	7	0	0	0
Fairfield House	28	28	0	0	0
Bulls Head	1	1	0	0	0
IQ Echo Street	92	92	0	0	0

Address	Total No. of rooms	No. of rooms that meet BRE Guidelines Negligible	Below BRE Guidelines - Magnitude of Change		
			Minor	Moderate	Major
Totals	142	142	0	0	0

Table 15.18 - Summary of Winter Sunlight Results

Address	Total No. of rooms	No. of rooms that meet BRE Guidelines Negligible	Below BRE Guidelines - Magnitude of Change		
			Minor	Moderate	Major
Fletcher House	13	13	0	0	0
8 Fairfield Street	1	1	0	0	0
Lambert Hall	7	7	0	0	0
Fairfield House	28	19	0	0	9
Bulls Head	1	1	0	0	0
IQ Echo Street	92	92	0	0	0
Totals	142	142	0	0	9

15.103. In situations where the construction of the Proposed Development would result in VSC, NSL and APSH alterations to the windows and rooms within a property which are all within the BRE guidelines, the effect of the Proposed Development upon the daylight and sunlight amenity to that property is considered to be negligible.

15.104. Of the 6 properties assessed, the effect of the Proposed Development upon the daylight and sunlight amenity within the 4 properties listed within Table 15.19 would be negligible (not significant).

Table 15.19 - Properties with a Negligible Daylight and Sunlight effect

Properties with a Negligible Daylight and Sunlight effect	
Fletcher House	Lambert Hall
8 Fairfield Street	Bulls Head

15.105. The remaining properties (IQ Echo Street and Fairfield House) are discussed in detail below

IQ Echo Street

15.106. A total of 482 windows serving 230 rooms were assessed for daylight within this building. The 92 rooms with Site facing windows orientated to within 90° of due south were assessed for sunlight.

VSC Daylight

15.107. 246 (51%) of the 482 windows assessed would meet the BRE's criteria and so experience a negligible magnitude of VSC change.

15.108. Based on the initial numerical criteria for determining the magnitude of change detailed in Table 15.3 the magnitude of VSC change to 36 (8%) of the 236 affected windows is minor. The magnitude of VSC change to 74 (15%) of the remaining 200 affected windows is moderate. The magnitude of VSC change to the remaining 126 (26%) of windows is major.

15.109. With the exception of 64 single aspect bedrooms, which all have low (between 9% and 12%) baseline VSC levels due to their recessed location, the levels of baseline VSC to the windows facing the Site are uncharacteristically high for an

urban location due to the relatively undeveloped nature of the site. The construction of the Proposed Development would reduce these to more contextual levels. Despite this, there would be a reasonable level of retained VSC with, for context and including the aforementioned bedrooms, the average retained VSC being 22%.

NSL Daylight

- 15.110. 160 (70%) of the 230 rooms assessed would meet the BRE's criteria and so experience a negligible magnitude of NSL change.
- 15.111. Based on the initial numerical criteria for determining the magnitude of change detailed in Table 15.3 the magnitude of NSL change to 15 (7%) of the 70 affected rooms is minor. The magnitude of NSL change to 11 (5%) of the remaining 55 affected rooms is moderate. The magnitude of NSL change to the remaining 44 (18%) of rooms is major.
- 15.112. Again, with the exception of the 64 single aspect bedrooms that are in recessed locations and so have a 'blinkered' view over the Site, despite the magnitude of NSL change to some of the rooms, there would be a reasonable level of retained NSL with, for context and including the aforementioned bedrooms, the average retained NSL being 77%.

Diffuse Daylight

- 15.113. 80 (35%) of the 230 rooms assessed would meet the BRE's criteria shown in Figure 15.1 and so experience a negligible magnitude of diffuse daylight change.
- 15.114. In accordance with the significance criteria described above, 53 (23%) of the remaining 150 rooms will experience changes in VSC and/or NSL which amount to a minor magnitude of diffuse daylight change.
- 15.115. 13 (6%) of the remaining 97 rooms (all LKDs) are all served by 3 windows, one of which has a low (15% to 18%) baseline VSC level against the BRE recommended 27%. The less than 6.5% absolute VSC changes therefore disproportionately present themselves as moderate to major magnitude of percentage of baseline changes when, in reality, the changes are not that material. The remaining windows retain between 18% and 28% VSC and the rooms retain NSL to between 91% and 97% of the rooms' areas. The magnitude of diffuse daylight change within these 13 rooms is therefore considered to be minor.
- 15.116. 20 (9%) further rooms (17 LKDs and 3 bedrooms) are again all served by 3 windows, of which 2 have uncharacteristically high (33% to 36%) baseline VSC levels for windows in an urban location and which are reduced to VSC levels of between 12% to 18% with the Proposed Development in place. The magnitude of VSC change to the other window serving each room ranges from 2.7% to 6.7% being negligible to moderate and the rooms retain NSL to between 69% and 100% of the rooms' areas. The magnitude of diffuse daylight change within these 3 rooms is therefore also considered to be minor.
- 15.117. The remaining 64 (28%) rooms (all bedrooms) have low (between 9% and 12%) baseline VSC levels due to their recessed locations. The less than 6.3% absolute VSC changes therefore present themselves as moderate to major magnitudes of VSC change. Similar magnitudes of NSL change will also be experienced. The overall level of diffuse daylight to these rooms is considered to be moderate.
- 15.118. In view of the fact that the more materially affected rooms are bedrooms which, by virtue of their usage, have a lesser requirement for daylight and the fact that they are in transient rather than permanent residential usage, the overall magnitude of diffuse daylight change is considered to be minor.

Daylight Effect

- 15.119. The sensitivity of this receptor is considered to be medium. The overall magnitude of daylight change is considered to be minor. The overall effect of the Proposed Development upon the daylight within this property is therefore considered to be **minor adverse (not significant)**.

APSH Sunlight

- 15.120. Any changes to the sunlight amenity within the 92 rooms material for assessment will be fully BRE compliant. The magnitude of APSH change is, therefore, negligible.

Sunlight Effect

- 15.121. The sensitivity of this receptor is considered to be medium. The magnitude of APSH change is negligible. The effect upon sunlight amenity within this property is therefore considered to be **negligible (not significant)**.

Fairfield House

- 15.122. A total of 185 windows serving 112 rooms were assessed for daylight within this building. The 28 rooms with Site facing windows orientated to within 90° of due south were assessed for sunlight.

VSC Daylight

- 15.123. 168 (91%) of the 185 windows assessed would meet the BRE's criteria and so experience a negligible magnitude of VSC change.
- 15.124. Based on the initial numerical criteria for determining the magnitude of change detailed in Table 15.3 the magnitude of VSC change to 13 (7%) of the 17 affected windows is minor. The magnitude of VSC change to the remaining 4 (2%) of affected windows is moderate.

NSL Daylight

- 15.125. 102 (91%) of the 112 rooms assessed would meet the BRE's criteria and so experience a negligible magnitude of NSL change.
- 15.126. Based on the initial numerical criteria for determining the magnitude of change detailed in Table 15.3 the magnitude of NSL change to 2 (2%) of the 10 affected rooms is minor. The magnitude of NSL change to 6 (5%) of the remaining 8 affected rooms is moderate. The magnitude of NSL change to the remaining 2 (2%) of rooms is major.

Diffuse Daylight

- 15.127. 94 (84%) of the 112 rooms assessed would meet the BRE's criteria shown in Figure 15.1 and so experience a negligible magnitude of diffuse daylight change.
- 15.128. In accordance with the significance criteria described above, 8 (7%) of the remaining 28 rooms will experience changes in VSC and/or NSL which amount to a minor magnitude of diffuse daylight change.
- 15.129. 3 (3%) of the remaining 20 rooms are all served by multiple windows, the magnitude of VSC change to at least one of which is negligible with the remaining windows experiencing no greater than a 4.8% absolute VSC change which disproportionately represent themselves as a moderate magnitude of change. 2 of the rooms will experience either a negligible or minor magnitude of NSL change and retain NSL to between 60% and 80% of the rooms area. The remaining room will experience a moderate NSL change but the magnitude of VSC change to both windows will be negligible. The magnitude of diffuse daylight change within these 3 rooms is therefore also considered to be minor.
- 15.130. The single aspect windows serving the remaining 7 (6%) rooms (all bedrooms) are all fully BRE compliant and so will experience a negligible magnitude of VSC change. The rooms all have low (25%) baseline NSL levels. The small (9% to 10%) therefore disproportionately present themselves as moderate to major magnitudes of NSL change. The overall magnitude of diffuse daylight change to these rooms is also considered to be minor.
- 15.131. In view of the fact that the small number of more materially affected rooms are bedrooms which, by virtue of their usage, have a lesser requirement for daylight and the fact that they are in transient rather than permanent residential usage, the overall magnitude of diffuse daylight change to this property is considered to be minor.

Daylight Effect

- 15.132. The sensitivity of this receptor is considered to be medium. The overall magnitude of daylight change is considered to be minor. The overall effect of the Proposed Development upon the daylight within this property is therefore considered to be **minor adverse (not significant)**.

APSH Sunlight

- 15.133. Any changes to the sunlight amenity within 19 (68%) the 28 rooms material for assessment will be fully BRE compliant. The magnitude of APSH change to these rooms is, therefore, negligible.
- 15.134. The remaining 9 rooms of unknown usage but still assessed in view of the orientation of their windows, will experience negligible to minor magnitudes of total APSH change and major winter APSH changes, which is to be expected in an urban location in view of the fact that the surrounding context is higher and the sun is lower in the sky in the winter months.
- 15.135. That said, all rooms will retain between 21% and 33% total APSH against the BRE recommendation of 25% for a suburban environment and up to 3% in the winter months against the BRE recommendation of 5%. The magnitude of APSH change to these rooms is, therefore, considered to be minor.

Sunlight Effect

- 15.136. The sensitivity of this receptor is considered to be medium. The magnitude of APSH change is minor. The effect upon sunlight amenity within this property is therefore considered to be **minor adverse (not significant)**.

Overshadowing – Scenario 5: Baseline + Phase A + Phase B + Phase C

- 15.137. The outputs of the computer modelling for overshadowing is provided in full within Appendix 15.3, with the key metrics provided in Table 15.20 below.
- 15.138. The breakdown of the Existing Baseline results compared to the Proposed Development for each of the areas of amenity space forming part of this assessment are discussed in more detail below.

Table 15.20: Summary of March SHOG Assessment Results

Area Name	Area benefitting from 2 hours of SHOG on 21st March (Baseline)	Area benefitting from 2 hours of SHOG on 21st March (Proposed)	Change in SHOG	Meets SHOG Criteria?
Vimto Park	97.11%	97.11 %	0%	Yes
IQ Echo Street Courtyard 1	55.74%	1.33%	98%	No
IQ Echo Street Courtyard 2	92.11%	0%	100%	No

- 15.139. Any changes to the level of shadow falling upon Vimto Park will be fully BRE compliant and so it will experience a negligible magnitude of March SHOG change.
- 15.140. There will be major magnitudes of March SHOG change to both of the IQ Echo Street Courtyards.
- 15.141. At paragraph 3.3.16 of the BRE guidelines it states that *“If a particular space is only used at certain times of day or year...it is instructive to plot shadows for those specific times.”* The SHOG effect during the summer months, when these spaces are more likely to be used by the building occupant, has also been assessed. The results of this assessment are shown in Table 15.21.

Table 15.21: Summary of June SHOG Assessment Results

Area Name	Area benefitting from 2 hours of SHOG on 21st March (Baseline)	Area benefitting from 2 hours of SHOG on 21st March (Proposed)	Change in SHOG	Meets SHOG Criteria?
Vimto Park	99.97%	99.97%	0%	Yes
IQ Echo Street Courtyard 1	98.76%	98.52%	1%	Yes
IQ Echo Street Courtyard 2	65.73%	57.71%	12%	Yes

- 15.142. Any changes to the level of shadow falling upon Vimto Park & the two IQ Echo Street Courtyards will be fully BRE compliant. These areas will, therefore, experience negligible magnitudes of June SHOG change.
- 15.143. The above analysis results show that, whilst the March SHOG assessment results show that the IQ Echo Street Courtyards will not be adequately sunlit throughout the year, during the summer months, when these areas are more likely to be used, at least 58% of all areas will be able to benefit from at least 2 hours of SHOG.
- 15.144. The overall magnitude of SHOG change to the IQ Echo Street Courtyards is considered to be minor. The magnitude of SHOG change to Vimto Park is negligible.

Overshadowing Effect

- 15.145. The sensitivity of the overshadowing receptors is considered to be medium.
- 15.146. The magnitude of SHOG change to Vimto Park is considered to be negligible. The effect of the Proposed Development upon the level of SHOG on this area is, therefore, considered to be **negligible (not significant)**.
- 15.147. The overall magnitude of SHOG change to IQ Echo Street Courtyard 1 is considered to be minor. The effect of the Proposed Development upon the level of SHOG on this areas is, therefore, considered to be **minor adverse (not significant)**.
- 15.148. The overall magnitude of SHOG change to IQ Echo Street Courtyard 2 is considered to be minor. The effect of the Proposed Development upon the level of SHOG on this areas is, therefore, considered to be **minor adverse (not significant)**.

Cumulative Effects

- 15.149. Since the EIA Screening and Scoping the following committed developments previously identified (and relevant to the daylight, sunlight and overshadowing assessment for the Proposed Development) are now under construction:
- 12 - IQ Echo Street; and
 - 1 – London Road.
- 15.150. At the time of preparing the EIA Screening and Scoping, scenario 3 and scenario 6 were scoped in, however as there are no committed developments which are of sufficient massing and sufficiently proximate to the Site to have an in combination effect with the Proposed Development, these scenarios are no longer required.

Mitigation Measures

Operational Phase

Daylight & Sunlight

- 15.151. Daylight impacts to the surrounding properties are negligible to minor adverse (Scenario 2 and Scenario 5). Sunlight impacts to the surrounding properties are negligible (Scenario 2) and negligible to minor adverse (Scenario 5). Overall, this is considered to result in non-significant effects. No mitigation measures are, therefore, considered necessary.

Overshadowing

- 15.152. SHOG impacts to the surrounding areas of amenity space are negligible to minor adverse (Scenario 2 and Scenario 5). Overall, this is considered to result in non-significant effects. No mitigation measures are, therefore, considered necessary.

Residual Effects

Operational Phase

Table 15.22: Summary of Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Scenario 2: Baseline + Phase A + Phase C - Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)	Scenario 5: Baseline + Phase A + Phase B + Phase C - Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase					
Reduction in daylight	Fletcher House	None	n/a	Negligible – Permanent	Negligible – Permanent
	8 Fairfield Street	None	n/a	Negligible – Permanent	Negligible – Permanent
	Lambert Hall	None	n/a	Negligible – Permanent	Negligible – Permanent
	Fairfield House	None	n/a	Negligible – Permanent	Minor Adverse – Permanent (not significant)
	Bulls Head	None	n/a	Negligible – Permanent	Negligible – Permanent
	IQ Echo Street	None	n/a	Minor Adverse – Permanent (not significant)	Minor Adverse – Permanent (not significant)
Reduction in sunlight	Fletcher House	None	n/a	Negligible – Permanent	Negligible – Permanent
	8 Fairfield Street	None	n/a	Negligible – Permanent	Negligible – Permanent
	Lambert Hall	None	n/a	Negligible – Permanent	Negligible – Permanent
	Fairfield House	None	n/a	Negligible – Permanent	Minor Adverse – Permanent (not significant)
	Bulls Head	None	n/a	Negligible – Permanent	Negligible – Permanent
	IQ Echo Street	None	n/a	Negligible – Permanent	Negligible – Permanent
	Vimto Park	None	n/a	Negligible – Permanent	Negligible – Permanent

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Scenario 2: Baseline + Phase A + Phase C - Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)	Scenario 5: Baseline + Phase A + Phase B + Phase C - Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Increase in shadow	IQ Echo Street Courtyards (1&2)	None	n/a	Minor Adverse – Permanent (not significant)	Minor Adverse – Permanent (not significant)

Monitoring

15.153. None required.

Reference List

15.154. This ES Chapter has been prepared in reference to the following:

- Ministry of Housing, Communities & Local Government (2021). National Planning Policy Framework. 2024.
- Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2021). Planning Practice Guidance. 2019 (regularly updated).
- Manchester City Council (2012). Manchester Core Strategy (2012 – 2027).
- Building Research Establishment (BRE) (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice, Third Edition.

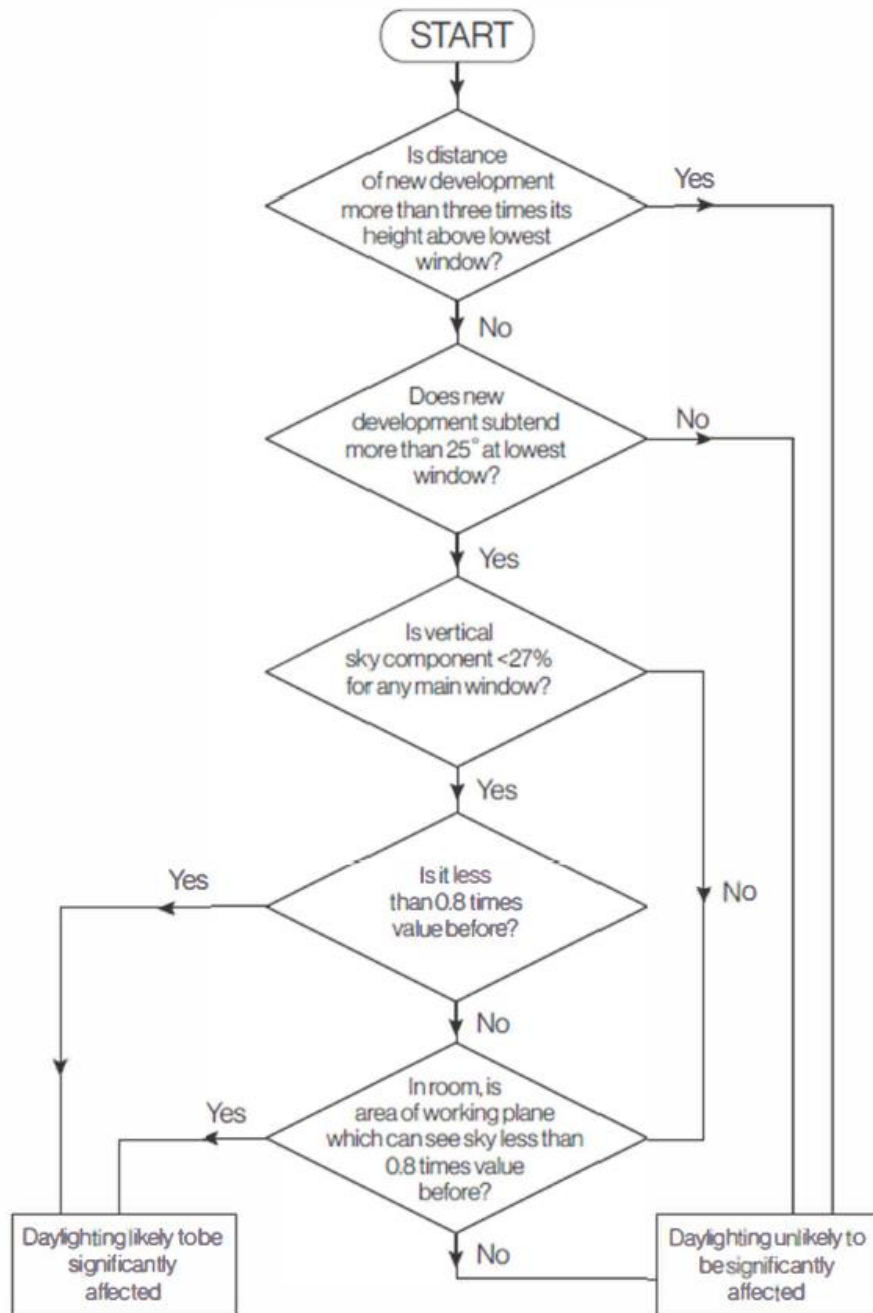


Figure:	15.1		
Title:	Figure 20 of the BRE Guidelines, Decision Chart: diffuse daylight		
Project:	Sister Plot C, Manchester		
Date:	24 th April 2025	Scale:	n/a

16. Noise and Vibration

Introduction

- 16.1. This Chapter of the ES has been prepared by Sol Acoustics and assesses the likely noise and vibration impacts of the Proposed Development upon the Site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted. This Chapter is accompanied by two technical appendices, 'Sister Plot C – Baseline Noise and Vibration Survey', and 'Sister Plot C – Preliminary Noise Management Plan'
- 16.2. The details of the Lead Author and Reviewer are set out in Table 16.1.

Table 16.1: Details of Lead Author and Reviewer

	Lead Author	Reviewer
Name	Joe Sinker	Thomas Leach
Company	Sol Acoustics	Sol Acoustics
Qualifications/Accreditations relevant to technical area inc. IEMA	MIOA	MIOA
Years technical experience (in technical area)	10	13
Number of EIA's delivered to date	3	

Assumptions and Limitations

Construction Activities

- 16.3. The exact location of each of the specific construction activities or plant used is not available at this stage.
- 16.4. The core working hours for Site preparation and construction are expected to be:
- 07:30 – 18:00 hours weekdays;
 - 08:30 – 14:00 hours Saturday; and
 - No work on Sunday / Bank holidays.
- 16.5. These core hours are in line with the guidance in MCC's Planning and Noise Technical Guidance; any work outside these hours would be subject to prior agreement, and / or reasonable notice given to MCC and its respective Environmental Health Office (EHO). Restricted operations, where proposed to continue outside of these hours, are subject to regulatory approval.
- 16.6. The construction noise assessment has assumed that all plant and equipment are distributed across the Site and operate continuously throughout a 10-hour working day. This is considered unlikely to occur in practice and, therefore, represents a robust assessment and worst-case scenario.
- 16.7. In accordance with the assessment scenarios Phase A may be completed and occupied while works are still being undertaken to complete Phase B and Phase C. As such, Phase A has been considered as a sensitive receptor in the later construction stages.

- 16.8. Vibration levels have been calculated to the closest point of the nearest sensitive receptor. This has been regarded to be the closest façade of the closest existing (under construction) residential dwellings at IQ Echo Street to the north of the Site, approximately 28 metres from the expected piling line.
- 16.9. The construction road traffic assessment has been based on traffic data provided by the Applicant's Transport Consultant.

Operational Development

- 16.10. The proposed flexible use spaces at ground floor of C1 and C2, and in the Viaduct are currently proposed for Class E and Sui Generis use (which are assumed for the purposes of this EIA to comprise of retail or food & drink establishments). None of these uses are sensitive to noise ingress from environmental sources and, therefore, no specific assessment has been undertaken.
- 16.11. Details of the proposed use of the ground floor flexible spaces is not available at the time of the assessment; therefore, a performance specification has been provided to control suitable noise egress impact.
- 16.12. Where future uses have the potential for high levels of amplified music, the façade and separating constructions may need to be enhanced to control noise such that there is no significant adverse impact on the noise sensitive areas of the Proposed Development (offices) or surrounding noise sensitive properties. This will need to be developed further as part of the detailed design stage.
- 16.13. Detailed mechanical plant and equipment information was not available at the time of the assessment; therefore, a performance specification has been provided to control suitable noise impact.
- 16.14. The operational road traffic assessment has been based on traffic data provided by the Applicant's Transport Consultant.
- 16.15. In order to predict the likely resultant environmental noise levels across the future façades of the Proposed Development, a 3D computer-based environmental noise model was created using the proprietary DataKustik "CadnaA" Noise Mapping software. The following assumptions have been made in the generation of the noise model:
- The noise model was set up to apply the noise prediction methodology set out in ISO 9613-2: 'Acoustics – Attenuation of Sound propagation outdoors – Part 2: General Method of Calculation'.
 - The model was set up to include up to third-order reflected noise from solid structures.
 - Ground absorption was set to G=0 (hard ground).
 - Acoustic screening and reflections afforded by nearby buildings and solid structures.
 - The existing land topography has been taken into consideration in the assessment. Topographical information has been obtained using the open-source LiDAR data made available by the Department for Environmental Food and Rural Affairs (DEFRA) and from topographical surveys undertaken on behalf of the Applicant.
- 16.16. The specific layouts and potential noise sources associated with events to be held in the proposed Sister Square will vary on an event-by-event basis. At this stage noise limits for music noise associated with outdoor events have been proposed on the basis of the established existing background noise climate, which should be achievable through the implementation of a noise management plans including suitable design of loudspeaker systems and orientation of stage areas or specific music noise sources where applicable.
- 16.17. In order to provide a worst-case assessment of noise generated by patrons on the surrounding noise sensitive receptors, a 3D computer-based environmental noise model was created using the proprietary DataKustik "CadnaA" Noise Mapping software. The following assumptions have been made in the generation of the noise model:
- The noise model was set up to apply the noise prediction methodology set out in ISO 9613-2: 'Acoustics – Attenuation of Sound propagation outdoors – Part 2: General Method of Calculation'.
 - The model was set up to include up to third-order reflected noise from solid structures.

- Ground absorption was set to G=0 (hard ground).
- Acoustic screening and reflections afforded by nearby buildings and solid structures.
- The existing land topography has been taken into consideration in the assessment. Topographical information has been obtained using the open-source LiDAR data made available by the Department for Environmental Food and Rural Affairs (DEFRA) and from topographical surveys undertaken on behalf of the Applicant.
- Noise from the proposed patrons has been modelled as an area source using an acoustic standard typical noise spectra for raised voices taken from BB93:2015, the ANC 'Acoustics of Schools a Design Guide' and by extension ANSI 3.5-1997 'American National Standard – Methods for Calculation of the Speech Intelligibility Index', with a correction made for the proposed number of patrons (600).
- An on-time correction of -6dB has been applied on the basis that over the assessment period not all patrons will be generating noise continuously and at the same time, as such an estimated average of 25% of the patrons have been modelled as exerting a raised voice effort continuously for the full assessment interval.

Relevant Legislation, Policy and Guidance

- 16.18. The noise and vibration assessment has been undertaken within the context of relevant planning policies, guidance documents, and legislative instruments. These are summarised below.

Legislation

Control of Pollution Act 1974, Part III

- 16.19. Sections 60 and 61 of the Control of Pollution Act 1974 (CoPA) provide the local authority special powers for controlling noise arising from construction and demolition works, regardless of whether a statutory nuisance has been caused or is likely to be caused. These powers may be exercised either before works start or after they have started
- 16.20. CoPA requires that 'Best Practicable Means' (as defined in section 72) are adopted to control construction noise on any given site. CoPA refers to British Standard (BS) 5228:2009+A1:2014 Part 1 Noise and Part 2 Vibration as Best Practicable Means. Section 61 sets out the process for application to the local authority for prior consent to carry out works.

Environmental Protection Act 1990, Part III

- 16.21. Section 79 of the Environmental Protection Act 1990 (as amended) declares a number of matters to be statutory nuisances, one of which is noise, the term being defined to include vibration. Under the provisions of the Act, the local authority is required to inspect its area periodically to detect any nuisance and, where a complaint of a statutory nuisance is made by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint. Should it be satisfied of the existence of a statutory nuisance, the local authority is obliged to serve an abatement notice.

The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015

- 16.22. The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015 was introduced to provide updated guidance on noise and vibration control on construction and open sites. The Order approves the British Standard BS 5228:2009+A1:2014 Part 1 Noise and Part 2 Vibration for the purpose of giving guidance on appropriate methods for minimising noise and vibration

Policy

National Planning Policy

Planning Policy Framework (2024)

- 16.23. The National Planning Policy Framework (NPPF) sets out the Government's requirements for the planning system. Paragraph 200 advises:

"Planning policies and decisions should contribute to and enhance the natural and local environment by; preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of... noise pollution... Development should, wherever possible, help to improve local environmental conditions..."

16.24. With specific regard to noise, paragraph 198 states that:

“Planning policies and decisions should aim to...mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

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

Regional Planning Policy

Places for Everyone Joint Development Plan 2022-2039

16.25. The Places for Everyone Joint Development Plan Document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan (PfE) was adopted on 21 March 2024.

16.26. The PfE sets out the strategic plan for the Greater Manchester area for jobs, new homes, and sustainable growth.

16.27. Policy JP-P3 addresses Cultural Facilities and states the following with specific regard to noise:

“...Supporting a mix of uses which derive mutual benefits from, and do not compromise, the creative industries and cultural facilities in the Creative Improvement District in line with the Agent of Change principle. If development would potentially result in conflict between a cultural activity and another use, especially in terms of noise, then the development responsible for the change must secure the implementation of appropriate mitigation before it is completed.”

Local Planning Policy

Manchester Core Strategy 2012-2027

16.28. The local planning context for the Site is provided by Manchester’s Local Development Framework, Core Strategy Development Plan which was adopted in July 2012.

16.29. With specific regard to noise, Policy DM1, Development Management, states that *“all development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document: ...effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise.”.*

Guidance

National

Noise Policy Statement for England 2010

16.30. The Noise Policy Statement for England (NPSE) seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. The NPSE applies to all forms of noise, including environmental noise, neighbour noise, and neighbourhood noise.

16.31. The NPSE sets out the long-term vision of the government’s noise policy, which is to: *“promote good health and a good quality of life through the effective management of noise within the context of policy on sustainable development”.*

16.32. The guidance promotes the effective management and control of noise, within the context of Government policy on sustainable development and thereby aims to:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvements of health and quality of life.

16.33. The Explanatory Note to the NPSE introduces three concepts to the assessment of noise in this country:

- *“NOEL – No Observed Effect Level – This is the level below which no effect can be detected and below which there is no detectable effect on health and quality of life due to noise.*
- *LOAEL – Lowest Observed Adverse Effect Level – This is the level above which adverse effects on health and quality of life can be detected.*
- *SOAEL – Significant Observed Adverse Effect Level – This is the level above which significant adverse effects on health and quality of life occur.”*

16.34. None of these levels are defined numerically in the NPSE and, for the SOAEL, the NPSE makes it clear that the noise level is likely to vary depending upon the noise source, the receptor and the time of day / day of the week, etc. The need for more research to investigate what may represent a SOAEL for noise is acknowledged and the NPSE asserts that not stating specific SOAEL levels provides policy flexibility in the period until there is further evidence and guidance.

Planning Practice Guidance on Noise 2019

16.35. The Planning Practice Guidance on Noise (PPG-N) advises on how planning can manage potential noise impacts in new development.

16.36. The Observable Adverse Effect Level terms presented in the NPSE are adopted in the Government’s PPG-N which presents a table of example outcomes to help characterise the level of effect as reproduced in Table 16.2.

16.37. The PPG-N gives advice on the ‘Agent of Change’ principal and states [emphasis added by ES Chapter author]:

“Development proposed in the vicinity of existing businesses, community facilities or other activities may need to put suitable mitigation measures in place to avoid those activities having a significant adverse effect on residents or users of the proposed scheme.

*In these circumstances the applicant (or ‘agent of change’) will need to clearly identify the effects of existing businesses that may cause a nuisance (including noise, but also dust, odours, vibration and other sources of pollution) and the likelihood that they could have a **significant adverse effect** on new residents/users. In doing so, the agent of change will need to take into account not only the current activities that may cause a nuisance, but also those activities that businesses or other facilities are permitted to carry out, even if they are not occurring at the time of the application being made.*

The agent of change will also need to define clearly the mitigation being proposed to address any potential significant adverse effects that are identified. Adopting this approach may not prevent all complaints from the new residents/users about noise or other effects, but can help to achieve a satisfactory living or working environment, and help to mitigate the risk of a statutory nuisance being found if the new development is used as designed (for example, keeping windows closed and using alternative ventilation systems when the noise or other effects are occurring).

It can be helpful for developers to provide information to prospective purchasers or occupants about mitigation measures that have been put in place, to raise awareness and reduce the risk of post-purchase/occupancy complaints”

16.38. The PPG-N also provides advice on mitigation significant adverse impacts where ‘Agent of Change’ needs to put mitigation in places stating:

“For noise sensitive developments, mitigation measures can include avoiding noisy locations in the first place; designing the development to reduce the impact of noise from adjoining activities or the local environment; incorporating noise barriers; and optimising the sound insulation provided by the building envelope. It may also be possible to work with the owners/operators of existing businesses or other activities in the vicinity, to explore whether potential adverse effects could be mitigated at source. Where this is the case, it may be necessary to ensure that these source-control measures are in place prior to the occupation / operation of the new development. Where multiple development sites would benefit from such source control measures, developers are encouraged to work collaboratively to spread this cost. Examples of source control measures could include increased sound proofing on a building (e.g. a music venue) or enclosing an outdoor activity (e.g. waste sorting) within a building to contain emissions”

Table 16.2: Observable Effect Levels

Response	Example of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not Present	No Effect	No Observed Effect	No Specific Measures Required
No Observed Adverse Effect Level			
Present and Not Intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No Specific Measures Required
Lowest Observed Adverse Effect Level			
Present and Intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and Reduce to a Minimum
Significant Observed Adverse Effect Level			
Present and Disruptive	The noise causes a material change in the behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty on getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and Very Disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

British Standard 7745 (2003)

- 16.39. British Standard (BS) 7445-2:1991 'Description and measurement of Environmental Noise' defines parameters, procedures and instrumentation required for noise measurement and analysis

ISO 9613 (1996)

- 16.40. ISO 9613 'Attenuation of sound during propagation outdoors – Part 2' gives general methods of calculating sound propagation outdoors including attenuation due to geometrical divergence (distance); air and ground absorption; screening; reflections and other effects

British Standard 8233 (2014)

- 16.41. British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' (BS 8233) provides criteria for the assessment of internal noise levels for various uses including dwellings and commercial properties.

Guidelines for Community Noise 1999

- 16.42. The World Health Organization (WHO) 'Guidelines for Community Noise' provides recommendation aimed to limit the adverse effects of noise on health.

British Standard 4142 (2014+A1:2019)

- 16.43. British Standard 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (BS 4142) provides criteria for the assessment of industrial and commercial sound at external noise sensitive receptors.

British Standard 5228 (2009+A1:2014)

- 16.44. British Standard 5228:2009+A1:2014, Part 1 and Part 2 'Code of practice for noise and vibration control on construction and open sites' (BS 5228) provides a guidance for the assessment and mitigation of noise and vibration from construction activities.

Calculation of Road Traffic Noise (1988)

- 16.45. The Department of Transport / Welsh Office Memorandum 'Calculation of Road Traffic Noise' (CRTN) describes procedures for traffic noise calculation; it is suitable for environmental assessments of schemes where road traffic noise may have an impact.

Design Manual for Roads and Bridges (2020)

- 16.46. The Design Manual for Roads and Bridges 'LA 111 Noise and Vibration' (DMRB) sets out the requirements for assessing and reporting the effects of highways noise and vibration from construction, operation and maintenance projects

British Standard 6472 (2008)

- 16.47. British Standard BS 6472-1:2008 'Guide to evaluation of human exposure to vibration in buildings - Vibration sources other than blasting' provides guidance on the likely human response to vibration within buildings. This standard assesses the likely adverse impacts of vibration and can be used to assess the suitability of proposed residential buildings in locations with existing vibration

The Noise Council Code of Practice on Environmental Noise Control at Concerts (1995)

- 16.48. The Noise Council's Code of Practice on Environmental Noise Control at Concerts provides guidance on environmental noise control at concerts and similar music events with the aim of enabling successful concerts to be held whilst keeping to a minimum the disturbance caused by noise.

Local

Manchester City Council Planning and Noise Technical Guidance (2022)

- 16.49. MCC's Planning and Noise Technical Guidance document published in October 2022 provides guidance on the assessment of noise and vibration impacts associated with various types of development within Manchester.

- 16.50. With regards to noise from commercial development it states:

"...The development should be designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location..."

- 16.51. With regards to noise from fixed building services plant it states:

“...Externally mounted ancillary plant, equipment and services shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location...”

16.52. With regards to noise from construction it states:

“All noisy works (i.e. those that are audible beyond the site boundary) should be restricted to the following hours to minimise disruption:

- • Monday - Friday: 7.30am - 6pm
- • Saturday: 8.30am - 2pm
- • Sunday / Bank holidays: No work

These restrictions apply to deliveries/collections to the site...

... A Construction Management Plan (CMP) shall be submitted to and approved by the Council for large schemes. This should contain a Noise & Vibration section that bases the assessment on BS 5228..., with reference to other relevant standards. It should also contain a community consultation strategy which includes how and when local businesses and residents will be consulted on matters such out of hours works”

16.53. With regards to noise from entertainment sources it states:

“Entertainment noise ($L_{Aeq,5min}$) should be controlled to 5dB below the typical background noise level (L_{A90}) in each octave band at the nearest noise sensitive location’.

Manchester City Council Guidance on Noise Control for Open Air Concerts and Events (2022)

16.54. MCC’s Guidance on Noise Control for Open Air Concerts and Events document published in August 2022 provides guidance on assessment and control of noise associated with outdoor events within Manchester. The MCC guidance is largely based on the guidance set out in the Noise Council’s Code of Practice on Environmental Noise Control at Concerts.

16.55. With regards to music noise guidelines the MCC guidance document states:

“The Music Noise Levels (MNL) when assessed at the prediction stage or measured during sound checks or concerts should not exceed the guidelines shown in Table 1 [Table 16.3] at 1 metre from the façade of any noise sensitive premises for events held between the hours of 09:00 and 23:00.”

Table 16.3: Music Noise Guidelines

Concert days per calendar year, per venue	Venue	Guideline
1 to 3	Urban stadia or arenas	The MNL should not exceed 75dB $L_{Aeq,15min}$
1 to 3	Other urban & rural venues	The MNL should not exceed 65dB $L_{Aeq,15min}$
4 to 12	All venues	The MNL should not exceed the background noise level by more than 15dB(A) over a 15 minute period
1. If the event site already holds a Premises Licence (PL) then any proposed activities will be restricted to the terms and conditions of the PL. For example, venues such as Heaton Park and the Etihad stadium have specific conditions in relation to a prescribed limit attached to the PL.		

Concert days per calendar year, per venue	Venue	Guideline
<p>2. Certain venues in the City may have site specific factors that will mean they fall outside of the above guidelines. The noise control strategy should be agreed in advance with the City Council's Events Unit.</p> <p>3. For events continuing or held between the hours 23:00 and 09:00 the music noise should not be audible within noise sensitive properties with windows open in a typical manner for ventilation. Control can be exercised in this situation by limiting the music noise so that it is just audible outside the noise sensitive premises. When that is achieved it can be assumed that the music noise is not audible inside the noise sensitive premises.</p> <p>4. Please refer to the Code of Practice (1995) for assessment relating to the background noise level.</p>		

16.56. Further low frequency octave band limits are given for specific genres of music in Table 2 [Table 16.4].

Table 16.4: Octave Bands and Limits

Type/genre/style of music	Octave frequency band (Hz)	Noise limit (dB)
Dance, Electronic, Drum & Bass, Dubstep, Reggae, RnB	63	75
	125	75
<p>1. A level up to 70dB in either the 63Hz or 125Hz octave frequency band is satisfactory; a level of 80dB or more in either of those octave frequency bands may cause significant disturbance (The Noise Council 1995).</p>		

16.57. In addition to the above noise limits, the document provides qualitative guidance regarding noise management and monitoring measures deemed appropriate by MCC.

Assessment Methodology and Significance Criteria

Scenarios Tested

16.58. The following list identifies the Scenarios presented with this ES Volume and justification as to why they have or have not been assessed in this ES Chapter:

- Scenario 1: Baseline Conditions
- Assessed to provide baseline for construction and operational phase assessments of other Scenarios
- Scenario 2: Baseline + Phase A + Phase C
- Assessed for construction and operational phases
- Scenario 3: Baseline + Phase A + Phase C + Cumulative
- Assessed for construction and operational phases
- Scenario 4: Baseline + Phase A + Phase C + IDM Masterplan + Cumulative
- Not Assessed as Phase B forms part of the IDM Masterplan and therefore covered by Scenario 7, which represents the worst case scenario (with IDM Masterplan + Cumulative).
- Scenario 5: Baseline + Phase A + Phase B + Phase C
- Assessed for construction and operational phases
- Scenario 6: Baseline + Phase A + Phase B + Phase C + Cumulative
- Assessed for construction and operational phases

- Scenario 7: Baseline + Phase A + Phase B + Phase C + IDM Masterplan + Cumulative
- Assessed for construction and operational phases
- Scenario 8: Baseline + Phase C
- Assessed for construction and operational phases

16.59. At this stage there are no fixed building massing in the SRF and as such there is insufficient detail to carry out a detailed assessment of Scenario 7. Accordingly, a high level qualitative assessment of Scenario 7 is presented herein.

The Study Area

- 16.60. The study area for the assessment includes the nearest noise sensitive receptors identified in Table 16.5 and illustrated in Figure 16.1. The relevant cumulative schemes are set out within Appendix 2.3.
- 16.61. The list of existing noise-sensitive receptors is not intended to be exhaustive, and it aims to contain a representative selection of the closest noise sensitive receptors in each direction from the Site. These receptors are considered representative of other potential receptors further away from the Site, as if noise levels are not deemed significant at these receptors, the receptors further afield will also not be significantly affected. Should significant effects be experience at the closes receptors, receptors at a greater distance will then be considered to determine the extent of the potential effects.
- 16.62. Consideration has also been given to the on-site receptors that may be occupied prior to completion of the latter phases of the Proposed Development.

Table 16.5: Nearest Noise Sensitive Receptors

Receptor	Description	Occupancy	Bearing from Site	Distance from Site
NSR1	IQ Echo Street	Residential	North	45m
NSR2	Capcis & Brain Bridge House	Commercial	North	55m
NSR3	Manchester Marriot Hotel	Residential	East	105m
NSR4	Renold Building	Commercial	West	90m
NSR5	The Mill	Residential	Southwest	215m
NSR6	Sackville Street Offices	Commercial	West	215m
NSR7	Sackville Street Building	Commercial	Northwest	125m
NSR8	Ferranti Building	Education	South	150m
NSR9	Graphene Innovation Centre	Commercial	Southwest	195m
NSR10	C1 (Sister Plot C – Phase A)	Commercial	West	10m

- 16.63. For the purposes of this assessment, the occupants of the existing sensitive receptors in the vicinity of the Proposed Development are considered to be the most likely to be affected by noise associated with the construction and demolition phase, and operational phase of the Proposed Development.

Surveys and Data Sources

- 16.64. The potential major sources of noise contributing to the baseline conditions at the Site were initially identified through desktop review of the Site and surrounding land uses undertaken using maps and aerial photography. Road traffic noise primarily associated with London Road (A6) and the elevated A57(M) and rail movements associated with the elevated railway running along the Viaduct were identified as the primary environmental noise sources.

- 16.65. Baseline noise conditions at the Site were established by means of noise monitoring undertaken between approximately 13:00 hours on Thursday 27 June and 13:00 hours on Friday 28 June 2024, and between approximately 14:00 hours on Thursday 17 October and 13:00 hours on Wednesday 23 October 2024.
- 16.66. Baseline vibration conditions at the Site were established by means of vibration monitoring undertaken between approximately 14:00 hours on Thursday 17 October and 13:00 hours on Wednesday 23 October 2024.
- 16.67. Details of the baseline noise and vibration survey are included in Appendix 16.1 Sister Plot C – Baseline Noise and Vibration Survey.

Source of Effect

- 16.68. Table 16.6 sets out the various sources of noise and vibration effects associated with the Proposed Development in the construction and operational phases and highlights the corresponding noise sensitive receptors assessed for each source.

Table 16.6: Sources of Noise and Vibration Effects

Phase	Source	
Construction	Temporary Noise	NSR1-10
	Temporary Vibration	NSR 1
	Temporary Road Traffic	NSR 1-10
Operational	Activity noise (commercial units)	NSR 1-10
	Activity noise (Temporary events Sister Square)	NSR1, NSR3, NSR5
	Building Services Noise	NSR1-10
	Road Traffic	NSR1-10

Significance Criteria

Receptors and Receptor Sensitivity

- 16.69. The categories to determine sensitive receptors are based on the guidance contained in BS 8233, WHO Guidelines, and other relevant reference criteria. Table 16.7 summarises the sensitivities for the different receptor types.

Table 16.7: Receptor Sensitivity

Sensitivity	Examples of Receptor
High	Residential (dwellings as well as residential healthcare and hotels) Educational facilities (school and colleges) Theatres and concert halls Places of worship
Medium	Non-residential healthcare and hospitals Noise sensitive leisure (museums and libraries)
Low	Commercial facilities (retail and office uses) Industrial receptors (workshops and warehouses)

Magnitude of Impact

- 16.70. The magnitude of impact will depend on the nature and characteristic of the noise that a listener is subjected to. Set out below are the various magnitudes of impact associated with:

- Temporary construction noise
- Temporary construction traffic;
- Temporary Construction vibration;

- Operational activity noise;
- Operational building services noise; and
- Operational traffic.

Construction Noise and Vibration

- 16.71. Annex E of BS 5228-1 provides example criteria of absolute noise limits for construction activities, and they have been used to determine the impact of construction noise impacts within this assessment. The criteria do not represent mandatory limits, but a set of example approaches intended to reflect the type of methods commonly applied to construction noise. The example criteria are based on a set of limiting values which, if exceeded, may result in a significant effect unless ambient noise levels are sufficiently high to provide a degree of masking of construction noise.
- 16.72. The range of guidance values detailed in BS 5228-1 Annex E has been used to numerically define the magnitude levels, as per Table 16.8. This method classifies proposed development sites into a linear category scale (A to C) defined by the ambient noise levels prevalent at a development site, with Category A representing quieter sites, and Category C representing loud urban sites
- 16.73. According with the findings of the noise survey, the Site falls under Category C under this method. The values presented in Table 16.8 have, therefore, been informed by this and chosen to relate to daytime hours from 07:30 to 18:00 on weekdays, and 08:30 to 14:00 on Saturdays
- 16.74. As construction noise will be an introduction of a new temporary noise source, where impacts are identified, they will be adverse.

Table 16.8: Magnitude of Construction Noise Impact

Magnitude	Noise Level dB $L_{Aeq,T}$	Details
Major	> 75	Trigger level for noise insulation works, or cost thereof as set out in Table E.2 of BS 5228. > 85dB $L_{Aeq,T}$ is the trigger level for temporary rehousing, or reasonable cost thereof, as set out in E.4 of BS 5228.
Moderate	> 65 ≤ 75	Noise is likely to be audible and may change behaviour but will be tolerated if prior warning has been given
Minor	= 65	Threshold of significance for the site based on measured noise levels and BS 5228 Annex E, Category C
Negligible	< 65	Noise is likely to be audible, but unlikely to change behaviour.

- 16.75. The magnitude of impact for construction traffic noise to be used for this assessment are shown in Table 16.9. This approach is based on DMRB, where the change in road traffic noise level (when comparing the same year with and without construction traffic) is assessed rather than setting an absolute noise level to determine the impact.

Table 16.9: Magnitude of Construction Traffic Impact

Magnitude	Noise Change dB $L_{A10,18h}$	Details
Major	≥ 5.0	Change in short term noise would be clearly perceptible. Considered in DMRB to be a major magnitude
Moderate	≥ 3.0 < 5.0	Change in short term level may be perceptible under normal conditions. Considered in DMRB to be a moderate magnitude.
Minor	≥ 1.0 < 3.0	Change in short term level may be perceived at the upper end of the range under certain conditions. Described in DMRB to be a minor magnitude.
Negligible	< 1.0	Imperceptible change. Described in DMRB to be of negligible magnitude.

- 16.76. The magnitude of impact of construction vibration has been determined from criteria set out in BS 5228-2. The values presented in Table 16.10 are based on human response to construction vibration levels in a residential environment.

- 16.77. Cosmetic damage to buildings caused by vibration has not been assessed as this typically would occur at higher vibration than those outlined in Table 16.10. As such, where vibration levels are controlled to meet the levels outlined below, cosmetic damage to building is highly unlikely to occur.

Table 16.10: Magnitude of Construction Vibration Impact

Magnitude	Vibration Level PPV mm/s	Details
Major	≥ 10.0	Vibration is likely to be intolerable for any more than a very brief exposure to this level.
Moderate	> 1.0 ≤ 10.0	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.
Minor	≥ 0.3 ≤ 1.0	Vibration within this range would be perceptible in a residential environment and has the potential to cause complaint but may be tolerated if prior warning has been given.
Negligible	< 0.3	Vibration levels below this level are unlikely to be perceptible in residential environments

Operational Noise and Vibration

- 16.78. The magnitude of noise impacts associated with the operation of any building services associated with the commercial areas of the Proposed Development have been defined based on guidance found within BS 4142.
- 16.79. The impact of the sound from building services depends upon how much the rating level ($L_{Ar,Tr}$) of the specific sound source exceeds the typical background sound level and the context in which the sound occurs. The impact can be determined by subtracting the typical measured background sound level from the rating level. The magnitude of impact for this source of noise is given in Table 16.11.

Table 16.11: Magnitude of Building Services Noise Impact

Magnitude	Details
Major	A difference of +10dB or more is likely to be an indication of a significant adverse impact, depending on context.
Moderate	A difference of +5dB is likely to be an indication of an adverse impact, depending on context.
Minor	The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.
Negligible	Where the rating level is lower than 10dB below the background sound level, this is an indication of the specific sound source not contributing to the overall noise climate, even if it emits constant noise and therefore would have a negligible impact.

- 16.80. The magnitude of noise impacts associated with the operation of the commercial / non-residential areas of the Proposed Development have been defined based on guidance found within BS 4142.
- 16.81. The impact of the sound of a commercial nature depends upon how much the rating level ($L_{Ar,Tr}$) of the specific sound source exceeds the typical background sound level and the context in which the sound occurs. The impact can be determined by subtracting the typical measured background sound level from the rating level. The magnitude of impact for this source of noise is given in Table 16.12

Table 16.12: Magnitude of Commercial Noise Impact

Magnitude	Details
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Major	A difference of +10dB or more is likely to be an indication of a significant adverse impact, depending on context.
Moderate	A difference of +5dB is likely to be an indication of an adverse impact, depending on context.
Minor	The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.
Negligible	Where the rating level is lower than 10dB below the background sound level, this is an indication of the specific sound source not contributing to the overall noise climate, even if it emits constant noise and therefore would have a negligible impact.

16.82. The magnitudes of impact for operational off-site traffic noise used for this assessment are shown in Table 16.13. This approach is based on DMRB, where the long-term change in road traffic noise level when comparing the same year with and without operational traffic is assessed.

Table 16.13: Magnitude of Operational Traffic Impact

Magnitude	Noise Change dB $L_{A10,18h}$	Details
Major	≥ 10.0	Change in short term noise would be clearly perceptible. Considered in DMRB to be a major magnitude
Moderate	≥ 5.0 < 10.0	Change in short term level may be perceptible under normal conditions. Considered in DMRB to be a moderate magnitude.
Minor	≥ 4.9 < 3.0	Change in short term level may be perceived at the upper end of the range under certain conditions. Described in DMRB to be a minor magnitude.
Negligible	< 2.9	Imperceivable change. Described in DMRB to be of negligible magnitude.

16.83. The magnitude of impact of tactile vibration has been determined from criteria set out in BS 6472-1. The values presented in Table 16.14 are based on human response to vibration levels in a residential environment.

16.84. For the assessment the magnitude of existing vibration impact on the proposed offices during the daytime only (07:00 – 23:00) the values in Table 16.14 should be multiplied by 2.

Table 16.14: Magnitude of Tactile Vibration

Magnitude	Vibration Level $VDV \text{ ms}^{-1.75}$		Details
	Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00)	
Major	≥ 0.8	≥ 0.4	Vibration within this range would be perceptible in a residential environment and is probable to cause adverse comment.
Moderate	< 0.8 ≥ 0.4	< 0.4 ≥ 0.2	Vibration within this range would be perceptible in a residential environment and has the potential to cause adverse comment.
Minor	< 0.4 ≥ 0.2	< 0.2 ≥ 0.1	Vibration within this range would be perceptible in a residential environment and has the potential to cause a low possibility of adverse comment.
Negligible	< 0.2	< 0.1	Vibration below this level would have no adverse impact

- 16.85. BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings' provides appropriate criteria for acceptable levels of noise ingress within various spaces. Table 16.15 summarises the most relevant design ranges applicable to the Proposed Development.

Table 16.15: Internal Ambient Noise Level Requirements as per BS 8233

Space	Design Range dB $L_{Aeq,T}$
Executive Office	35 - 40
Open-plan office	45 - 50
Concourse, corridor, circulation space	45 - 55
Cafeteria, canteen, kitchen, departments store	50 - 55

- 16.86. British Council for Offices' Guide to Specification 2019 recommends that noise intrusion levels in speculative offices should not exceed more than NR38 $L_{Aeq,T}$ and not normally exceed more than 55dB $L_{A01,1h}$. Rain noise should be controlled so that it does not exceed 60dB $L_{Aeq,T}$ in office spaces during heavy rainfall.

Operational - Events

- 16.87. In order to establish suitable assessment criteria for noise generated during outdoor events located within the proposed Sister Square it is necessary to consider both the nature of and the proposed frequency of the anticipated types of events. A summary of anticipated events and the likely frequency of occurrence has been prepared by ID Manchester Ltd and is set out in the submitted Plot C Events Management Strategy.
- 16.88. Table 16.16 summarises a proposed categorisation of anticipated event types identifying events as either major or minor, where major events are expected to have potential to generate significant levels of music and patron noise (e.g. During cinema or sporting events screenings or centralised music performances), and where minor events are expected to generate lower and distributed levels of patron and possible localised music noise.

Table 16.16: Proposed Event Noise Limit Categorisations

Event Type	Anticipated Frequency	Proposed Noise Limit Categorisation
Innovation Festival	3 – 4 per year	Minor
Cinema, live sports screenings, family-friendly screenings		Major
Ice rink/roller rink		Minor
Music Festival		Major
Community events	Monthly	Major
Music events		Major
Pop-up food markets		Minor
Pop-up theatre – Summer time		Major
Brand activations – Space commercialisation	Weekly/bi-weekly	Minor
Family events/family days out, and sports days		Minor
Wellness events including fitness classes (Running clubs, outdoor HIIT, Yoga, Pilates, etc.)		Minor
Outdoor exhibitions		Minor
Workshops		Minor

- 16.89. On the basis of the anticipated frequency of events set out in the Sister Plot C Events Management Strategy (replicated above in Table 16.16) it is anticipated that the number of 'Major' event days within a calendar year is not likely to exceed 30 and no events will take place outside the hours of 09:00 – 23:00.

- 16.90. MCC's Guidance on Noise Control for Open Air Concerts and Events does not provide specific guidance for venues for which more than 12 event days per calendar year are proposed, however the Noise Council's Code of Practice on Environmental Noise Control at Concerts states the following:
- "...For indoor venues used for up to about 30 events per calendar year an MNL not exceeding the background noise by more than 5dB(A) over a fifteen minute period is recommended for events finishing no later than 2300 hours..."*
- 16.91. As MCC's Guidance on Noise Control for Open Air Concerts and Events is based upon the Noise Council's Code of Practice on Environmental Noise Control at Concerts, and in lieu of any more appropriate guidance specific to the organisation of outdoor events in the Sister Square it is therefore proposed to adopt this limit of 5dB(A) above the background over a fifteen minute period at 1 metre from the nearest noise sensitive receptors for music noise associated with 'Major' events.
- 16.92. It should be noted that with regards to event noise it is proposed that the commercial premises that form part of Plot C and the wider SRF area are not considered sensitive to noise from the development's own events and the nearest receptors sensitive to noise from events will be NSR1, NSR3 and NSR5.
- 16.93. For 'Minor' events, where lower and more localised music noise levels are anticipated, it is proposed to adopt MCC's guidance normally applied to permanent entertainment venues (5dB below the typical background noise level L_{A90} in each octave band at the nearest noise sensitive location) with no restriction on frequency of these events.
- 16.94. The magnitudes of impact for event patron noise used for this assessment are shown in Table 16.17. This approach is based on WHO Guidelines for Community Noise in outdoor living areas.

Table 16.17: Magnitude of Event Patron Noise

Magnitude	Noise Change dB $L_{Aeq,16h}$	Details
Major	≥ 55	Serious annoyance, daytime and evening
Moderate	≥ 50 < 54.9	Moderate annoyance, daytime and evening
Minor	< 49.9	-

Significance of Effect

- 16.95. The significance of effect at a receptor is calculated by combining the magnitude of the effect with the sensitive of the receptor, as summarised in Table 16.18; significant effects are emphasised in bold

Table 16.18: Significance of Effect Matrix

Magnitude	Sensitivity		
	High	Medium	Low
Major	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate or Minor Adverse/Beneficial
Moderate	Major - Moderate Adverse/Beneficial	Moderate Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate or Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial - Negligible
Negligible	Negligible	Negligible	Negligible

Effect Duration

- 16.96. For the purposes of the ES, effects that are generated because of the construction works (i.e., those that last for this set period) have been classed as 'temporary'; these may further be classified as 'short term' or 'medium-term' effects depending on the duration of the construction works that generate the effect in question in line with the general guidance contained within SB 5228-1.

- 16.97. Effects that result from the completed and operational Proposed Development have been classed as ‘permanent’ or ‘long term’ effects.

Direct or Indirect Effects

- 16.98. For the purposes of the ES, ‘direct’ effects are those that are classed as a direct consequence of a project (the Proposed Development) related impact and are likely to be spatially or temporally concurrent.
- 16.99. ‘Indirect’ effects are a secondary consequence to a project (the Proposed Development) related impact and are likely to be spatially or temporally removed from the direct impacts.

Baseline Conditions

- 16.100. The main noise sources within the vicinity of the Site are road traffic on London Road (A6) to the east of the Site and the elevated A57(M) to the south.
- 16.101. The Site is bordered to the north by an elevated railway running over the Viaduct with rail services to and from Manchester Piccadilly Station. Noise from trains contributes to the existing noise climate at the Site.
- 16.102. Baseline noise conditions at the Site were established by means of a combination of unattended and attended noise monitoring at six positions undertaken between approximately 13:00 hours on Thursday 27 June and 13:00 hours on Friday 28 June 2024, and between approximately 14:00 hours on Thursday 17 October and 13:00 hours on Wednesday 23 October 2024.
- 16.103. Baseline vibration conditions at the Site were established by means of vibration monitoring at a single location undertaken between approximately 14:00 hours on Thursday 17 October and 13:00 hours on Wednesday 23 October 2024.
- 16.104. The measurement positions are illustrated in Figure 16.2 and detailed in Table 16.19.

Table 16.19: Noise and Vibration Measurement Positions

Measurement Position	Description
MP1 (Unattended Noise Logger, June)	Mast mounted microphone protruding from a fourth floor window, approximately 1m from the northern façade of the Renold building. Sited in “façade” conditions.
MP2 (Unattended Noise Logger, June)	Mast mounted microphone protruding from a fourth floor window, approximately 1m from the southern façade of the Renold building. Sited in “façade” conditions.
MP3 (Unattended Noise Logger, October)	Mast mounted microphone secured approximately 1.5m above the roof of the Wright Robinson building. Sites in “free-field” conditions.
MP4 (Unattended Noise Logger, October)	Mast mounted microphone secured approximately 1.5m above the roof of the Maths and Social Sciences building. Sites in “free-field” conditions
MP5 (Attended Noise Measurement, October)	Tripod mounted microphone approximately 1.5m above local ground level set back approximately 3m from the nearside edge of London Road (A6). Sited in “free-field” conditions.
MP6 (Attended Noise Measurement, October)	Tripod mounted microphone approximately 1.5m above local ground level set back approximately 3m from the nearside edge Sackville Street. Sited in “free-field” conditions.
MP7 (Unattended Vibration Logger, October)	Ground mounted sensor on the northern boundary of the Barnes Wallis building.

- 16.105. The prevailing weather conditions during both surveys were generally suitable for the purposes of environmental noise measurements, with wind speeds less than 5m/s and rainfall intensity less than 2mm/h, with the exception of some short periods of rainfall between 01:00 and 04:00 on 19 October 2024, and some short periods of higher wind speeds between 13:00 and 18:00 on 27 June 2024 and 14:00 and 16:30 on 20 October 2024. These periods have been omitted from further analysis.
- 16.106. The exclusion of these periods are not considered to alter the robustness of the assessments included in this ES Chapter.
- 16.107. Appendix 16.1 Sister Plot C – Baseline Noise and Vibration Survey provides full details of the surveys and equipment used. The survey equipment was calibrated immediately before and after usage with no significant drift in level found to have occurred.
- 16.108. All noise levels measured at Measurement Positions MP1 – MP4 have been processed and summarised to provide an overall level at each location for the whole survey period. Ambient sound levels have been logarithmically averaged for the day (07:00-23:00) and night (23:00-07:00) periods to present the overall $L_{Aeq,16hour}$ and $L_{Aeq,8hour}$ noise levels, respectively.
- 16.109. For the short duration attended measurements undertaken at Measurement Positions MP5 and MP6, the measured representative L_{A10} noise levels from three consecutive hours have been arithmetically averaged and corrected to provide an estimated $L_{Aeq,16hour}$ in accordance with the shortened measurement procedure set out in CRTN.
- 16.110. Baseline noise level predictions have been made using the CadnaA mapping software to produce a baseline noise model. The measured noise levels at the various monitoring locations have been used to calibrate the noise model.

Unattended Noise Monitoring (Long Term)

- 16.111. Unattended noise monitoring was undertaken at measurement positions MP1 – MP4.
- 16.112. Table 16.20 and Table 16.21 provide a summary of the noise levels measured at the long-term monitoring locations for the day and night respectively.
- 16.113. Table 16.20 also includes the daytime noise events in terms of the highest $L_{A1,1hour}$ parameter which is relevant to the assessment of noise ingress into the proposed office spaces.

Table 16.20: Summary of Measured Noise Levels at MP1 to MP4 – Daytime (07:00 – 23:00 hours)

Start Date	Daytime Noise Level, dB $L_{Aeq,16hour}$ / Highest Hourly L_{A1} , dB $L_{A1,1hour}$			
	MP1	MP2	MP3	MP4
27 June 2024	56* / 70	60* / 66	-	-
28 June 2024	61* / 74	62* / 67	-	-
17 October 2024	-	-	67* / 75	76* / 80
18 October 2024	-	-	67 / 75	77 / 81
19 October 2024	-	-	66 / 71	76 / 80
20 October 2024	-	-	67 / 76	75 / 82
21 October 2024	-	-	68 / 77	76 / 80
22 October 2024	-	-	69 / 85	76 / 80
23 October 2024	-	-	69* / 80	77* / 79
* Incomplete measurement period				

Table 16.21: Summary of Measured Noise Levels at MP1 to MP4 – Night-time (23:00 – 07:00 hours)

Start Date	Night-time Noise Level, dB $L_{Aeq,8hour}$			
	MP1	MP2	MP3	MP4
27 June 2024	55	58	-	-
28 June 2024	-	-	-	-
17 October 2024	-	-	63	72
18 October 2024	-	-	62	71
19 October 2024	-	-	64	72
20 October 2024	-	-	63	72
21 October 2024	-	-	62	72
22 October 2024	-	-	63	72
23 October 2024	-	-	-	-

16.114. Appendix 16.2 Background Noise Level Statistical Analysis Graphs provides statistical analysis graphs for the day and night periods measured at each of the unattended monitoring locations, which presents the distribution of the background noise levels during each day and night period recorded during the survey. Table 16.22 presents the values deemed to be statistically representative of the background levels at each Measurement Position during the daytime and night-time periods. It should be noted that a time weighting period of 15-minutes has been used for both the day and night.

Table 16.22: Statistically Representative Background Sound Levels at Locations MP1 to MP4

Period	Representative Background Sound Level, dB $L_{A90,15min}$			
	MP1	MP2	MP3	MP4
Daytime (07:00 – 23:00)	50	58	63	74
Night-time (23:00 – 07:00)	45	50	53	63

16.115. Appendix 16.2 Background Noise Level Statistical Analysis Graphs provides statistical analysis graphs for the day period measured at MP1, which presents the distribution of the background noise levels in each octave band during each day period recorded during the survey. Table 16.23: Statistically Representative Octave Band Daytime Background Sound Levels at Location MP1 presents the values deemed to be statistically representative of the background levels at MP1 during the daytime. It should be noted that a time weighting period of 15-minutes has been used.

Table 16.23: Statistically Representative Octave Band Daytime Background Sound Levels at Location MP1

Representative Background Sound Level, dB $L_{Aeq,15min}$, at Octave Band Centre Frequency, Hz							
63	125	250	500	1k	2k	4k	8k
54	51	49	48	48	40	30	18

Attended Noise Monitoring (Short Term)

16.116. In addition to the long-term surveys, short sample measurements were taken along the A6 London Road and Sackville Street.

16.117. The purpose of the short-term measurements was to quantify the relevant contributions of noise from the A6 London Road and Sackville Street.

16.118. Attended noise monitoring was undertaken between approximately 10:45 and 12:15 on the 17 October 2024 whilst the long-term monitoring was in progress to assist with calibration of the 3D acoustic model.

16.119. Table 16.24 and Table 16.25 summarise the noise levels measured at MP5 and MP6 respectively.

Table 16.24: Summary of Measured Noise Levels at MP5

Start Time	Measured Sound Level at MP5, dB			
	L _{Aeq,15minute}	L _{A1,15minute}	L _{A10,15minute}	L _{A90,15minute}
10:45	73	80	77	64
11:00	73	80	77	64
11:15	73	80	76	63
11:30	73	80	77	65
11:45	72	80	76	64
12:00	73	80	77	65

Table 16.25: Summary of Measured Noise Levels at MP6

Start Time	Measured Sound Level at MP6, dB			
	L _{Aeq,15minute}	L _{A1,15minute}	L _{A10,15minute}	L _{A90,15minute}
10:45	66	73	69	60
11:00	66	72	69	60
11:15	66	72	69	60
11:30	65	72	69	60
11:45	65	72	68	60
12:00	66	72	69	59

Unattended Vibration Monitoring (Long Term)

16.120. Long term vibration monitoring was undertaken at Measurement Position MP7 in a position representative of the closest proposed receptor to the existing railway line to the north.

16.121. Table 16.26 provide a summary of the maximum vibration levels measured at the long-term monitoring location in the X, Y, and Z axes respectively for each daytime period (07:00 - 23:00). Appendix 16.1 Sister Plot C – Noise and Vibration Survey provides full details of the vibration measurements.

Table 16.26: Summary of Measured Baseline Vibration Levels at MP7

Date	Maximum Measured Vibration Dose Value, $VDV_{b/d}^{-1.75}$		
	X-Axis	Y-Axis	Z-Axis
17 October 2024	0.002	0.002	0.013
18 October 2024	0.002	0.003	0.014
19 October 2024	0.002	0.002	0.014
20 October 2024	0.002	0.002	0.011
21 October 2024	0.009	0.004	0.014
22 October 2024	0.002	0.003	0.014
23 October 2024	0.002	0.002	0.011

Identification and Evaluation of Likely Significant Effects

Construction Phase

Construction Activities

- 16.122. Construction activities close to sensitive receptors could potentially generate noise impacts, particularly when more than one noisy activity coincides. These construction noise and vibration impacts can lead to temporary direct, reversible effects in the form of annoyance, speech interference and disturbance and are confined to the local scale (i.e. surrounding buildings).
- 16.123. Noise generated during the construction works of the Proposed Development has the potential to adversely affect nearby residential receptors. In the absence of mitigation and management, activities relating to these works may have a high magnitude of impact at highly sensitive receivers (i.e., residential), and could result in a significant effect.
- 16.124. A conservative noise assessment of the predicted noise levels based on the construction programme, at the receptors identified in Table 16.5, has been carried out for construction 'Timeslices' as follows in Table 16.27:

Table 16.27: Construction Noise Assessment Timeslices

Timeslice	Phase	Construction Activity
1	A	Enabling Works
2	A	Piling and Substructure
3	A	Superstructure, Envelope, and Fit Out
4	B	Piling and Substructure
5	B	Superstructure, Envelope, and Fit Out
6	C	Superstructure, Envelope, and Fit Out

- 16.125. The assumed construction activities for each phase of work are detailed in Table 16.38. The cumulative sound power level assumes each item is running continuously throughout each phase, which, in practice, is unlikely to occur and therefore presents a worst-case scenario.
- 16.126. Table 16.28 identifies the relevant 'Timeslices' to each of the proposed Assessment Scenarios.

Table 16.28: Timeslice Relevance to Scenarios

Scenario	Relevant Timeslices
1: Baseline Conditions	-
2: Baseline + Phase A + Phase C	1, 2, 3, 6
3: Baseline + Phase A + Phase C + Cumulative	1, 2, 3, 6
4: Baseline + Phase A + Phase C + IDM Masterplan Cumulative	1, 2, 3, 6
5: Baseline + Phase A + Phase B + Phase C	1, 2, 3, 4, 5, 6
6: Baseline + Phase A + Phase B + Phase C + Cumulative	1, 2, 3, 4, 5, 6
7: Baseline + Phase A + Phase B + Phase C + IDM Masterplan + Cumulative	1, 2, 3, 4, 5, 6
8: Baseline + Phase C	6

Scenario 2: Baseline + Phase A + Phase C

- 16.127. Table 16.39 summarises the worst-case calculated incident noise levels at each receptor for Scenario 2.
- 16.128. The predicted noise levels show that, as a worst-case without the mitigation detailed above, a moderate magnitude of impact is predicted at receptors NSR1, NSR2, NSR3, NSR4. NSR1 and NSR3 are residential with a high sensitivity which

results in a direct, local, temporary **Major – Moderate Adverse effect (Significant)**, NSR2 and NSR4 are offices with a low sensitivity which results in a direct, local, temporary **Minor Adverse effect (Not significant)**.

- 16.129. The predicted noise levels show that, as a worst case (unmitigated), a moderate magnitude of impact is predicted at on-site receptor NSR10. These receptors are of low sensitivity, resulting in a direct, local, temporary **Moderate or Minor Adverse effect (Significant)**.
- 16.130. As previously noted, in practice these noise levels are unlikely to occur, as the plant items will be spread across the Site and operating at a lower utilisation than assumed in the assessment which is based on 100% utilisation.
- 16.131. The predicted noise levels show that, as a worst-case (unmitigated), a negligible magnitude of impact is predicted at receptors NSR5, NSR6, NSR7, and NSR9. These receptors are of low sensitivity, resulting in a direct, local, temporary, **Negligible Adverse effect (Not Significant)**.
- 16.132. The predicted noise levels show that, as a worst-case (unmitigated), a negligible magnitude of impact is predicted at receptor NSR8. This receptor is of high sensitivity, resulting in a direct, local, temporary, **Negligible Adverse effect (Not Significant)**.

Scenario 5: Baseline + Phase A + Phase B + Phase C

- 16.133. Table 16.40 summarises the worst-case calculated incident noise levels at each receptor for Scenario 5.
- 16.134. The predicted noise levels show that, as a worst-case without the mitigation detailed above, a moderate magnitude of impact is predicted at receptors NSR1, NSR2, NSR3, NSR4. NSR1 and NSR3 are residential with a high sensitivity which results in a direct, local, temporary **Major – Moderate Adverse effect (Significant)**, NSR2 and NSR4 are offices with a low sensitivity which results in a direct, local, temporary **Minor Adverse effect (Not significant)**.
- 16.135. The predicted noise levels show that, as a worst case (unmitigated), a moderate magnitude of impact is predicted at on-site receptors NSR10 and NSR11. These receptors are of low sensitivity, resulting in a direct, local, temporary **Moderate or Minor Adverse effect (Significant)**.
- 16.136. As previously noted, in practice these noise levels are unlikely to occur, as the plant items will be spread across the Site and operating at a lower utilisation than assumed in the assessment which is based on 100% utilisation.
- 16.137. The predicted noise levels show that, as a worst-case (unmitigated), a negligible magnitude of impact is predicted at receptors NSR5, NSR6, NSR7, and NSR9. These receptors are of low sensitivity, resulting in a direct, local, temporary, **Negligible Adverse effect (Not Significant)**.
- 16.138. The predicted noise levels show that, as a worst-case (unmitigated), a negligible magnitude of impact is predicted at receptor NSR8. This receptor is of high sensitivity, resulting in a direct, local, temporary, **Negligible Adverse effect (Not Significant)**.

Scenario 8: Baseline + Phase C

- 16.139. Table 16.41 summarises the worst-case calculated incident noise levels at each receptor for Scenario 8.
- 16.140. The predicted noise levels show that, as a worst-case without the mitigation detailed above, a moderate magnitude of impact is predicted at receptors NSR1 and NSR4. NSR1 is residential with a high sensitivity which results in a direct, local, temporary **Major – Moderate Adverse effect (Significant)**, NSR4 is an office with a low sensitivity which results in a direct, local, temporary **Minor Adverse effect (Not significant)**.
- 16.141. As previously noted, in practice these noise levels are unlikely to occur, as the plant items will be spread across the Site and operating at a lower utilisation than assumed in the assessment which is based on 100% utilisation.
- 16.142. The predicted noise levels show that, as a worst-case (unmitigated), a negligible magnitude of impact is predicted at receptors NSR2, NSR5, NSR6, NSR7, and NSR9. These receptors are of low sensitivity, resulting in a direct, local, temporary, **Negligible Adverse effect (Not Significant)**.

- 16.143. The predicted noise levels show that, as a worst-case (unmitigated), a negligible magnitude of impact is predicted at receptor NSR8. This receptor is of high sensitivity, resulting in a direct, local, temporary, **Negligible Adverse effect (Not Significant)**.

Construction Road Traffic

- 16.144. Construction road traffic could potentially generate additional noise impacts at noise sensitive receptors surrounding the Site. These impacts can lead to temporary effects in the form of annoyance and disturbance of short to medium duration and are generally confined to the local scale (i.e. surrounding roads) but has the potential to lead to effects on the district scale (i.e. roads further afield).
- 16.145. As the Proposed Development is “car free” the predicted increase in traffic flows associated with the completed development are minimal, as such, where baseline flow data was not available for certain road links, data has not been procured. Within the vicinity of the noise and vibration study area the two links without baseline data available are Sackville Street to the west and the A57M exit slip road to the south. Due to the lack of baseline flow data these links have not been included within the change in noise level calculations herein.
- 16.146. As only peak construction traffic flows associated with Scenario 5 (Baseline + Phase A + Phase B + Phase C) have been provided only Scenario 5 can be assessed. It should however be noted that the peak construction traffic flows associated with Scenario 5 are worst-case.

Scenario 5: Baseline + Phase A + Phase B + Phase C

- 16.147. Table 16.29 presents the predicted change in noise level ($L_{A10,18\text{hour}}$) for the construction phase of the development assuming construction of phases A, B, and C (Scenario 5).

Table 16.29: Scenario 5 Predicted Change in Noise Level due to Construction Road Traffic

Receptor	Predicted Noise Level Baseline dB $L_{A10,18\text{hour}}$	Predicted Noise Level during Construction dB $L_{A10,18\text{hour}}$	Change in Noise Level dB $L_{A10,18\text{hour}}$
NSR1	66.8	66.9	0.1
NSR2	78.3	78.5	0.2
NSR3	76.5	76.7	0.2
NSR4	55.1	55.2	0.1
NSR5	50.9	50.9	0
NSR6	45.7	48.7	0
NSR7	49.6	49.8	0.2
NSR8	75.2	75.2	0
NSR9	73.8	73.8	0

- 16.148. The change in noise level from construction traffic is predicted to result in a negligible magnitude of impact. This is considered to result in a direct, local, temporary, **Negligible effect (Not Significant)**.

Construction Vibration

- 16.149. The main source of vibration during construction is anticipated to come from the piling for Phase A and Phase B. As such the assessment of construction vibration would be applicable to Scenarios 2 and 5 only. The proposed piling method to achieve this is via use of a Continuous Flight Auger (please refer to Chapter 5). As stated in Annex F of BS 5228-2, the levels of vibration associated with this type of piling are minimal, as the process relies on slow steady motions.
- 16.150. The minimum distance between a vibration sensitive residential receiver and location at which piling is assumed to take place is 30 metres. Based on the Peak Particle Velocity (PPV) values given in Annex D of BS 5228-2 for augering, PPV levels from construction of the Proposed Development are not expected to exceed 0.03 mm/s at the nearest residential receptors

- 16.151. The above vibration levels would be a negligible magnitude of impact at the closest residential receptors (high sensitivity), resulting in a direct, local, temporary, **Negligible effect (Not Significant)**.

Operational Phase

Change in Road Traffic

- 16.152. During the operation of the Proposed Development, a change in road traffic could potentially generate noise impact. This can lead to direct and temporary effects in the form of annoyance and disturbance, of short to medium duration, then potentially lead to effects of long-term duration and are generally confined to the local scale (i.e. surrounding roads) but has the potential to lead to effects on the district scale (i.e. roads further afield)
- 16.153. As the Proposed Development is “car free” the predicted increase in traffic flows associated with the completed development are minimal, as such, where baseline flow data was not available for certain road links, data has not been procured. Within the vicinity of the noise and vibration study area the two links without baseline data available are Sackville Street to the west and the A57M exit slip road to the south. Due to the lack of baseline flow data these links have not been included within the change in noise level calculations herein.

Scenario 5: Baseline + Phase A + Phase B + Phase C

- 16.154. Table 16.30 presents the predicted change in noise level ($L_{A10,18\text{hour}}$) for the operational phase of the development assuming completion of phases A, B, and C (Scenario 5).

Table 16.30 Scenario 5 Predicted Change in Noise Level due to Operational Road Traffic

Receptor	Predicted Noise Level Baseline dB $L_{A10,18\text{hour}}$	Predicted Noise Level Operational dB $L_{A10,18\text{hour}}$	Change in Noise Level dB $L_{A10,18\text{hour}}$
NSR1	66.8	66.8	0
NSR2	78.3	78.3	0
NSR3	76.5	76.5	0
NSR4	55.1	55.1	0
NSR5	50.9	50.9	0
NSR6	45.7	45.7	0
NSR7	49.6	49.6	0
NSR8	75.2	75.2	0
NSR9	73.8	73.8	0

- 16.155. The change in noise level from operational road traffic is predicted to result in a negligible magnitude of impact. This is considered to result in a direct, local, permanent, **Negligible effect (Not Significant)**.
- 16.156. As Scenario 5 represents the worst case operational traffic flows (Phase A + Phase B + Phase C) and is not predicted to give rise to a significant effect it is therefore considered unnecessary to undertake individual assessments of Scenarios 2 and 8 (Phase A + Phase C and Phase C respectively), but based on the above it can be concluded that they will also result in a direct, local, permanent, **Negligible effect (Not Significant)**.

Noise from Fixed Plant and Equipment **Scenarios 2-8**

- 16.157. Noise from fixed plant and equipment, could potentially generate noise impact. This can lead to direct and permanent effects in the form of annoyance and disturbance of medium to long-term duration and are generally confined to the local scale (i.e. surrounding receptors) but has the potential to lead to effects on the district scale (i.e. receptors further afield).
- 16.158. In line with the requirements of MCC it is recommended that any proposed new fixed building services plant associated with the Proposed Development be specified such that the total cumulative Rating Level ($L_{A,r,Tr}$) from the

proposed building services items does not exceed a level of 5dB below the representative background noise level at the nearest noise sensitive receptors.

- 16.159. Cumulative noise contributions from the building services scheme will be controlled through the selection of adequate items of plant and the provision of suitable noise mitigation measured, as required.
- 16.160. This will ensure that all noise from the operation of the building services plant is of minor magnitude of impact at highly sensitive receptors, resulting in a direct, local, permanent, **Moderate** or Minor **Adverse effect (Significant)**.
- 16.161. In accordance with the above, the building services plant for the Proposed Development will be designed such that the limits presented in Table 16.31 are not exceeded.

Table 16.31: Cumulative Plant Noise Limits

Cumulative Plant Noise Limits at 1m from any Noise Sensitive Façade, dB $L_{A,T,r}$	
Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00)
45	40

Noise from Commercial Uses of the Proposed Development

Scenarios 2-8

- 16.162. Noise from the operation of commercial uses within the Proposed Development could potentially generate noise impact. This can lead to direct and permanent effects in the form of annoyance and disturbance of medium to long-term duration and are generally confined to the local scale (i.e. surrounding receptors) but has the potential to lead to effects on the district scale (i.e. receptors further afield).
- 16.163. In line with the requirements of MCC it is recommended that any noise from commercial uses of the Proposed Development be specified such that the total cumulative Rating Level ($L_{A,T,r}$) from the operational activities does not exceed a level of 5dB below the representative background noise level at the nearest noise sensitive receptors.
- 16.164. This will ensure that all noise from the operation of the commercial and non-residential uses is of Minor magnitude of impact at highly sensitive receptors, resulting in a direct, local, permanent, **Moderate** or Minor **Adverse effect (Significant)**.
- 16.165. In accordance with the above, the operation of commercial uses will be designed such that the limits presented in Table 16.32 are not exceeded.

Table 16.32: Commercial Unit Operational Noise Limits

Commercial Unit Operational Noise Limits at 1m from any Noise Sensitive Façade, dB $L_{A,T,r}$	
Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00)
45	40

Noise from Temporary Events

Scenarios 2 and 5

- 16.166. Noise from the operation of temporary events in the proposed Sister Square could potentially generate noise impact. This can lead to direct and permanent effects in the form of annoyance and disturbance of short to medium term duration and are generally confined to the local scale (i.e. surrounding residential receptors) but has the potential to lead to effects on the district scale (i.e. receptors further afield).
- 16.167. In line with the guidance of MCC and underpinning guidance set out in the Noise Council's Code of Practice on Environmental Noise Control at Concerts it is recommended that music noise associated with temporary events be controlled so as not to exceed the limits set out in Table 16.33 below depending on the classification of the event type as described in Table 16.16.

Table 16.33: Music Noise Limits for Temporary Events

Event Classification	Parameter	Music Noise Limit at 1m from Nearest Residential Receptor								
		63	125	250	500	1k	2k	4k	8k	dBA
Major	Leq,15min	75	75	-	-	-	-	-	-	55
Minor	Leq,5min	49	46	44	43	43	35	25	13	-

- 16.168. In order to ensure these limits are not exceeded it will be necessary to carefully plan and actively monitor noise levels at events on a case-by-case basis, with an event specific Noise Management Plan submitted to MCC in advance of the event taking place. Recommended details of mitigation and monitoring are set out in Paragraphs 16.209 and 16.210 of this ES Chapter.
- 16.169. These limits could also be secured via a suitably worded planning condition.
- 16.170. These limits have been reviewed by the authors of this Chapter and the ID Manchester Ltd and are considered to be achievable through the use of directional loudspeaker systems and appropriate planning of events in line with the preliminary Noise Management Plan included in Appendix 16.3 Preliminary Noise Management Plan.
- 16.171. Due to the limited scope of the guidance that forms the basis of these limits it is not possible to clearly and numerically relate the limits to a magnitude of impact and associated scale of effect, however as the limits have been derived from MCC and the Noise Council's most relevant guidance it is envisaged that adherence to these limits should ensure that music noise from operation of temporary events can be considered a Minor magnitude of impact at highly sensitive residential receptors NSR1, NSR3, and NSR5, effectively resulting in a direct, local, permanent, **Moderate** or Minor **Adverse effect (Significant)**.
- 16.172. To assess the magnitude of impact of patron noise associated with temporary events an assessment of the anticipated worst-case event has been carried out. The worst-case event based on the Plot C Events Management Strategy document has been considered to be a music festival or live sporting performance with an audience size of circa 600 people concentrated in the main Sister Square event space. Figure 16.8 illustrates the location of the area source in the 3D acoustic model used for the assessment.
- 16.173. As set out in Paragraph 16.17 the noise from the proposed patrons has been modelled as an area source using an acoustic standard typical noise spectra for raised voices taken from BB93:2015, the ANC 'Acoustics of Schools a Design Guide' and by extension ANSI 3.5-1997 'American National Standard – Methods for Calculation of the Speech Intelligibility Index', with a correction made for the proposed number of patrons (600) and an on-time correction of -6dB applied on the basis that an average of 25% patrons will be generating noise continuously and at the same time over the full assessment interval.
- 16.174. Table 16.34 presents the predicted noise level ($L_{Aeq,T}$) for the anticipated worst-case event scenario at the nearest residential receptors.

Table 16.34: Worst-case Predicted Patron Noise Levels at Residential Receptors

Receptor	Predicted Patron Noise Level, dB $L_{Aeq,T}$
NSR1	49
NSR3	42
NSR5	46

- 16.175. The change in noise level from operational road traffic is predicted to result in a negligible magnitude of impact. This is considered to result in a direct, local, permanent, **Moderate** or Minor **Adverse effect (Significant)**

- 16.176. It is difficult to control noise generated by patrons; events will need to be carefully planned and actively managed in order to minimise the risk of adverse effect on nearby residents and for each event an event specific Noise Management Plan should be submitted to MCC in advance of the event taking place. Recommended details of mitigation and monitoring are set out in Paragraphs 16.209 and 16.210 of this Chapter.

Site Suitability (Noise)

- 16.177. Predictions have been undertaken using the CadnaA noise mapping software to produce a baseline noise model to generate noise level predictions for the Site and surrounding area. The predicted noise levels ($L_{Aeq,T}$) incident on the façade from all cumulative noise sources are presented in Figure 16.3 to Figure 16.6.
- 16.178. The sound insulation performance of the building envelope will be driven by the performance of the glazed elements within the build-up. On the basis that the solid non-glazed elements will achieve a minimum sound insulation performance of $40\text{dB } R'_w + C_{tr}$.
- 16.179. Table 16.35 provides preliminary acoustic performance requirements for the glazing (and any glazed doors) for offices forming part of the Proposed Development.
- 16.180. These specifications are provided to demonstrate Site suitability only and will require further review and finalised glazing specification during the detailed design stage. It is considered that this can be secured by means of a suitable planning condition.
- 16.181. It should be noted that the values in Table 16.35 are given in terms of the on-site performance requirements $R'_w + C_{tr}$ and a suitable correction should be included from standard laboratory test data; for large glazing units, this is typically up to 2dB.
- 16.182. Table 16.35 should be read in conjunction with Figure 16.7 which identifies the extent of Façade Zone A.

Table 16.35: Preliminary Glazing Specifications

Façade Zone	Example Double Glazing Configuration	Minimum Weighted Sound Reduction Index dB $R'_w + C_{tr}$
A	8 / 16 / 6 mm	32
All other	6 / 12 / 4 mm	29

- 16.183. All proposed office space will be mechanically ventilated with no reliance on open windows as a means of achieving required ventilation rates.
- 16.184. As the above preliminary glazing specifications are intended to control noise ingress to a level below the design targets set out in Table 16.15 it is envisaged that achieving these limits should ensure that environmental noise ingress to the proposed commercial units can be considered a Negligible magnitude of impact at low sensitivity receptors, effectively resulting in a direct, local, permanent, Negligible effect **(Not Significant)**.

Site Suitability (Vibration)

- 16.185. Based on the long term baseline vibration survey, the highest measured z-axis VDV_b is $0.014\text{ms}^{-1.75}$ during the daytime (07:00-23:00) which results in a negligible magnitude of impact and therefore a direct, local, permanent, **Negligible effect (Not significant)**.

Cumulative Effects

- 16.186. Cumulative effects are the combined effects of several development schemes (in conjunction with the Proposed Development) which may, on an individual basis be insignificant, cumulatively, have a significant effect.
- 16.187. Cumulative effects have been considered both including (Scenario 7) and excluding (Scenario 6) the IDM Masterplan.

- 16.188. The EIA has given consideration to 'Cumulative Effects' for committed and future developments within an approximate 1.15km radius of the Site.

Construction

Construction Activities

- 16.189. The closest committed and future development that may generate construction noise are IQ Echo Street (NSR1) and London Road Fire Station at approximate distances of 45 and 173 metres respectively.
- 16.190. The Proposed Development and committed developments will each have controls on construction noise applied at their respective closest sensitive receptors. IQ Echo Street is the nearest and most sensitive receptor to the Proposed Development, and as such it cannot contribute to a cumulative effect at NSR1 where the highest magnitude of impact of construction activities associated with the Proposed Development to a residential receptor is predicted.
- 16.191. For a meaningful cumulative effect to occur, it would be necessary for the construction works of the committed and future developments to occur concurrently and generate sufficient levels of noise at any common receptor which is unlikely, as suitable construction noise level limits are controlled by CoPA / BD 5228-1. Therefore the cumulative effect of construction activity for Scenarios 3, 6, and 7 has been assessed as **Negligible (Not Significant)**.

Construction Traffic

- 16.192. There is a possibility that the cumulative construction traffic from the Proposed Development and the nearby committed developments could increase the baseline noise levels on the wider road traffic network.
- 16.193. However, even for a worst-case scenario, where each of the identified committed and future developments produce the same peak daily construction traffic flow as the Proposed Development, the predicted increase in traffic flow on the major road network and corresponding noise levels would not be significant.
- 16.194. Therefore, the cumulative effect of construction traffic for Scenarios 3, 4, 6, and 7 has been assessed as **Negligible (Not Significant)**.

Operation

Change in Road Traffic

- 16.195. Table 16.36 presents the predicted change in noise level ($LA_{10,18\text{hour}}$) for the cumulative and future (with and without the IDM Masterplan) developments assuming completion of phases A, B, and C (Scenarios 6 and 7 respectively).

Table 16.36: Scenarios 6 and 7 Predicted Change in Noise Level due to Cumulative Road Traffic

Receptor	Predicted Noise Level Baseline dB $LA_{10,18\text{hour}}$	Predicted Noise Level Cumulative dB $LA_{10,18\text{hour}}$	Change in Noise Level dB $LA_{10,18\text{hour}}$	Predicted Noise Level Cumulative + IDM Masterplan dB $LA_{10,18\text{hour}}$	Change in Noise Level dB $LA_{10,18\text{hour}}$
NSR1	66.8	67.2	0.4	67.2	0.4
NSR2	78.3	78.9	0.6	79	0.7
NSR3	76.5	77.1	0.6	77.1	0.6
NSR4	55.1	55.3	0.2	55.3	0.2
NSR5	50.9	51	0.1	51	0.1
NSR6	45.7	45.9	0.2	46	0.3
NSR7	49.6	50.2	0.6	50.3	0.7
NSR8	75.2	75.2	0	75.2	0
NSR9	73.8	73.8	0	73.8	0

- 16.196. The change in noise level from cumulative (with and without Slster) road traffic is predicted to result in a negligible magnitude of impact. This is considered to result in a direct, local, permanent, **Negligible effect (Not Significant)**.

Noise from Fixed Plant and Equipment and Commercial Uses

- 16.197. During operation noise from each committed development would be controlled to achieve the noise criteria set by MCC at the nearest noise sensitive receptor. The cumulative effect of the operation of the Proposed Development and other committed and future developments would therefore remain a **Moderate** or Minor **Adverse effect (Significant)**

Noise from Temporary Events

- 16.198. During operation noise from any temporary events associated with each other committed development would be controlled to achieve similar noise criteria based upon the guidance provided by MCC and relevant supporting guidance documents (e.g. the Noise Council's Code of Practice for Environmental Noise Control at Concerts).
- 16.199. Future plots of Sister may bring forward new residential receptors, but it is anticipated that if required, it will be possible to embed suitable mitigation into the design of such receptors through appropriate specification of external wall, glazing, and ventilation strategies such that a suitable internal noise level is achieved within dwellings, or localised screening to achieve desirable noise levels in outdoor living areas.
- 16.200. On the basis of the above the cumulative effect of the operation of temporary events is therefore considered to remain a **Moderate** or Minor **Adverse effect (Significant)**.

Mitigation Measures

Construction Phase

Construction Noise and Vibration

- 16.201. In general, construction noise and vibration should be managed using 'Best Practicable Means' (BPM), i.e., the use of all reasonable measures to minimise construction noise and vibration.
- 16.202. The Principal Contractor will use BPM to minimise nuisance from noise and vibration. BPM is defined in Section 72 of the Control of Pollution Act 1974 and Section 79 of the Environmental Protection Act 1990 as those measures which are:
- "... reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to financial implications"*
- 16.203. The noise and vibration control measures to be implemented on-site should be captured within a Construction Environmental Management Plan (CEMP).
- 16.204. General noise and vibration control measures to be adopted are listed below, with reference to British Standard (BS) 5228 'Code of practice for noise and vibration control on construction and open sites', Part 1: Noise (+A1:2014), and Part 2: Vibration (+A1:2014):
- Construction will be confined to the permitted hours as set out in the CEMP.
 - Loading/unloading activities will be located away from residential properties and shielded from those properties, where practicable.
 - Material will be handled in a manner that minimises noise and drop heights of materials will be minimised.
 - Careful selection of plant and construction methods. Only plant conforming to relevant national, EU or international standards, directives and recommendations on noise and vibration emissions will be used. The Principal Contractor will ensure that each item of plant used on the project complies with the noise limits quoted in the relevant European Commission Directive 2000/14/EC/United Kingdom Statutory Instrument (SI) 2001/1701 (as amended). The Principal Contractor's Environmental Manager will maintain a register of plant and equipment and statutory certification.
 - Design and use of acoustic screening measures where practicable and necessary, at the earliest opportunity to meet the noise limits within the CEMP. Acoustic screening measures include Site hoardings, acoustic barriers, acoustic enclosures, acoustic housing for plant and temporary stockpiles. Such measures can be particularly appropriate for stationary or near-stationary plant such as pneumatic breakers, piling rigs and compressors.

Barriers will be located as close to the plant as possible and, in order to provide adequate attenuation, and must have a mass per unit area of at least 7 kg/m².

- All vehicles and mechanical plant used for the purpose of the work will be fitted with effective exhaust silencers and shall be maintained in good and efficient working order and operated to minimise noise emissions.
- All compressors and generators will be "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use, and all pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers.
- All machines in intermittent use will be shut down in the intervening periods between works or throttled down to a minimum. Lorry engines will be switched off when vehicles are stationary. Noise emitting equipment which is required to run continuously will be housed in a suitable acoustic enclosure.
- Plant and equipment liable to create noise and / or vibration whilst in operation will, as far as reasonably practicable, be located away from sensitive receptors and away from walls which could reflect noise towards sensitive receptors.
- Where reasonably practicable, fixed items of construction plant will be electrically powered in preference to diesel or petrol driven.
- Vehicles will not wait or queue on the public highway with engines idling; construction traffic movements will be undertaken in accordance with the Construction Traffic Management Plan (CTMP).
- All appropriate contractor personnel will be instructed on BPM measures to reduce noise and vibration as part of their induction training, and followed up by 'tool box' talks.
- Noisy activities will be staggered in time and space, where feasible.
- Only designated access routes (on-site) will be used.
- Reversing alarms incorporating one of more of the features listed below or any other comparable system will be used where reasonably practicable:
 - Highly directional sounders;
 - Use of broad band signals;
 - Self adjusting output sounders;
 - Flashing warning lights; and
 - Reversing alarms will be set to the minimum output noise level required for health and safety compliance.
- All Site personnel will receive training appropriate to the nature of their roles and responsibility; the training will include specific information in relation to noise and vibration management. If their work activities are assessed as being particularly noise / vibration emission prone all staff will receive induction training that will incorporate environmental awareness training, plus specific training in relation to noise and vibration.
- For piling activities, where practicable, piles should be installed by continuous flight auger or vibratory piling. Where necessary, mitigation to reduce vibration levels (in particular, that associated with piling) at receptors near construction works should include consideration of:
 - Use of alternative methods;
 - Removal of obstructions;
 - Provision of cut-off trenches;
 - Reduction of energy input per blow;
 - Reduction of resistance to penetration, including mudding in for rotary bored piles; and adding water to the bore hole for impact bored piles;
 - Excavation under support fluid;
 - Removal of the plug when using casing vibrators;
 - Bottom driving; and

- o Use of variable moment vibrators.

16.205.

16.206. It is considered that implementation of an approved CEMP and BPM would provide suitable construction phase mitigation.

16.207. However, where construction activities are predicted to result in significant adverse effect (NSR1, NSR3, NSR10, NSR11), the implementation of noise and vibration monitoring should be considered.

Construction Traffic Noise

16.208. No additional mitigation measures are proposed for construction road traffic noise.

Operational Phase

Noise from Temporary Events

16.209. In order to suitably control music and patron noise from temporary events noise must be carefully considered during event planning and actively monitored during events. For each event a Noise Management Plan should be submitted to MCC in advance of the event, including:

- Identification of external monitoring locations;
- Noise criteria (as set out in Table 16.33);
- Assessment including predicted noise levels based upon the specifics of the planned event (e.g. directional speaker array systems and space planning);
- Noise management and control procedure.

16.210. Although the Noise Management Plan for each event will need to be specific to the event in question, a preliminary Noise Management Plan setting out the key parameters and methods for control of noise associated with temporary events is set out in Appendix 16.3 Preliminary Noise Management Plan.

16.211. No additional mitigation measures are proposed for the other aspects of the operational phase.

Residual Effects

Construction Phase

16.212. With implementation of the additional mitigation measures listed above, it is estimated that the magnitude of construction noise impacts could be reduced to minor at highly sensitive residential receptors NSR1 and NSR3 and moderate at NSR10 and NSR11. This would result in respective residual effects of local, temporary, **Moderate or Minor Adverse (Significant)** and local, temporary, **Minor Adverse (Not Significant)** effects respectively.

Operational Phase

16.213. When controlled in line with the requirements of MCC, the predicted magnitude of impact from noise from building services and commercial operational activities of the Proposed Development are considered minor, which, at highly sensitive residential receptors NSR1 and NSR3 are considered to be a local, permanent, **Moderate or Minor Adverse effect (Significant)**.

16.214. However, as the limits for these operational noise sources are advised by MCC it is considered that no additional mitigation is required and the resultant residual effect will be acceptable.

16.215. When controlled in line with the proposed limits and the preliminary Noise Management Plan set out in Appendix 16.3 Preliminary Noise Management Plan, the predicted magnitude of impact from noise from temporary events operational activities of the Proposed Development are considered minor, which, at highly sensitive residential receptors NSR1, NSR3, and NSR5 are considered to be a local, temporary, **Moderate or Minor Adverse effect (Significant)**.

16.216. However, as the limits for these operational noise sources have been devised based on the guidance of MCC and the Noise Council it is considered that no additional mitigation is required and the resultant residual effect will be acceptable.

Table 16.37: Residual Effects Summary

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Construction Noise & Vibration	NSR1, NSR3	CEMP & BPM	Adherence to BPM guidance and agreed methodologies in CEMP secured by suitably worded condition.	Local, Temporary, Moderate or Minor Adverse (Significant)
Construction Noise & Vibration	NSR10, NSR11	CEMP & BPM	Adherence to BPM guidance and agreed methodologies in CEMP secured by suitably worded condition.	Local, Temporary, Minor Adverse (Not Significant)
Operational Phase				
Noise from Building Services	NSR1, NSR3	None	Not Applicable	Local, Permanent, Moderate or Minor Adverse (Significant)
Noise from Commercial Operational Activities	NSR1, NSR3	None	Not Applicable	Local, Permanent, Moderate or Minor Adverse (Significant)
Noise from Temporary Events	NSR1, NSR3, NSR5	NMP	Adherence to NMP limits and guidance to be agreed with MCC on a per-event basis. Principle can be secured by suitably worded condition.	Local, Temporary, Moderate or Minor Adverse (Significant)

Reference List

16.217. This ES Chapter has been prepared in reference to the following:

- Control of Pollution Act 1974
- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise, BSI, London
- BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration, BSI, London
- Environmental Protection Act 1990, Part III
- The Control of Noise (Code of Practice for Construction and Open Site) (England) Order 2015
- Ministry of Housing, Communities and Local Government (2024), The National Planning Policy Framework
- Department for Environment, Food and Rural Affairs (March 2014), Noise Policy Statement for England
- Ministry of Housing, Communities and Local Government (March 2014, Updated 22 July 2019) Planning Practice Guidance – Noise
- Manchester City Council (October 2022) Planning and Noise Technical Guidance
- British Standard 7445-2:1991 Description and measurement of environmental noise, Part 2: Guide to the acquisition of data pertinent to land use, BSI, London

- ISO 9613-2:2024 Acoustics — Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors, International Organization for Standardization
- British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings, BSI, London
- World Health Organization (1995), Guidelines for Community Noise
- British Standard 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound, BSI, London
- Department of Transport Welsh Office, HMSO (1988), Calculation of Road Traffic Noise
- The Highways Agency (May 2020), Design Manual for Roads and Bridges, LA 111, Noise and Vibration, Revision 2 (formerly HD 213/11, IAN 185/15)
- British Standard 6472-1:2008 Guide to evaluation of human exposure to vibration in buildings - Vibration sources other than blasting, BSI, London

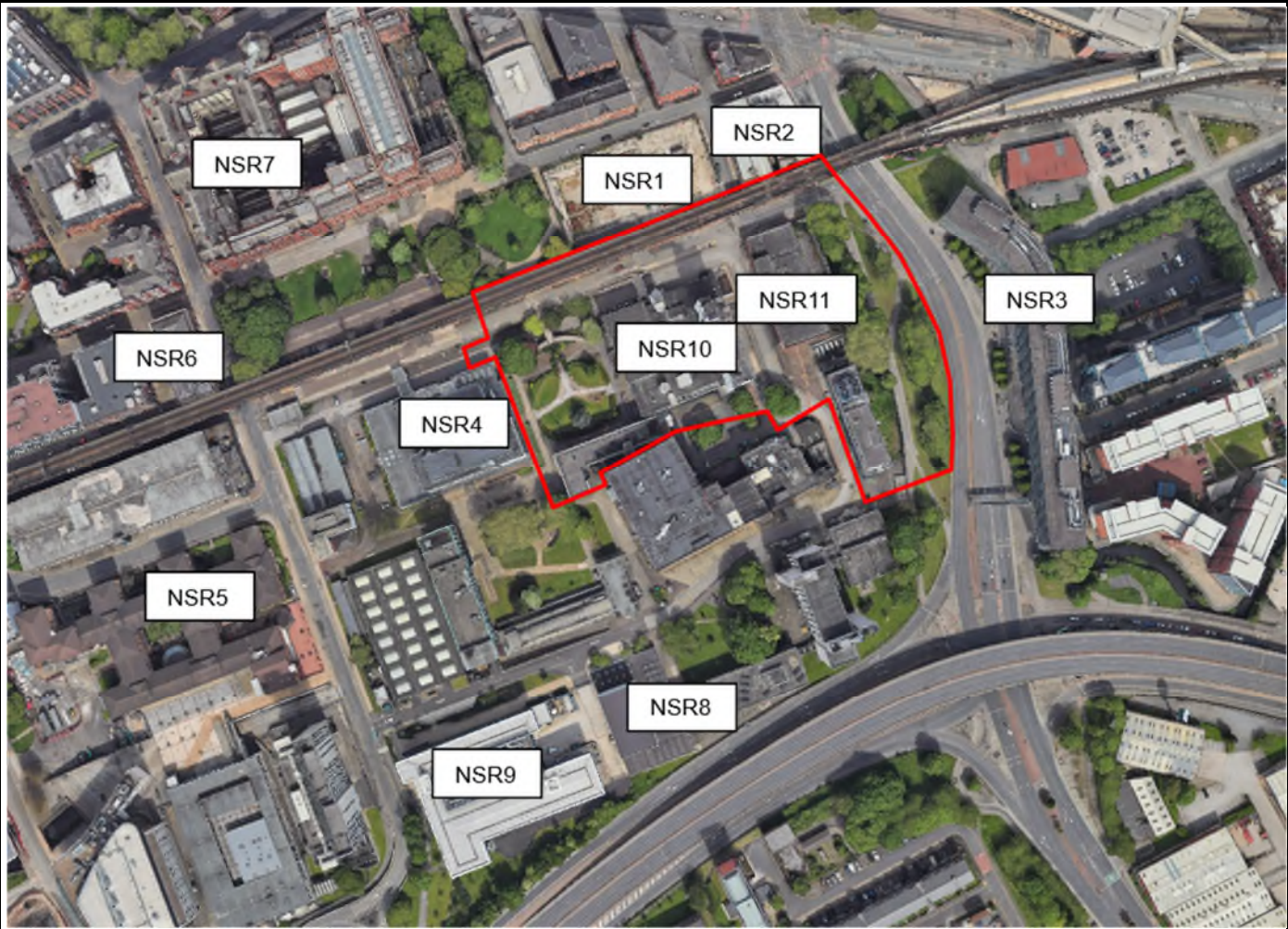


	Figure:	Figure 16.1		
	Title:	Nearest Noise Sensitive Receptors		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

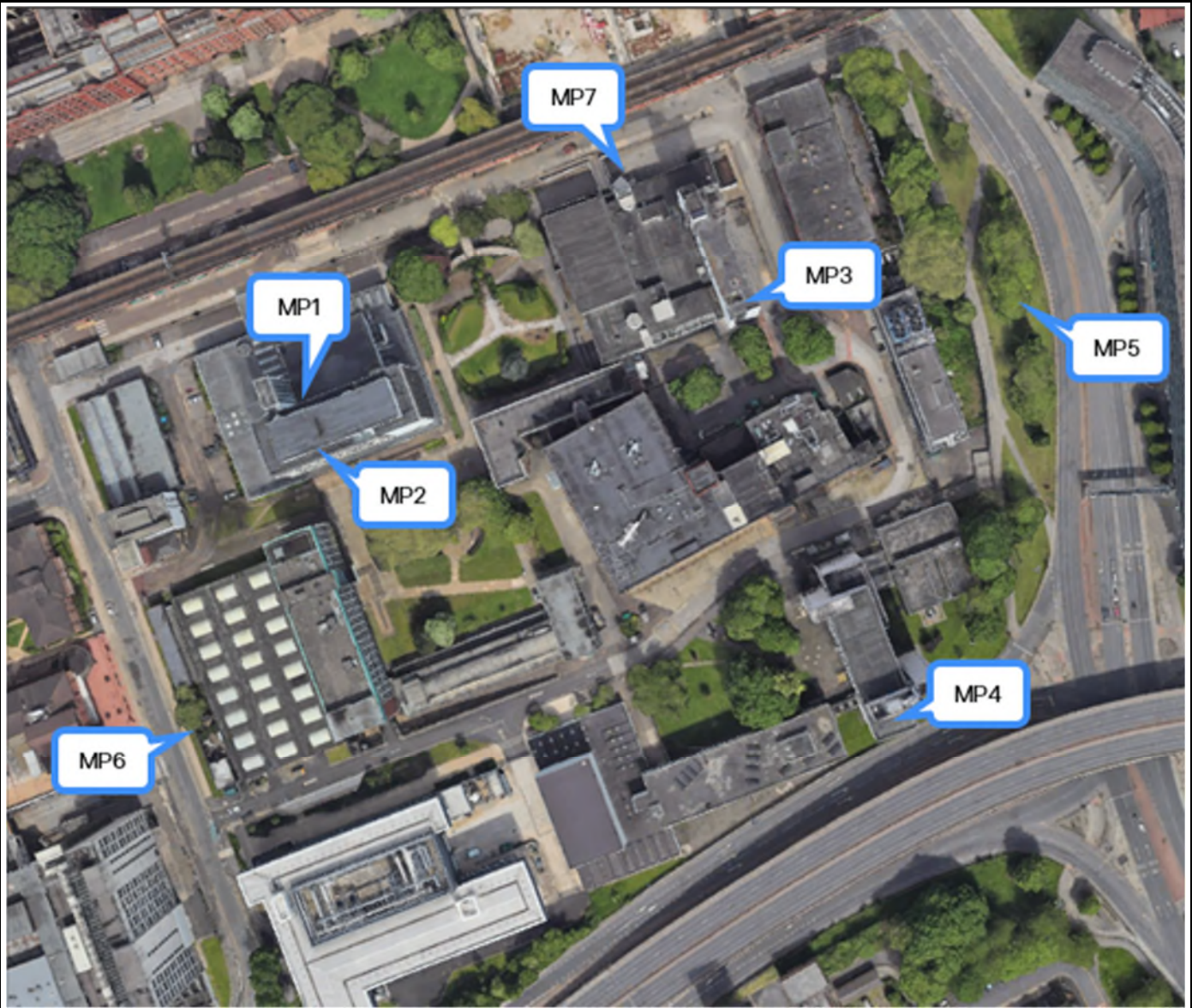


	Figure:	Figure 16.2		
	Title:	Noise and Vibration Measurement Positions		
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	Date:	May 2025	Scale:	Not to Scale

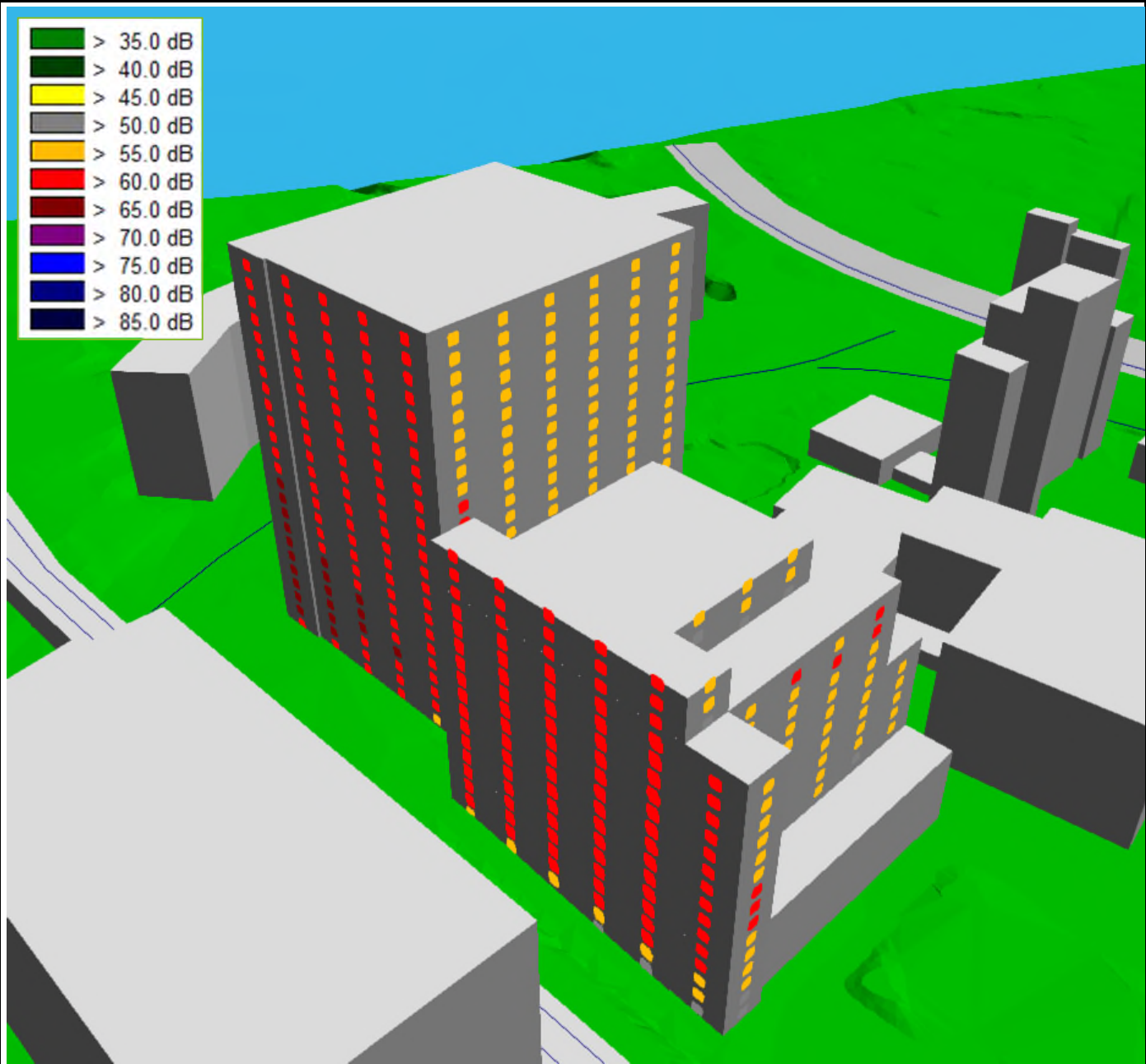


	Figure:	Figure 16.3		
	Title:	Predicted Daytime LAeq,16hour Incident Noise Levels, Looking Southeast		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

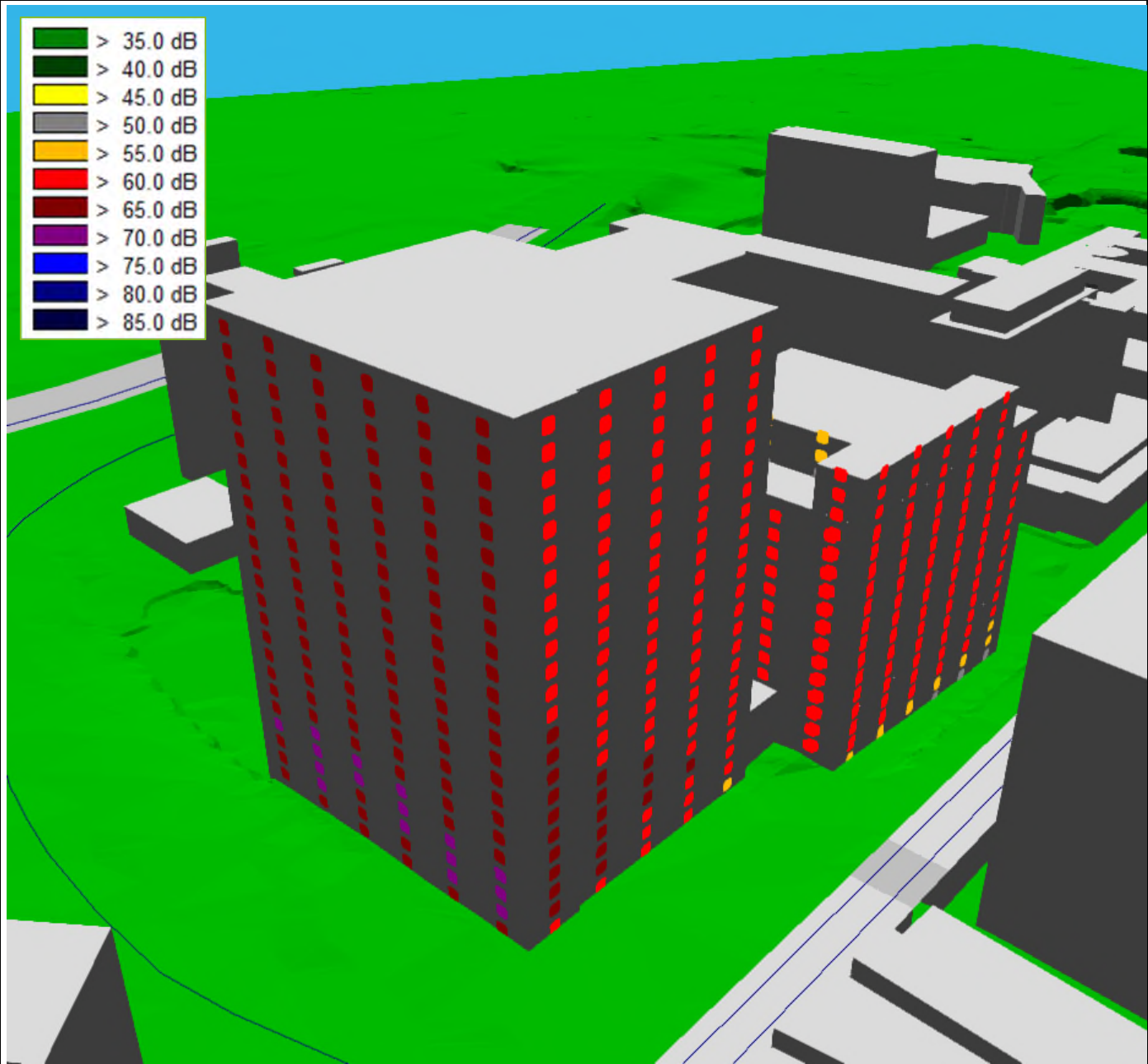


	Figure:	Figure 16.4		
	Title:	Predicted Daytime LAeq,16hour Incident Noise Levels, Looking Southwest		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

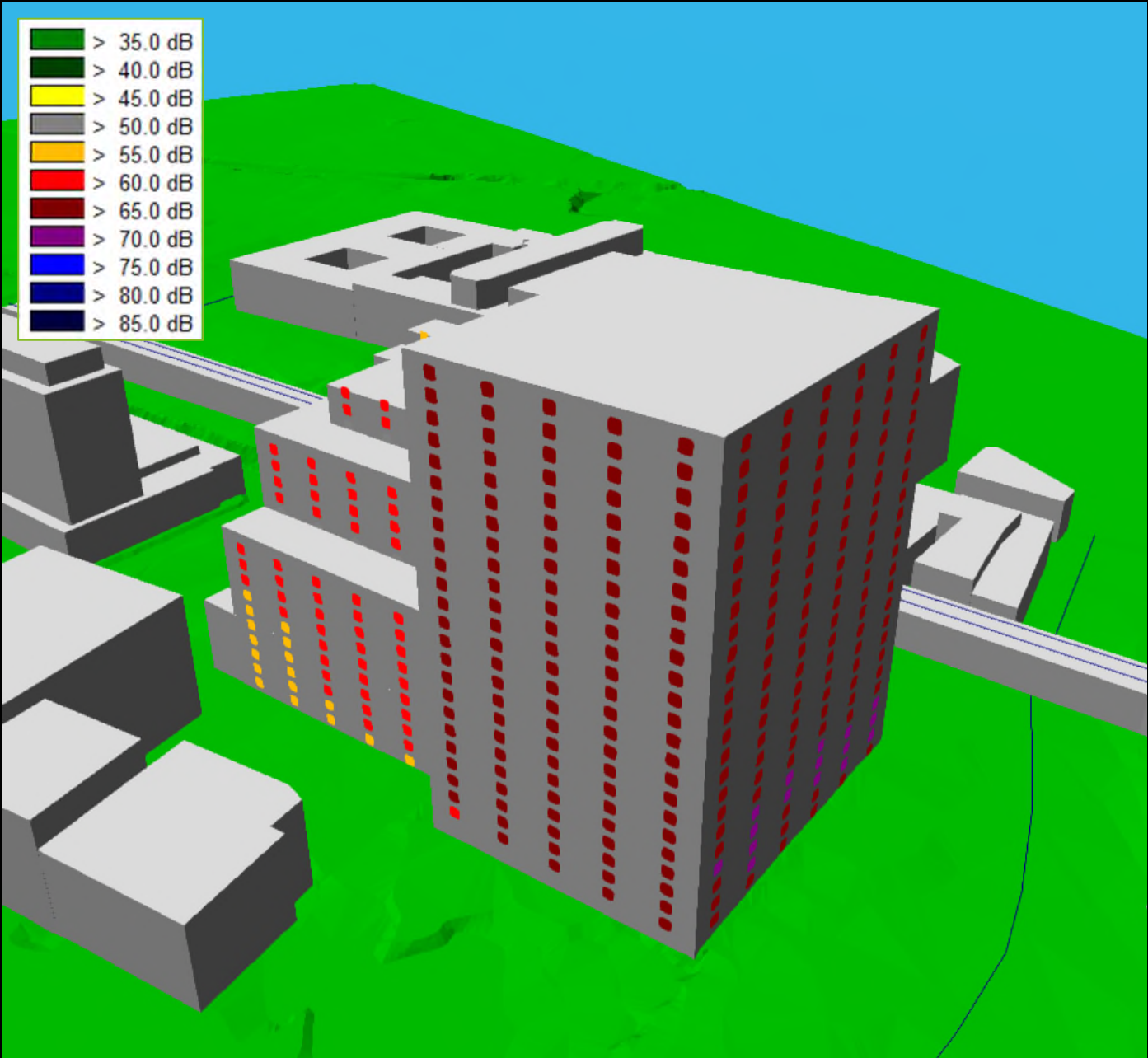


	Figure:	Figure 16.5		
	Title:	Predicted Daytime $L_{Aeq,16hour}$ Incident Noise Levels, Looking Northwest		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale



	Figure:	Figure 16.6		
	Title:	Predicted Daytime $L_{Aeq,16hour}$ Incident Noise Levels, Looking Northeast		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale



Figure:	Figure 16.7		
Title:	Façade Performance Zones		
Project:	Sister Plot C, Manchester		
Date:	May 2025	Scale:	Not to Scale



Figure:	Figure 16.8		
Title:	3D Noise Map Worst-case Patron Noise Source		
Project:	Sister Plot C, Manchester		
Date:	May 2025	Scale:	Not to Scale

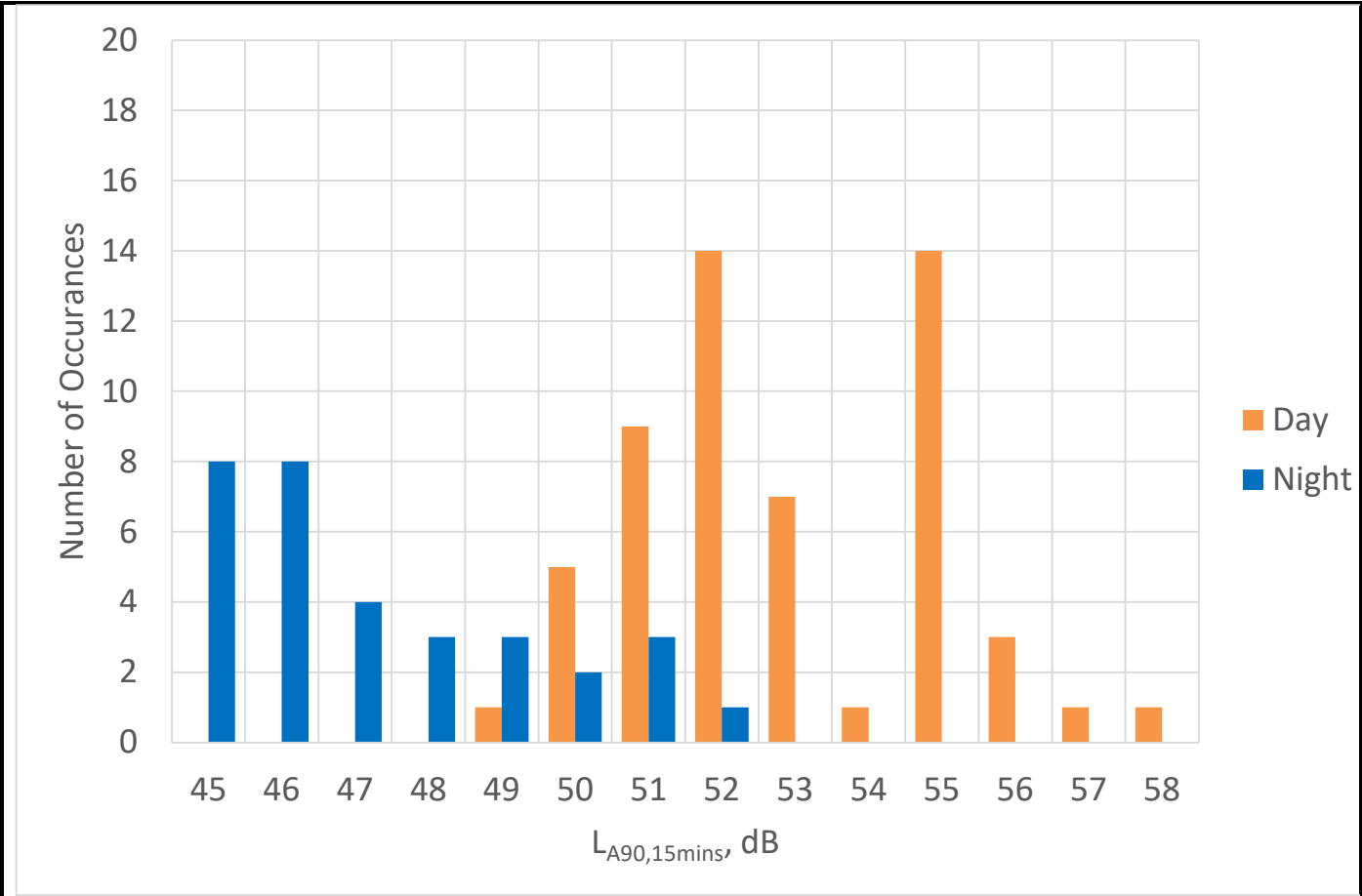


	Figure:	Figure 16.9		
	Title:	LA90,15min Noise Levels at MP1		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

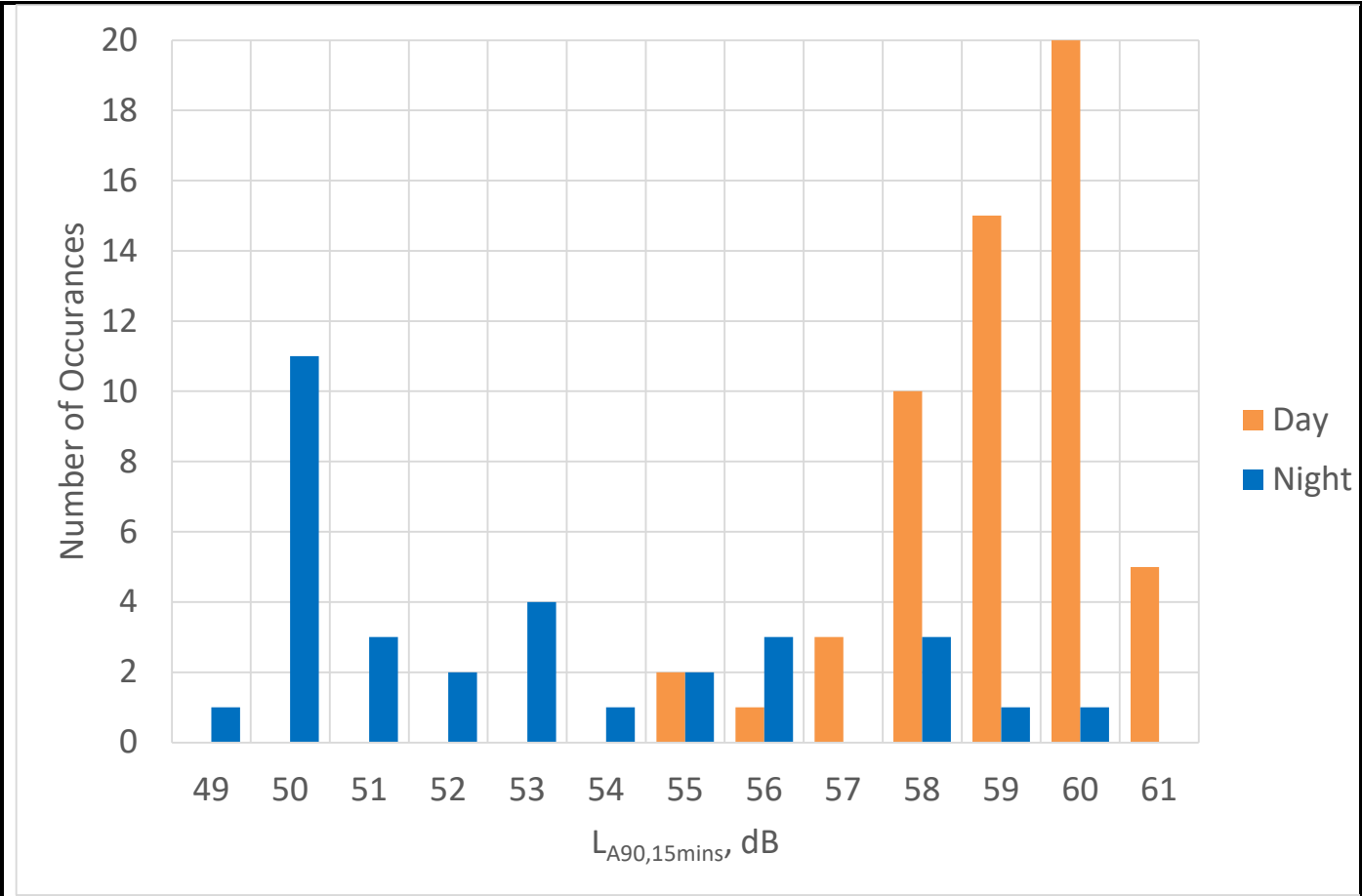


	Figure:	Figure 16.10		
	Title:	LA90,15min Noise Levels at MP2		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

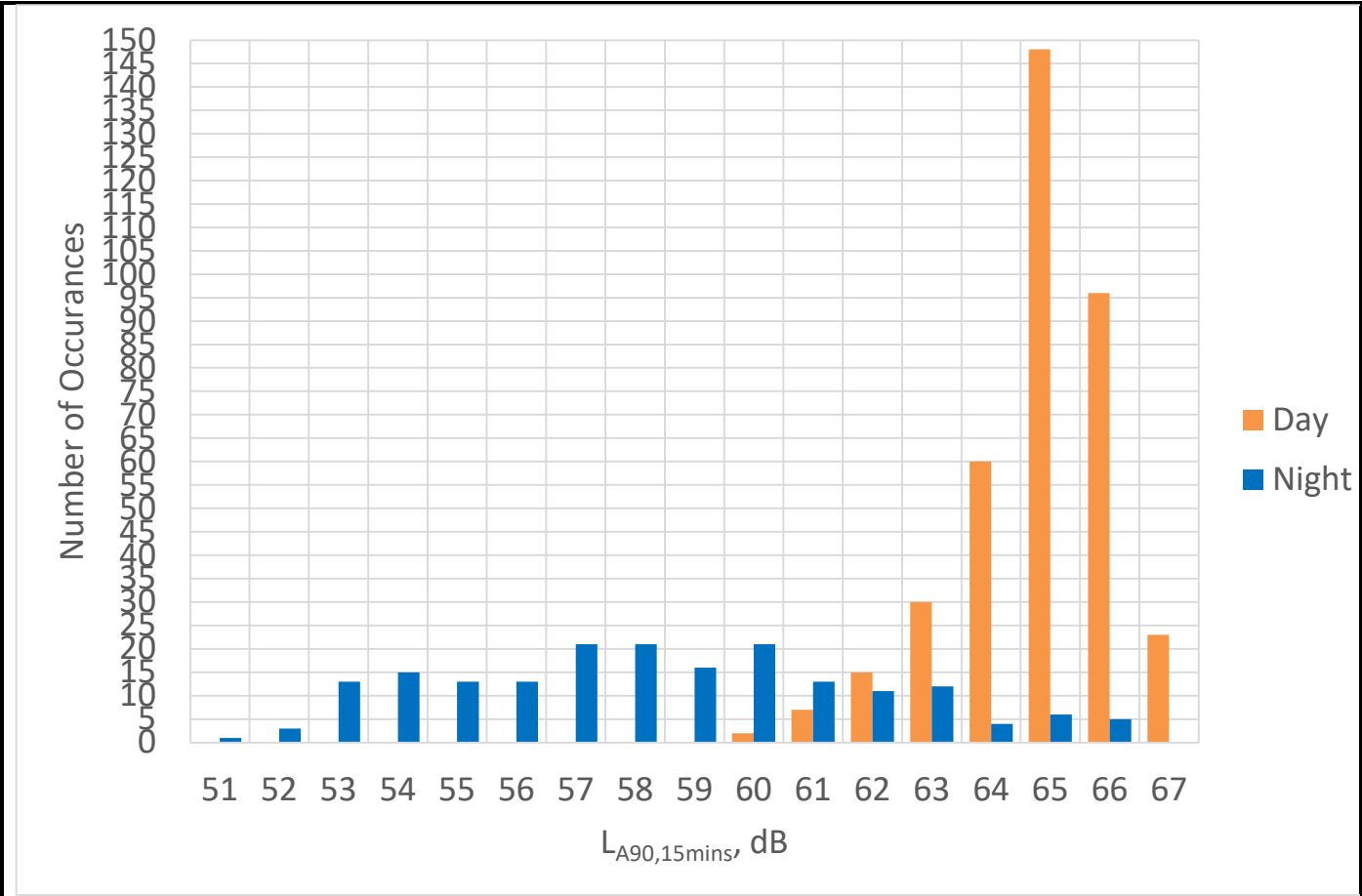


	Figure:	Figure 16.11		
	Title:	LA90,15min Noise Levels at MP3		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

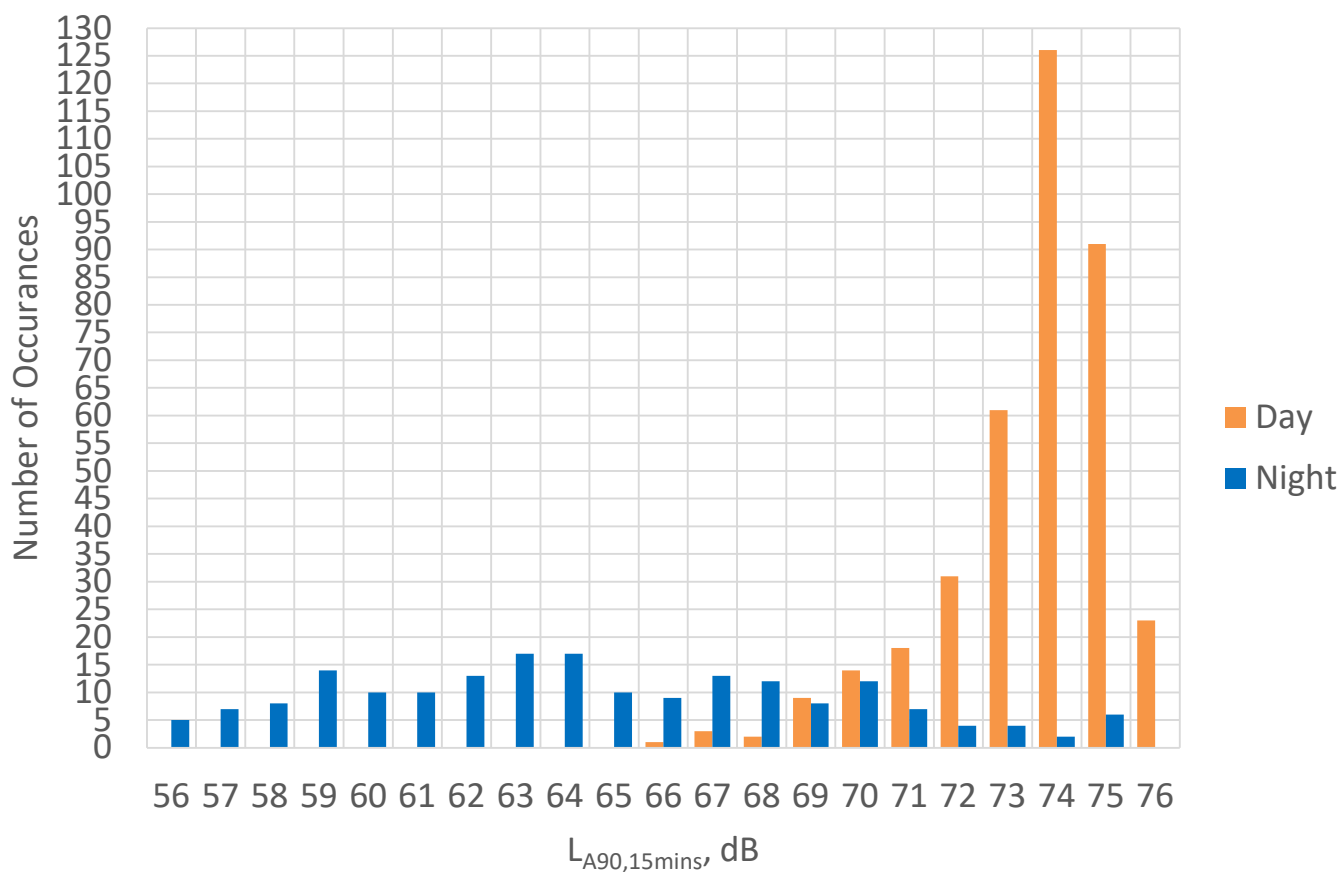


	Figure:	Figure 16.12		
	Title:	$L_{A90,15min}$ Noise Levels at MP4		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

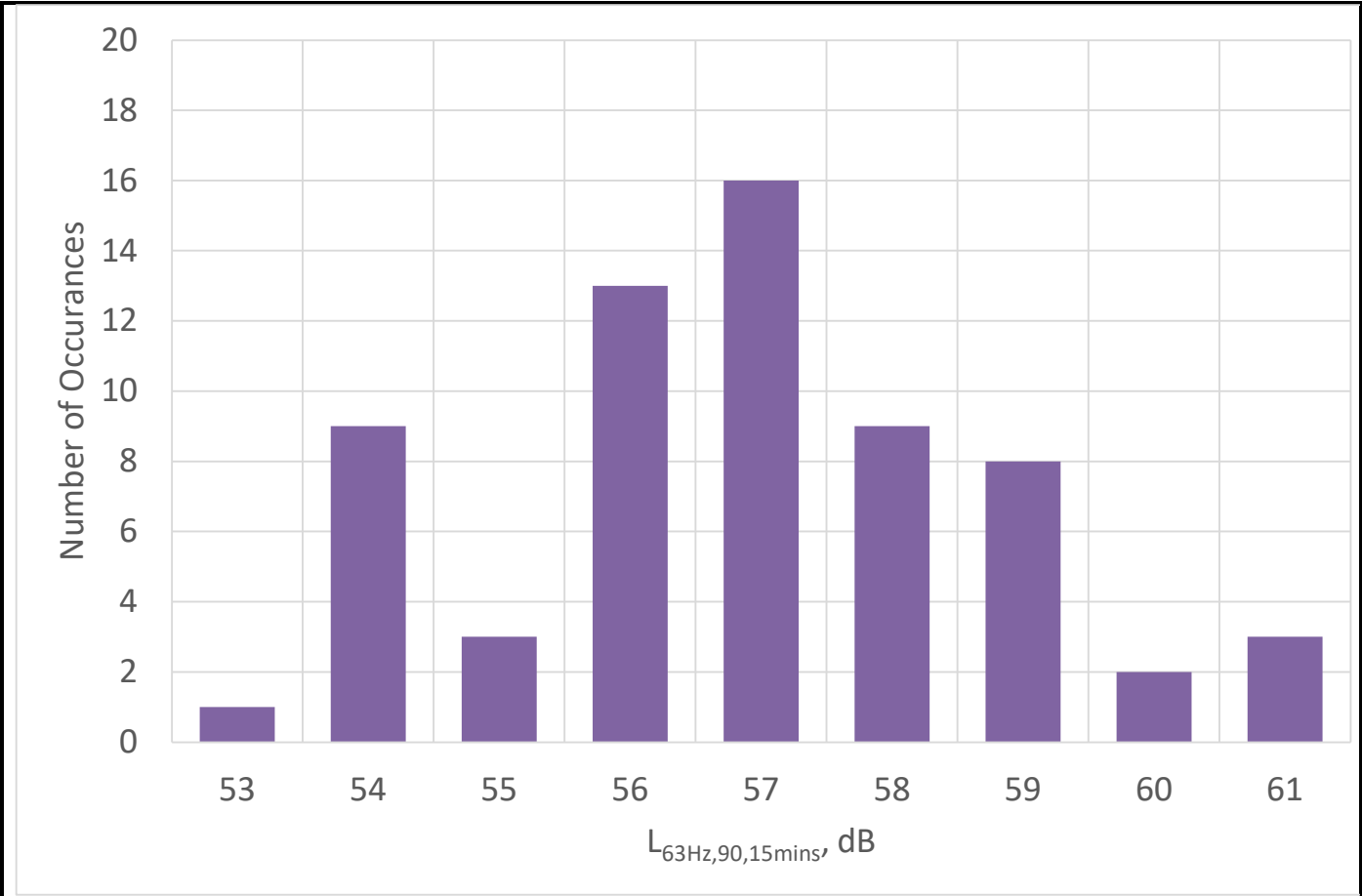


	Figure:	Figure 16.13		
	Title:	Daytime L _{63Hz,90,15min} Noise Levels at MP1		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

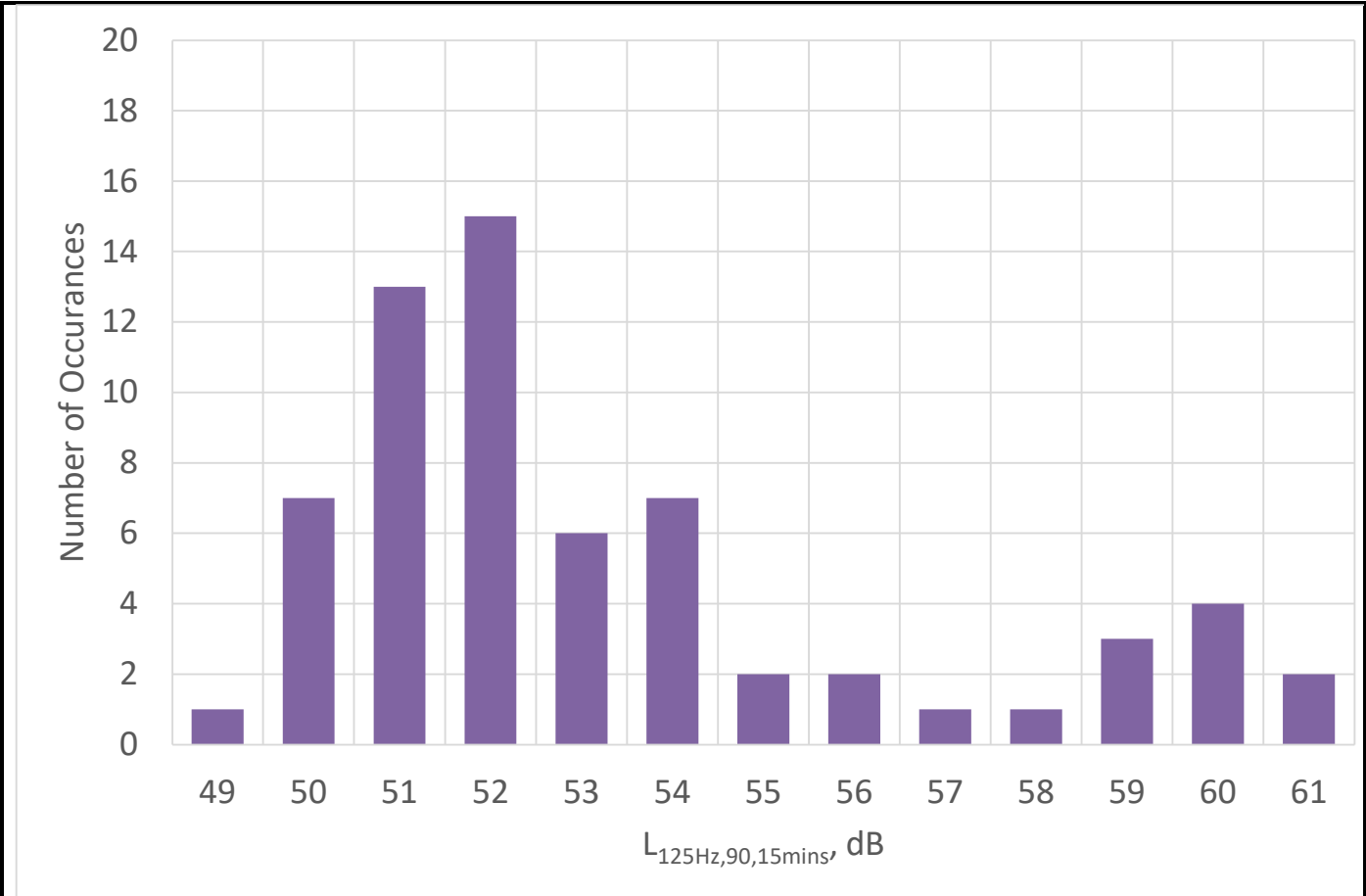


	Figure:	Figure 16.14		
	Title:	Daytime $L_{125\text{Hz},90,15\text{min}}$ Noise Levels at MP1		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

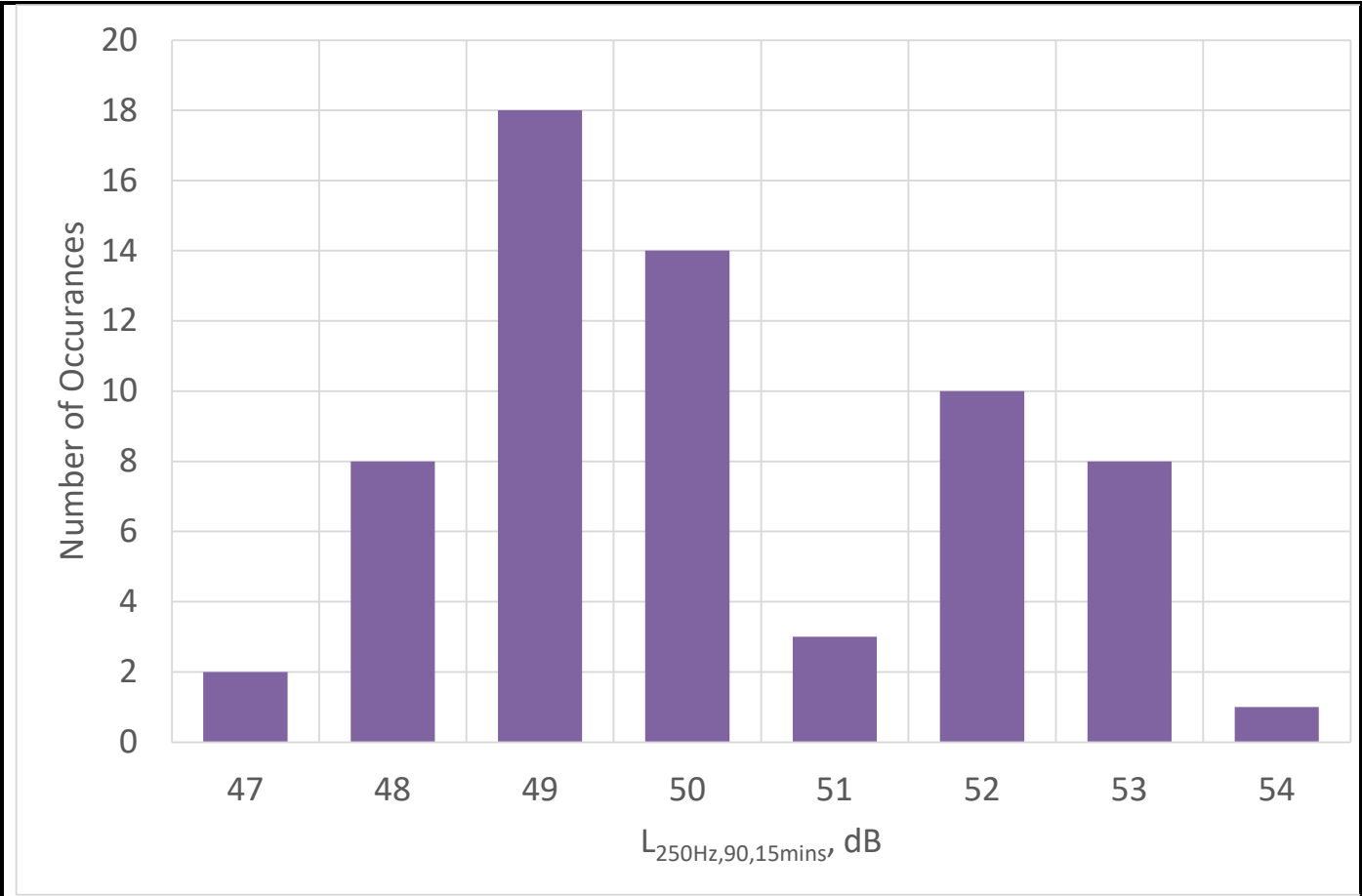


	Figure:	Figure 16.15		
	Title:	Daytime L _{250Hz,90,15min} Noise Levels at MP1		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

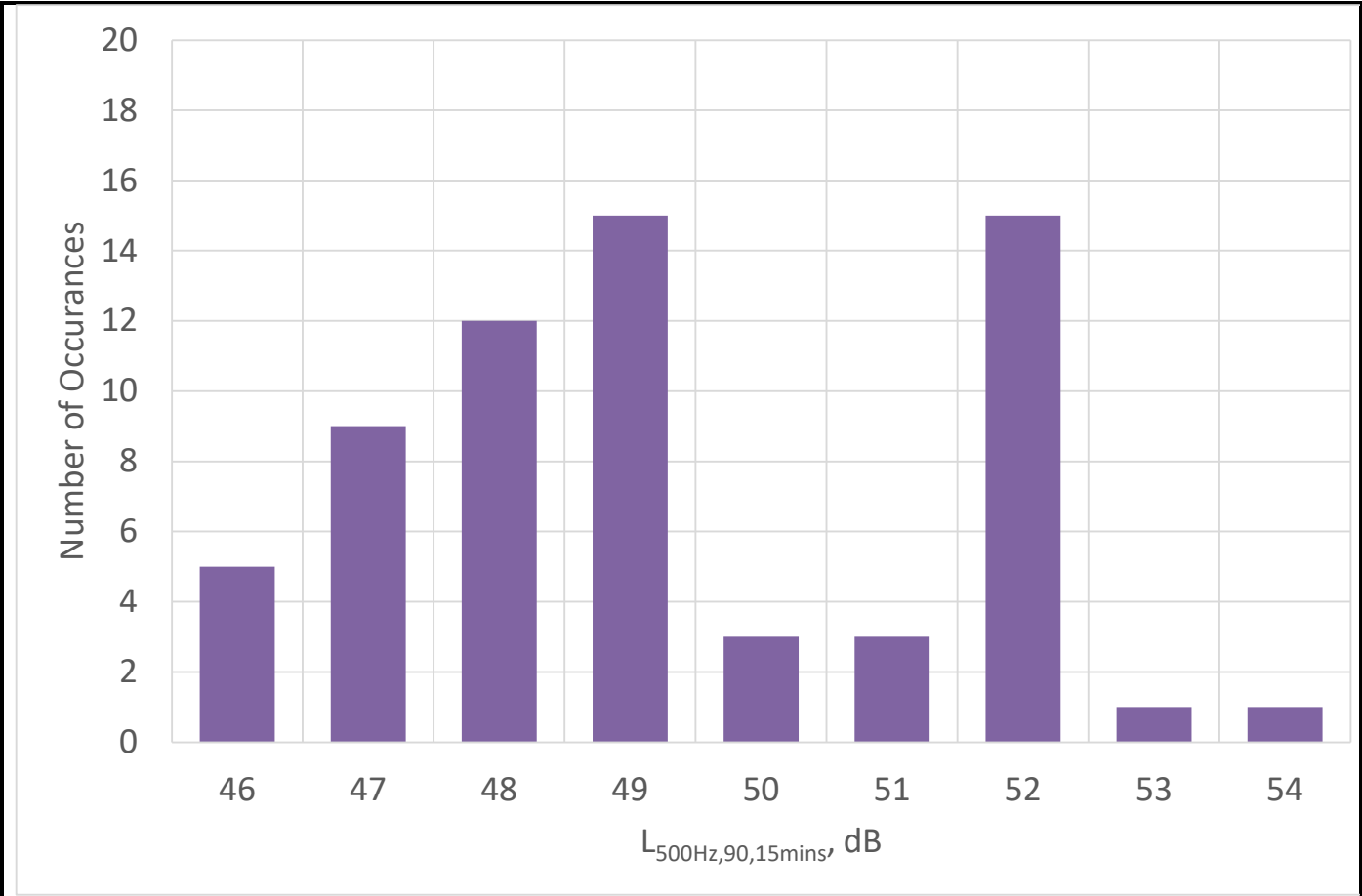


	Figure:	Figure 16.16		
	Title:	Daytime L _{500Hz,90,15min} Noise Levels at MP1		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

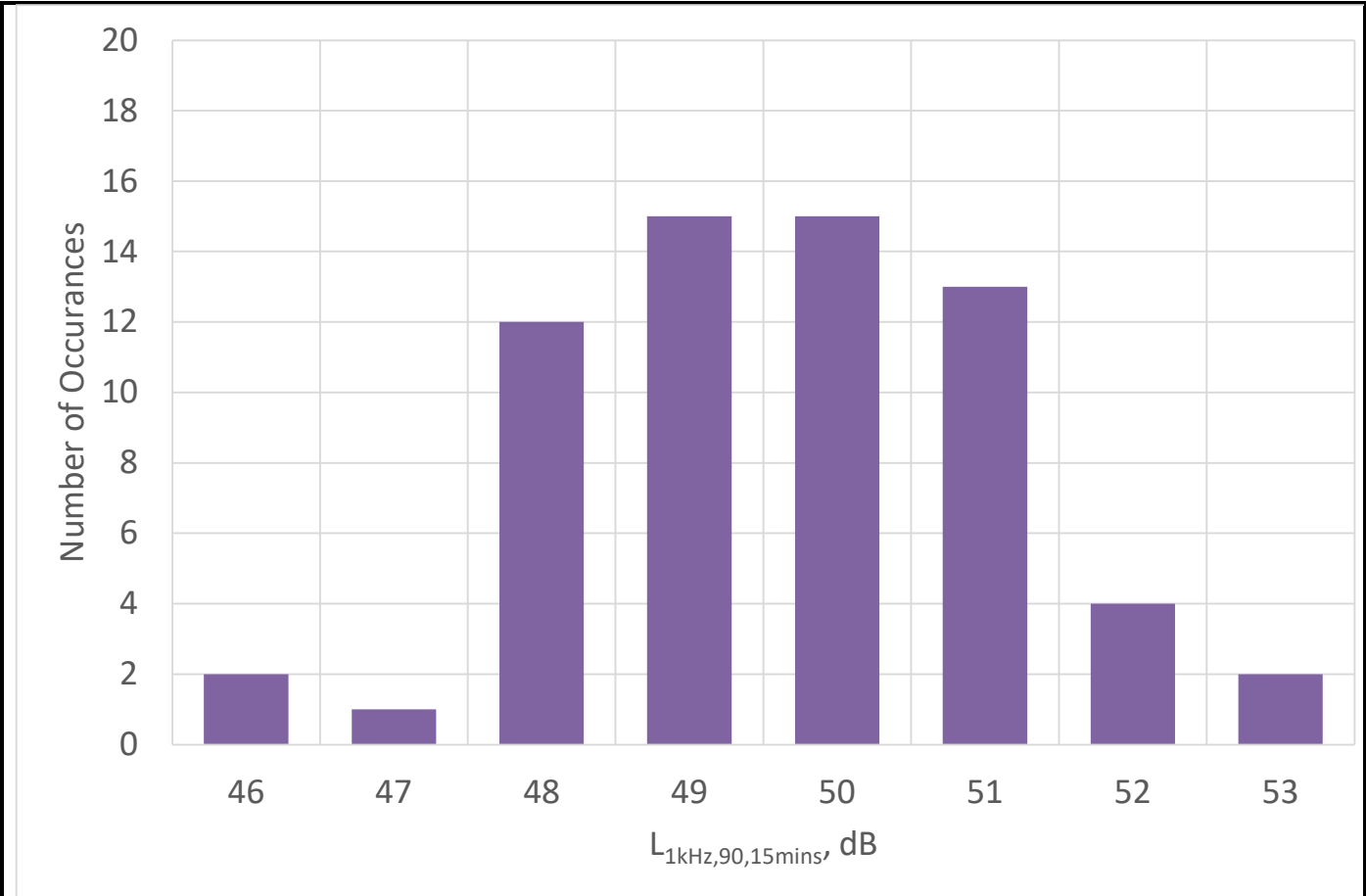


	Figure:	Figure 16.17		
	Title:	Daytime L _{1kHz,90,15min} Noise Levels at MP1		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

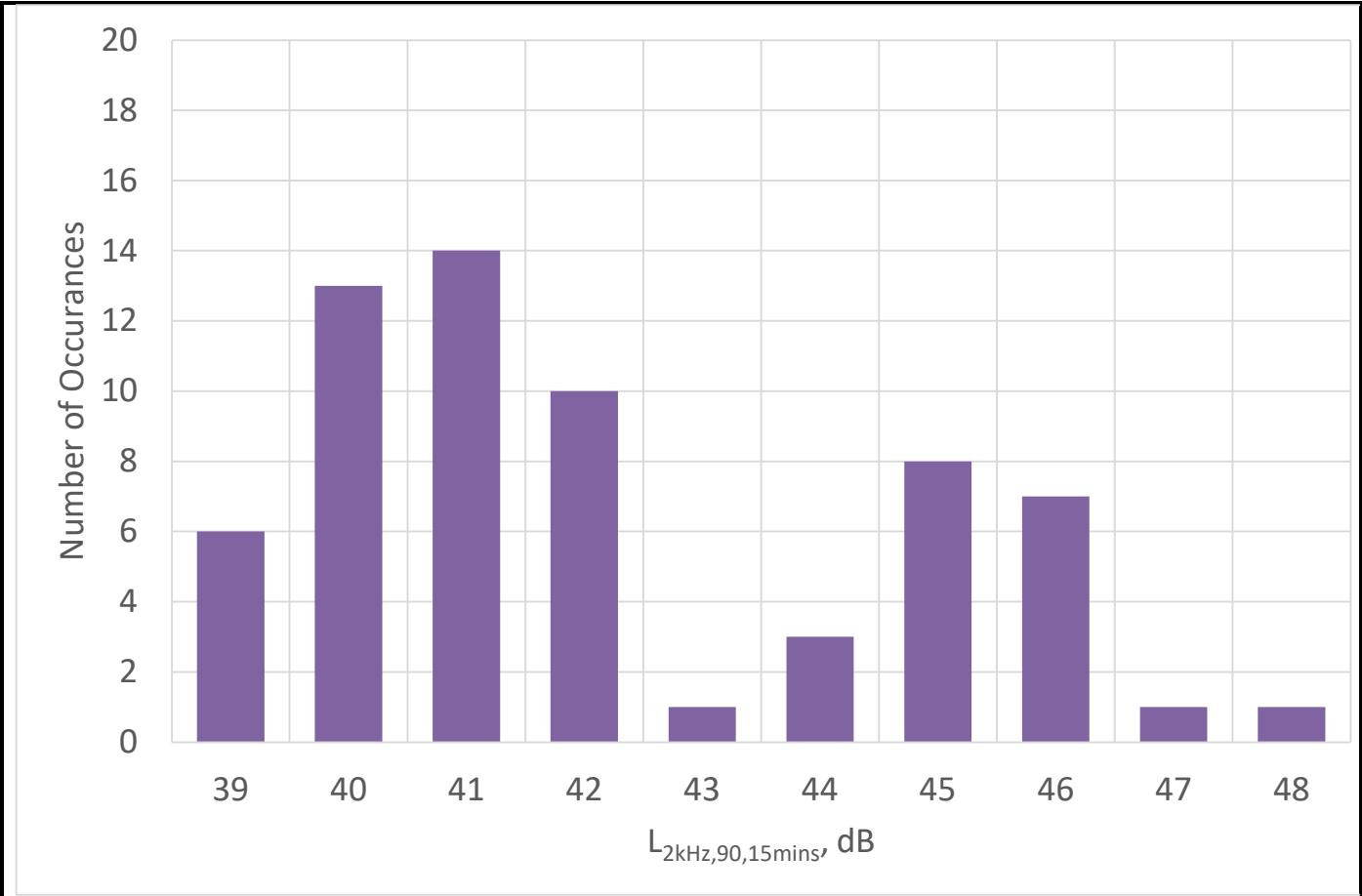


	Figure:	Figure 16.18		
	Title:	Daytime L _{2kHz,90,15min} Noise Levels at MP1		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

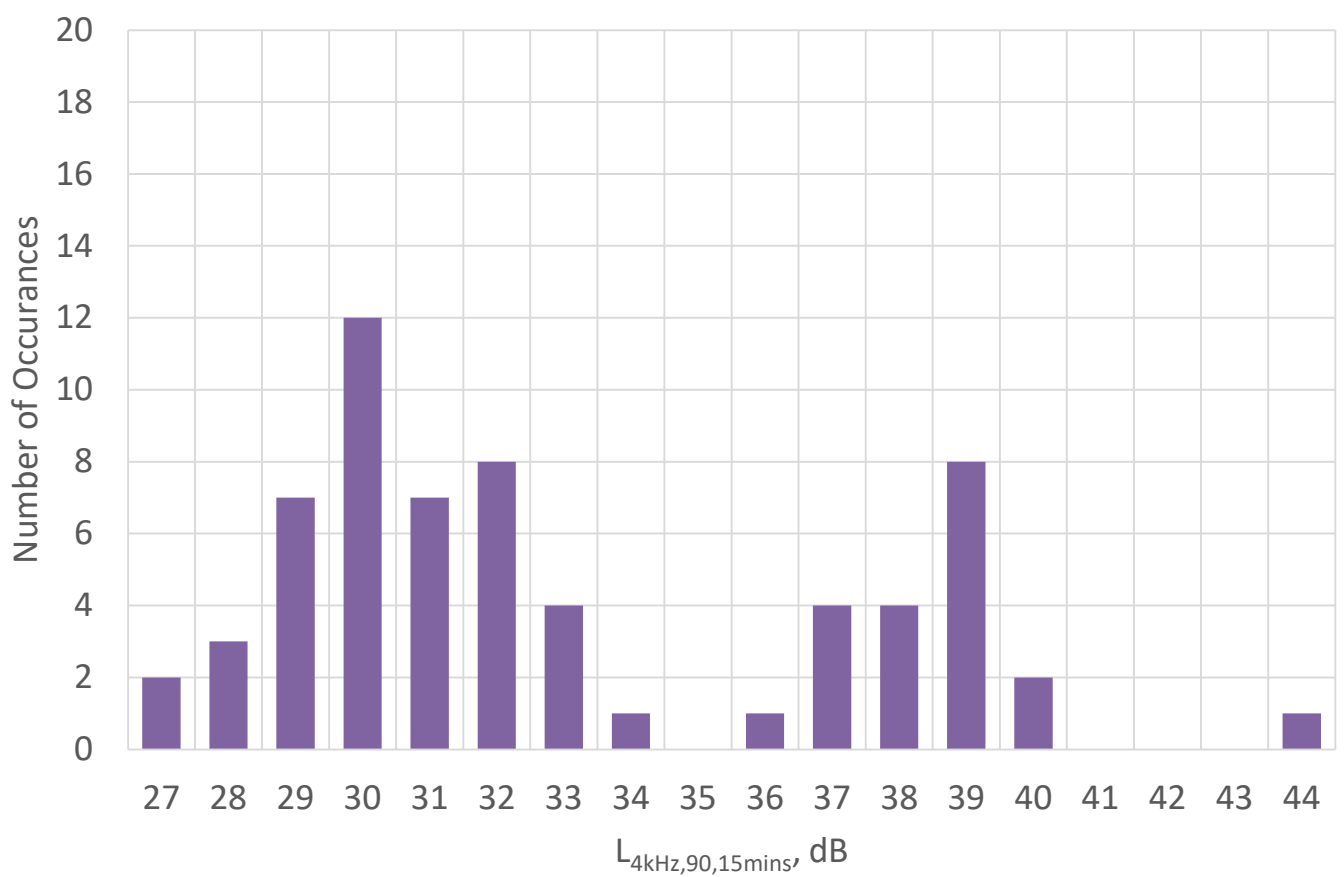


	Figure:	Figure 16.19		
	Title:	Daytime $L_{4\text{kHz},90,15\text{min}}$ Noise Levels at MP1		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

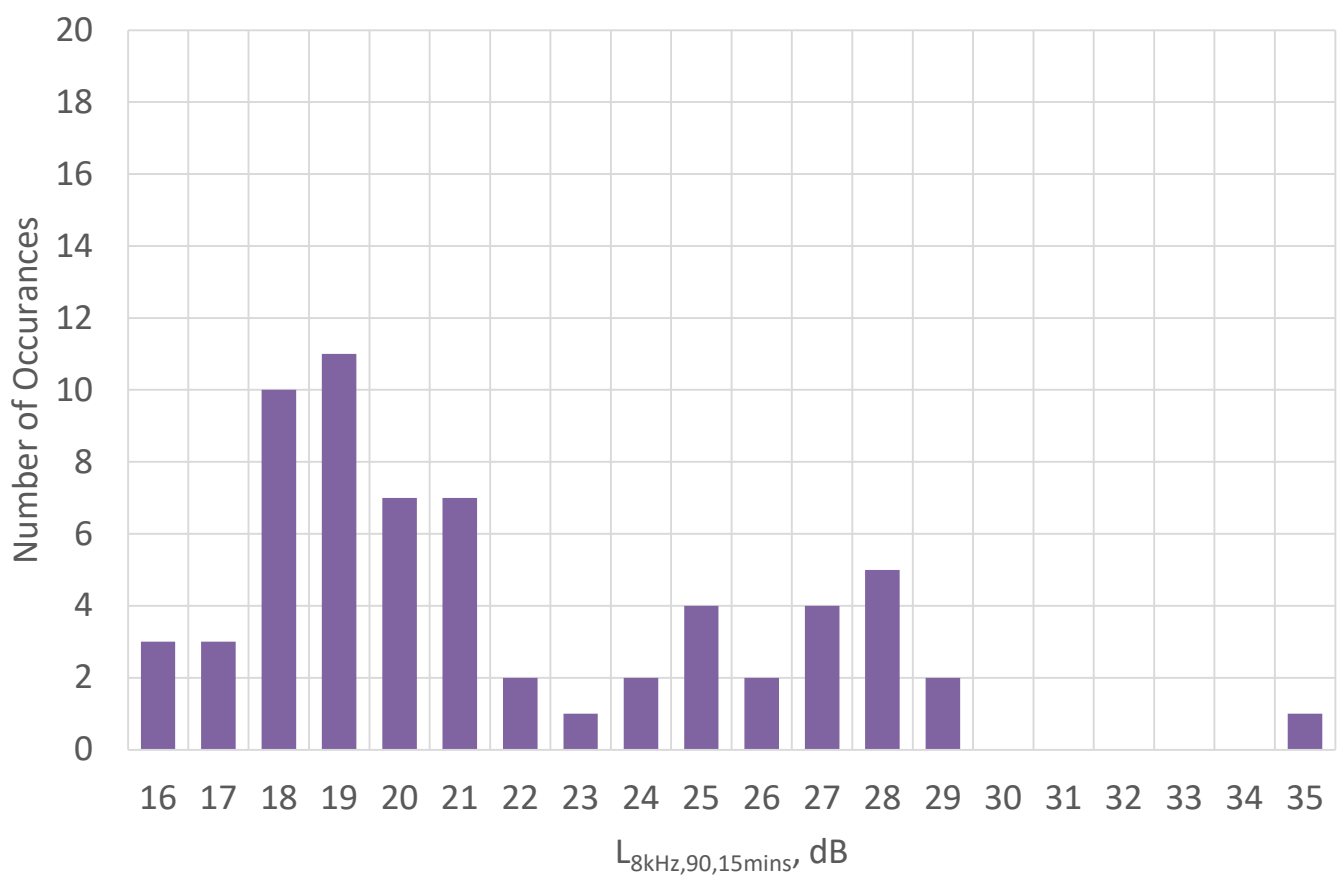


	Figure:	Figure 16.20		
	Title:	Daytime $L_{8\text{kHz},90,15\text{min}}$ Noise Levels at MP1		
	Project:	Sister Plot C, Manchester		
	Date:	May 2025	Scale:	Not to Scale

Table 16.38: Noise Levels Used in the Construction Noise Assessment

Plant Item	BS5228 Table Reference	No.	% On Time	Sound Pressure Level at 10m dB L _{pA}	Sound Power Level dB L _{WA}
Enabling Works (Phase A)					
Jet wash	C.3.13	2	100	63	90.0
Mini tracked excavator	C.3.20	2	100	68	88.6
Diesel generator	C.6.39	2	100	65	93.1
Dust Layer mist cannon	C.4.91	2	100	88	97.9
100T mobile crane	C.4.41	2	100	71	96.1
Lorry	C.6.21	2	100	80	108.6
Piling and Substructure (Phases A and B)					
Jet wash	C.3.13	2	100	63	90.0
Mini tracked excavator	C.3.20	2	100	68	88.6
Diesel generator	C.6.39	2	100	65	93.1
Dust Layer mist cannon	C.4.91	2	100	88	97.9
100T mobile crane	C.4.41	2	100	71	96.1
Lorry	C.6.21	2	100	80	108.6
CFA Piling Rig	C.3.22	2	100	80	107.7
22T excavator	C.2.3	2	100	78	105.9
5T front dumper	C.4.7	2	100	78	105.4
Static concrete pump	C.3.25	2	100	78	102.8
Static concrete mixer	C.4.22	2	100	76	102.5
Poker vibrator	C.4.34	2	100	69	90.7
Vibratory roller	C.5.21	2	100	80	103.8
Petrol disc cutter	C.3.35	2	100	65	80.4
Tool compressor	C.3.19	2	100	75	101.7
8T excavator	C.2.7	1	100	70	97.5
Superstructure, Envelope, and Fit Out (Phases A and B)					
Jet wash	C.3.13	2	100	63	90.0
Mini tracked excavator	C.3.20	2	100	68	88.6
Diesel generator	C.6.39	2	100	65	93.1
Dust Layer mist cannon	C.4.91	2	100	88	97.9
100T mobile crane	C.4.41	2	100	71	96.1
Lorry	C.6.21	2	100	80	108.6
Tower Crane	C.4.49	1	100	77	104.9
Circular Saw	C.4.72	1	100	79	107.2
5T front dumper	C.4.7	2	100	78	105.4
Static concrete pump	C.3.25	2	100	78	102.8
Static concrete mixer	C.4.22	2	100	76	102.5
Poker vibrator	C.4.34	2	100	69	90.7
Vibratory roller	C.5.21	2	100	80	103.8
Petrol disc cutter	C.3.35	2	100	65	80.4
Tool compressor	C.3.19	2	100	75	101.7
Angle grinder	C.4.93	1	100	80	108.7

Plant Item	BS5228 Table Reference	No.	% On Time	Sound Pressure Level at 10m dB L _{pA}	Sound Power Level dB L _{WA}
5T excavator	C.2.7	1	100	70	97.5
Caged material hoist (electric)	C.4.61	1	100	68	96.3
Superstructure, Envelope, and Fit Out (Phase C)					
Jet wash	C.3.13	1	100	63	90.0
Diesel generator	C.6.39	1	100	65	93.1
Dust Layer mist cannon	c.4.91	1	100	88	97.9
Lorry	C.6.21	1	100	80	108.6
Circular Saw	C.4.72	1	100	79	107.2
5T front dumper	C.4.7	1	100	78	105.4
Petrol disc cutter	C.3.35	2	100	65	80.4
Tool compressor	C.3.19	2	100	75	101.7
Angle grinder	C.4.93	1	100	80	108.7

Table 16.39: Scenario 2 Predicted Construction Noise Levels

Receptor (Sensitivity)	Ref	Construction Noise Level at Receptor, dB L _{Aeq,T}					
		Phase A Timeslice 1	Timeslice 2	Timeslice 3	Phase B Timeslice 4	Timeslice 5	Phase C Timeslice 6
NSR1 (High)	Predicted Noise Level (Magnitude)	69 (Moderate)	73 (Moderate)	74 (Moderate)	-	-	73 (Moderate)
	Effect Scale	Major- Moderate Adverse	Major- Moderate Adverse	Major- Moderate Adverse	-	-	Major- Moderate Adverse
NSR2 (Low)	Predicted Noise Level (Magnitude)	64 (Negligible)	68 (Moderate)	69 (Moderate)	-	-	65 (Minor)
	Effect Scale	Negligible	Minor Adverse	Minor Adverse	-	-	Minor Adverse
NSR3 (High)	Predicted Noise Level (Magnitude)	65 (Minor)	68 (Moderate)	69 (Moderate)	-	-	65 (Minor)
	Effect Scale	Moderate or Minor Adverse	Major- Moderate Adverse	Major- Moderate Adverse	-	-	Moderate or Minor Adverse
NSR4 (Low)	Predicted Noise Level (Magnitude)	68 (Moderate)	73 (Moderate)	73 (Moderate)	-	-	70 (Moderate)
	Effect Scale	Minor Adverse	Minor Adverse	Minor Adverse	-	-	Minor Adverse
NSR5 (High)	Predicted Noise Level (Magnitude)	53 (Negligible)	61 (Negligible)	62 (Negligible)	-	-	52 (Negligible)
	Effect Scale	Negligible	Negligible	Negligible	-	-	Negligible
NSR6 (Low)	Predicted Noise Level (Magnitude)	54 (Negligible)	58 (Negligible)	59 (Negligible)	-	-	55 (Negligible)
	Effect Scale	Negligible	Negligible	Negligible	-	-	Negligible
NSR7 (High)	Predicted Noise Level (Magnitude)	56 (Negligible)	63 (Negligible)	64 (Negligible)	-	-	60 (Negligible)
	Effect Scale	Negligible	Negligible	Negligible	-	-	Negligible
NSR8 (High)	Predicted Noise Level (Magnitude)	56 (Negligible)	60 (Negligible)	60 (Negligible)	-	-	55 (Negligible)

Receptor (Sensitivity)	Ref	Construction Noise Level at Receptor, dB L _{Aeq,T}					
		Phase A			Phase B		Phase C
		Timeslice 1	Timeslice 2	Timeslice 3	Timeslice 4	Timeslice 5	Timeslice 6
	Effect Scale	Negligible	Negligible	Negligible	-	-	Negligible
NSR9 (Low)	Predicted Noise Level (Magnitude)	56 (Negligible)	61 (Negligible)	61 (Negligible)	-	-	56 (Negligible)
	Effect Scale	Negligible	Negligible	Negligible	-	-	Negligible
NSR10 (Low)	Predicted Noise Level (Magnitude)	-	-	-	-	-	83 (Major)
	Effect Scale	-	-	-			Moderate or Minor Adverse
NSR11 (Low)	Predicted Noise Level (Magnitude)	-	-	-	-	-	-
	Effect Scale	-	-	-	-	-	-

Table 16.40: Scenario 5 Predicted Construction Noise Levels

Receptor (Sensitivity)	Ref	Construction Noise Level at Receptor, dB L _{Aeq,T}					
		Phase A			Phase B		Phase C
		Timeslice 1	Timeslice 2	Timeslice 3	Timeslice 4	Timeslice 5	Timeslice 6
NSR1 (High)	Predicted Noise Level (Magnitude)	69 (Moderate)	73 (Moderate)	74 (Moderate)	73 (Moderate)	74 (Moderate)	73 (Moderate)
	Effect Scale	Major- Moderate Adverse	Major- Moderate Adverse	Major- Moderate Adverse	Major- Moderate Adverse	Major- Moderate Adverse	Major- Moderate Adverse
NSR2 (Low)	Predicted Noise Level (Magnitude)	64 (Negligible)	68 (Moderate)	69 (Moderate)	72 (Moderate)	73 (Moderate)	66 (Moderate)
	Effect Scale	Negligible	Minor Adverse	Minor Adverse	Minor Adverse	Minor Adverse	Minor Adverse
NSR3 (High)	Predicted Noise Level (Magnitude)	65 (Minor)	68 (Moderate)	69 (Moderate)	73 (Moderate)	74 (Moderate)	66 (Moderate)
	Effect Scale	Moderate or Minor Adverse	Major- Moderate Adverse	Major- Moderate Adverse	Major- Moderate Adverse	Major- Moderate Adverse	Major- Moderate Adverse
NSR4 (Low)	Predicted Noise Level (Magnitude)	68 (Moderate)	73 (Moderate)	73 (Moderate)	67 (Moderate)	68 (Moderate)	71 (Moderate)
	Effect Scale	Minor Adverse	Minor Adverse	Minor Adverse	Minor Adverse	Minor Adverse	Minor Adverse
NSR5 (High)	Predicted Noise Level (Magnitude)	53 (Negligible)	61 (Negligible)	62 (Negligible)	57 (Negligible)	57 (Negligible)	50 (Negligible)
	Effect Scale	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
NSR6 (Low)	Predicted Noise Level (Magnitude)	54 (Negligible)	58 (Negligible)	59 (Negligible)	55 (Negligible)	55 (Negligible)	55 (Negligible)
	Effect Scale	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
NSR7 (High)	Predicted Noise Level (Magnitude)	56 (Negligible)	63 (Negligible)	64 (Negligible)	58 (Negligible)	59 (Negligible)	60 (Negligible)
	Effect Scale	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
NSR8 (High)	Predicted Noise Level (Magnitude)	56 (Negligible)	60 (Negligible)	60 (Negligible)	57 (Negligible)	57 (Negligible)	55 (Negligible)

Receptor (Sensitivity)	Ref	Construction Noise Level at Receptor, dB L _{Aeq,T}					
		Phase A Timeslice 1	Timeslice 2	Timeslice 3	Phase B Timeslice 4	Timeslice 5	Phase C Timeslice 6
	Effect Scale	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
NSR9 (Low)	Predicted Noise Level (Magnitude)	56 (Negligible)	61 (Negligible)	61 (Negligible)	57 (Negligible)	58 (Negligible)	56 (Negligible)
	Effect Scale	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
NSR10 (Low)	Predicted Noise Level (Magnitude)	-	-	-	83 (Major)	83 (Major)	83 (Major)
	Effect Scale	-	-	-	Moderate or Minor Adverse	Moderate or Minor Adverse	Moderate or Minor Adverse
NSR11 (Low)	Predicted Noise Level (Magnitude)	-	-	-	-	-	76 (Major)
	Effect Scale	-	-	-	-	-	Moderate or Minor Adverse

Table 16.41: Scenario 8 Predicted Construction Noise Levels

Receptor (Sensitivity)	Ref	Construction Noise Level at Receptor, dB L _{Aeq,T}					
		Phase A Timeslice 1	Timeslice 2	Timeslice 3	Phase B Timeslice 4	Timeslice 5	Phase C Timeslice 6
NSR1 (High)	Predicted Noise Level (Magnitude)	-	-	-	-	-	69 (Moderate)
	Effect Scale	-	-	-	-	-	Major – Moderate Adverse
NSR2 (Low)	Predicted Noise Level (Magnitude)	-	-	-	-	-	59 (Negligible)
	Effect Scale	-	-	-	-	-	Negligible
NSR3 (High)	Predicted Noise Level (Magnitude)	-	-	-	-	-	65 (Minor)
	Effect Scale	-	-	-	-	-	Moderate or Minor Adverse
NSR4 (Low)	Predicted Noise Level (Magnitude)	-	-	-	-	-	71 (Moderate)
	Effect Scale	-	-	-	-	-	Minor Adverse
NSR5 (High)	Predicted Noise Level (Magnitude)	-	-	-	-	-	52 (Negligible)
	Effect Scale	-	-	-	-	-	Negligible
NSR6 (Low)	Predicted Noise Level (Magnitude)	-	-	-	-	-	53 (Negligible)
	Effect Scale	-	-	-	-	-	Negligible
NSR7 (High)	Predicted Noise Level (Magnitude)	-	-	-	-	-	56 (Negligible)
	Effect Scale	-	-	-	-	-	Negligible
NSR8 (High)	Predicted Noise Level (Magnitude)	-	-	-	-	-	58 (Negligible)

Receptor (Sensitivity)	Ref	Construction Noise Level at Receptor, dB L _{Aeq,T}					
		Phase A			Phase B		Phase C
		Timeslice 1	Timeslice 2	Timeslice 3	Timeslice 4	Timeslice 5	Timeslice 6
	Effect Scale	-	-	-	-	-	Negligible
NSR9 (Low)	Predicted Noise Level (Magnitude)	-	-	-	-	-	59 (Negligible)
	Effect Scale	-	-	-	-	-	Negligible
NSR10 (Low)	Predicted Noise Level (Magnitude)	-	-	-	-	-	-
	Effect Scale	-	-	-	-	-	-
NSR11 (Low)	Predicted Noise Level (Magnitude)	-	-	-	-	-	-
	Effect Scale	-	-	-	-	-	-

17. Ground Conditions

Introduction

- 17.1. This Chapter of the ES has been prepared by Civic Earth to assess the likely ground conditions' impacts of the Proposed Development upon the Site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.
- 17.2. This Chapter is accompanied by the following appendices:
- Appendix 17.1 Civic Earth (2025) Sister – Plot C and Enabling Works Area. Phase 1 Desk Study and Data Review. April 2025. Reference 51019-CE-XX-XX-R-G-1001. Revision P05.
 - Appendix 17.2 Civic Earth (2025) Sister – Plot C. Site Investigation Report. April 2025. Reference 51019-CE-02-XX-R-G-1002. Revision P04.
- 17.3. The authors of this chapter have the following experience.

Table 17.0- Authorship Information.

	Lead Author	Reviewer
Name	Dan Matthews	Kirsty Poore
Company	Civic Earth Limited	Civic Earth Limited
Qualifications/Accreditations relevant to technical area inc. IEMA	BEng, CSci, CEnv, MIEEnvSc	MSc, MSci (Hons), CGeol, FGS, ARSM, ROGEP Specialist
Years technical experience (in technical area)	25	12
Number of EIA's delivered to date	<10	<5

Assumptions and Limitations

- 17.4. The assessment is based on the existing desk study information and the ground conditions identified at the exploratory hole locations during the previous ground investigations undertaken. However, given the nature of Site investigation, there is the potential for unidentified contamination to be present between exploratory hole locations.
- 17.5. A remediation strategy report and a material reuse report will be produced based on the findings of the reports presented in Appendices 17.1 and 17.2. It is anticipated that this would be conditioned.
- 17.6. Beneficial or adverse effects to the relevant receptors during construction and operation are identified and assessed. Beneficial (or positive) effects are associated with the mitigation of risks associated with contamination (e.g. because of the breaking of a contaminant linkage). The adverse (or negative) effects are temporary during the construction phase and relate to the increased potential for contaminant exposure (e.g. from the generation of contaminated dusts) and are long-term from the use of the Site during the operational phase (e.g. associated with any residual contamination).
- 17.7. The significance of an effect also reflects the timescales involved, i.e. short-term (less than 3 years duration), medium-term (between 3- and 10-years duration) or long term (in excess of 10 years duration), the extent of the area affected and the nature of the effect (i.e. its permanency). The significance of a potential effect is derived by considering both sensitivity of the receptor and the magnitude of impact.
- 17.8. Effects that are generated because of the enabling and construction works (i.e. those that last for this set period) are classed as 'temporary'. These may be further classified as either 'short term' or 'medium-term' effects depending on

the duration of the enabling and construction works that generate the effect in question. Effects that result from the completed and operational Proposed Development are classed as permanent or long term effects.

Relevant Legislation, Policy and Guidance

Legislation

- 17.9. The primary regulatory regime under which contaminated land is managed in the UK is Part 2A of the Environmental Protection Act 1990 (as amended) (HM Government, 1990).
- 17.10. Under Part 2A of the Environmental Protection Act (EPA), a site is defined as “contaminated land” if it is causing “significant harm” or if there is a “significant possibility of significant harm” or if the site is causing, or could cause, pollution of Controlled Waters [which can include both groundwater and surface water]. If a site is determined as “contaminated land” then remediation is required to break significant contaminant linkages (i.e. the source-pathway-receptor relationships).

Policy

National

- 17.11. Within the National Planning Policy Framework (NPPF) 2024, reference to brownfield land/previously developed land is made within paragraphs 65, 89, 124, 125(c), 147, 148 and 154(g).
- 17.12. Paragraph 187(f) of the NPPF states that “Planning policies and decisions should contribute to and enhance the natural and local environment by remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate”.
- 17.13. Paragraph 196(b) of the NPPF states that ‘Planning policies and decisions should ensure that a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation)’ and paragraph 196(b) states that ‘after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990’.
- 17.14. Paragraph 198 of the NPPF states the need for ‘the new development [to be] appropriate for its location [by] taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development’.

Regional

Places for Everyone (2014)

- 17.15. The Places for Everyone Joint Development Plan Document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan reinforces the ambition to bring forward brownfield land for development. The document states that the majority of development between 2022 and 2039 (the “plan period”) will be on land within the urban area, most of which is brownfield land. The plan adopts a “brownfield preference” policy, with a commitment for the districts to do all that they can to make sure that brownfield sites come forward in the early part of the plan period.

Local

Manchester Core Strategy (2012) and Addendum (2024)

- 17.16. Manchester’s Core Strategy Development Plan Document (DPD) adopted in 2012 is the primary strategic planning document in the City’s Local Development Framework. Reference to contaminated land has been made within the

Core Strategy, Policy EN 17 Water Quality and Policy EN 18 Contaminated Land and Ground Stability, with the key elements being as follows:

- **Policy EN17 Water Quality:** Development should avoid any adverse impact on water quality, including during the construction phase, and wherever possible should seek to enhance water quality, both chemical and ecological. Development should minimise surface water run-off from development and associated roads, and maximise the use of appropriate sustainable drainage systems, to minimise groundwater contamination, and to avoid pollutants reaching watercourses.
- **Policy EN 18 Contaminated Land and Ground Stability:** The council will give priority for the remediation of contaminated land to strategic locations. Any proposal for development of contaminated land must be accompanied by a health risk assessment. All new development within former mining areas shall undertake an assessment of any associated risk to the Proposed Development and, if necessary incorporate appropriate mitigation measures to address them.

17.17. The Council's target is for 90% of new development to be on previously developed land. This is in line with historical trends across Manchester and will ensure a sustainable approach is taken with regard to the use of land as a limited resource.

Guidance

Environment Agency (EA) – Contaminated Land Assessment

- 17.18. The framework for the assessment of potential land contamination adopted in this assessment is based on current guidance documents regarding the implementation of the above regimes and the assessment of potentially contaminated land, with particular reference to: Land Contamination Risk Management (Environment Agency, 2023).
- 17.19. Various technical guidance documents have been produced in the UK for the assessment of ground conditions. Key documents relevant to the Proposed Development are discussed below.

British Standards

- 17.20. Relevant technical documents produced by the British Standards Institute include standards for investigation of potentially contaminated sites in order that appropriate actions can be taken, which include:
- BS8485 Code of Practice for Characterisation and Remediation of Ground Gas in Affected Developments.
 - BS10175 Investigation of Potentially Contaminated Sites – Code of Practice.

CIRIA

- 17.21. CIRIA produces a range of technical guidance to encourage the safe working on construction sites including:
- CIRIA C665 – Assessing Risks Posed by Hazardous Ground Gases to Buildings;
 - CIRIA C681 - Unexploded Ordnance (UXO): A Guide for the Construction Industry;
 - CIRIA C692 - Environmental good practice on site; and
 - CIRIA C735 - Good practice on the testing and verification of protection systems for buildings against hazardous ground gases.

Assessment Methodology and Significance Criteria

Scenarios Tested

- 17.22. The following scenarios are included in the assessment of Ground Conditions effects for the Proposed Development:
- 1) Baseline

- 2) Baseline + Phase A + Phase C
- 5) Baseline + Phase A + Phase B + Phase C

17.23. It is noted that the EIA Screening and Scoping report (dated 7 April 2025) also indicated that Scenario 8 would be tested. However, Scenario 8 is associated with change of use and associated works to the existing Viaduct arches only and therefore Ground conditions are not considered to be applicable, and so Scenario 8 has not been tested.

The Study Area

17.24. The study area comprises the red line boundary of the Site, the wider SRF area and a buffer zone (typically 250m to 500m) comprising surrounding areas which may impact the Proposed Development or be susceptible to impact as a result of the Proposed Development.

Surveys and Data Sources

17.25. The supporting documentation for this ES Chapter comprises:

- Appendix 17.1 - Civic Earth (2025) Sister – Plot C and Enabling Works Area. Phase 1 Desk Study and Data Review. January 2025. Reference 51019-CE-XX-XX-R-G-1001. Revision P04 (which included a summary of the findings of previous desk study and site investigation undertaken by Arup in 2019 and 2022, and Allied Exploration & Geotechnics Limited in 2020).
- Appendix 17.2 - Civic Earth (2025) Sister – Plot C. Site Investigation Report. April 2025. Reference 51019-CE-02-XX-R-G-1002. Revision P03 .

17.26. The desk study included the wider SRF area and the site investigation included a preliminary level of investigation of the wider SRF area, in addition to the investigation and risk assessment of the Site.

Consultation

17.27. First consultation meeting with Environment Agency on 29 January 2024 to discuss Proposed Development works and review initial proposed scope of site investigation works. Second consultation meeting with Environment Agency on 29 February 2024 to discuss feedback on Phase 1 Desk Study (P01) and site investigation scoping documents following a technical review by the Environment Agency.

17.28. A further meeting took place with the Environment Agency and Manchester City Council Environmental Health Officer (EHO) on 23 September 2024, having issued an updated Phase 1 Desk Study (P02) in advance. Feedback on the Phase 1 Desk Study (P02) was provided by the EHO on 8 October 2024. Civic Earth noted in the consultation meeting on 23 September that following the meeting they would issue the interpretative report of the Plot C and Enabling Works (Plots E and F) mid-October 2024 for the Environment Agency and EHO to review and provide comment. The EA officer commented (in the meeting on 23 September) that in principle in agreement with the assessments and recommendations, but naturally would need to have the full report with data to fully review.

17.29. The EHO provided feedback on the Site Investigation Report (P01) on 28 October 2024. The EA provided feedback on the Site Investigation Report (P01) on 15 November 2024. Following completion of additional assessments, the updated Site Investigation Report (P02) was provided to the EA and EHO for comment. The EHO provided feedback on 24 February 2025 and confirmed at this stage they have no comments. The EA provided feedback on 10 March 2025 recommending a further round of groundwater sampling of the Principal aquifer and update to the Site Investigation Report to reflect the current boundary of the Site.

Source of Effect

17.30. The ground conditions have been assessed in accordance with gov.uk Land Contamination Risk Management (LCRM) guidance, following the staged approach; Stage 1 Risk Assessment, Stage 2 Options Appraisal, Stage 3 Remediation and Verification. At the time of writing, the Stage 1 Risk Assessment has been completed and it is anticipated that planning conditions will be imposed with respect to Stages 2 and 3. It is noted that the Stage 2 Options Appraisal is currently underway and a Remediation Strategy report will be completed in due course. .

- 17.31. The assessment has followed the tiered approach to risk assessment to develop the conceptual site model, identify the potential contaminant linkages and assess and evaluate the risk to establish whether there is an unacceptable risk:
- Tier 1 - Preliminary Risk Assessment: Phase 1 Desk Study and Data Review Report
 - Tier 2 – Generic Quantitative Risk Assessment: Site Investigation Report.
 - Tier 3 – Detailed Quantitative Risk Assessment: Not considered to be required based on the findings of Tier 2.
- 17.32. Each tier requires the hazards to be identified, assessed using the Source-Pathway-Receptor linkage approach and the level of risk evaluated. These terms are defined as:
- source – a contaminant or pollutant that is in, on or under the land and that has the potential to cause harm or pollution
 - pathway – a route by which a receptor is or could be affected by a contaminant
 - receptor – something that could be adversely affected by a contaminant, for example a person, controlled waters, an organism, an ecosystem, or Part 2A receptors such as buildings, crops or animal
- 17.33. Pathways will be specific to the receptor type. For example, they could be:
- ingestion, inhalation, dermal contact for human health receptors
 - infiltration and contaminant migration through permeable strata such as the unsaturated zone for groundwater
 - a secondary pathway from groundwater contamination to surface water
 - migration of ground gases and vapours such as permanent gases, landfill gas and volatile hydrocarbons into buildings
 - direct contact and uptake by plants
- 17.34. Where a source, relevant pathway, and receptor are present, a ‘contaminant linkage’ is created whereby there is a circumstance through which some level of environmental harm could occur which has to be assessed and mitigated as appropriate.
- 17.35. For the preliminary risk assessment the risks are evaluated qualitatively. The Tier 2 assessment uses assessment criteria protective of human health based on the proposed land use and controlled waters (Environmental Quality Standards and Drinking Water Standards) to evaluate the risks, and also evaluates risks to other receptors identified including ecological receptors, services and building structure.
- 17.36. The methodology for impact prediction is based on assessing both the magnitude of change expected and the sensitivity of the receptor.

Significance Criteria

- 17.37. The assessment of potential effects considers two criteria: the sensitivity of the receptor and the magnitude of impact upon the receptor. These two criteria are considered together in a matrix to determine the overall significance of effect.
- 17.38. The criteria used to assess receptor sensitivity is described in Table 17.1 and the criteria used to assess how far an effect deviates from the baseline condition described in Table 17.2 below. The tables include details of the types of receptor considered within each Sensitivity Level and provides examples of the levels of impact.

Table 17.1. Receptor Sensitivity

Sensitivity	Examples of Receptor
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance.

Sensitivity	Examples of Receptor
	<p>Receptors include:</p> <ul style="list-style-type: none"> • People (on-site or on neighbouring properties) occupying land in residential use with gardens, or using allotments, children's play areas etc. • Construction workers engaged in extensive earthworks. • Principal aquifer of regional importance used for potable water supply. Highly ecologically sensitive watercourse or water bodies. • Nationally or internationally designated ecological sites. • Buildings of high historic or local importance.
Medium	<p>The receptor/resource has moderate capacity to absorb change without significantly altering its present character, or is of high importance.</p> <p>Receptors include:</p> <ul style="list-style-type: none"> • People (on-site or on neighbouring properties) occupying land in residential use without gardens, or using public areas of soft landscaping/open spaces. • Construction workers engaged in moderate earthworks. • Groundwater classified as a Principal or Secondary aquifer, local watercourse or non-designated water bodies not used for large scale human consumption which can be used for industrial purposes; may be important for local recreational purposes. • Locally designated ecological sites. • Buildings, including services and foundations.
Low	<p>The receptor/resource is tolerant of change without detriment to its character, is of low or local importance.</p> <p>Receptors include:</p> <ul style="list-style-type: none"> • People (on-site or on neighbouring properties) occupying or using commercial or industrial buildings, car parking, hard landscaping. • Construction workers site but with minimal disturbance to the ground. • Non-potable water resources, water body of low recreational qualities. • Sites of low ecological value and flora and fauna occupying non-designated open areas. • Infrastructure (e.g. roads, highways and railways).

Table 17.2. Magnitude of Impact

Magnitude of Impact	Criteria for Assessing Effect
Major	<p>Total loss or major/substantial alteration to key elements/features of the baseline conditions such that the post development character/composition/attributes will be fundamentally changed.</p> <p>Defined as:</p> <p>Short term (acute) or long term (chronic) adverse effects on human health, broadly equivalent to "significant harm" as defined by the Environmental Protection Act 1990 (HM Government, 1990).</p> <p>Persistent and extensive pollution of water resource or ecosystem equivalent to Category 1 pollution incident (major pollution release).</p> <p>Catastrophic damage to crops/building/infrastructure.</p> <p>Complete and occupied development: The development introduces or removes a large-scale source of potential contamination or pollutant linkage.</p>
Moderate	<p>Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.</p> <p>Defined as:</p> <ul style="list-style-type: none"> • Short term (acute) or long term (chronic) adverse effects on human health but not equivalent to "significant harm" as defined by the Environmental Protection Act 1990. • Non-persistent pollution of water resource or ecosystem equivalent to Category 2 pollution incident (moderate pollution release). • Significant damage to crops/buildings/infrastructure (on or off-site). • Contamination of off-site soils.

Magnitude of Impact	Criteria for Assessing Effect
	<ul style="list-style-type: none"> Complete and occupied development: The development introduces or removes a relatively small-scale source of potential contamination or pollutant linkage.
Minor	<p>A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character / composition / attributes of the baseline condition will be similar to the pre-development circumstances/situation.</p> <p>Defined as:</p> <ul style="list-style-type: none"> Easily preventable, non-permanent health effects on humans. Minor, low-level, localised, temporary pollution of water resources or ecosystem. Easily repairable damage to crops/buildings/infrastructure. Easily preventable, permanent health effects on humans. Localised damage to buildings/infrastructure (on or off-site). Complete and occupied development: The development introduces or removes a minor source of potential contamination or pollutant linkage.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

- 17.39. The significance of the potential effect is evaluated by considering the sensitivity of the receptor and the magnitude of change, as set out in the matrix in Table 17.3, below (moderate and above are considered to be significant as indicated by the bold text in the table).

Table 17.3. Significance of Potential Effect

Magnitude	Sensitivity		
	High	Medium	Low
Major	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate or Minor Adverse/Beneficial
Moderate	Major - Moderate Adverse/Beneficial	Moderate Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate or Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial - Negligible
Negligible	Negligible	Negligible	Negligible

- 17.40. The prediction of effects of the Proposed Development on ground conditions has then been made by comparing the existing ground (and groundwater) conditions, with the condition of these media during the Construction Phase and the Operational Phase, taking into account embedded design mitigation measures (i.e. mitigation that will be delivered through delivery of the Proposed Development as designed and/or mitigation that would be expected to be achieved through following best practice).

Baseline Conditions

Scenario 1: Existing Baseline

- 17.41. The baseline conditions have been established based on the Phase 1 Desk Study and Data Review Report (Appendix 17.1) and the Phase 2 Site Investigation Report (Appendix 17.2).
- 17.42. It is noted the Local Authorities Environmental Health Officer and the Environment Agency were consulted during the site investigation process. This included a series of meetings, review and comment of the site investigation scope and review and comment on the reports as described above. Additional works have been undertaken to address comments by the regulators, which are reflected within the reports summarised below.
- 17.43. In summary, earliest available mapping indicates that the Site and the wider SRF area were historically occupied by residential / smaller structures and various significant industrial activities including a Chemical Works, Iron Foundry, Cotton Mill, Nut and Bolt Works, Motor Engineering Works, Cloth Finishing Works, Tank, Sawmill, Chimneys and Store

Rooms, Solution of Tin House, and Cylinder House (which was associated with the predominantly off-site Ardwick Bridge Chemical Works). The Site continued to have heavy industrial use until the mid-1960s when the area was extensively redeveloped into University of Manchester facilities. The locations of the pertinent historical industrial activities within the Site and the wider SRF area are illustrated in Plate 7 of the Phase 1 Desk Study and Data Review report. A detailed UXO assessment was undertaken which indicated that the majority of the Site was in an area at low risk from UXO. However, an area of moderate risk was identified to the south in the SRF area, which extended slightly into the southeast of the Site.

- 17.44. The earliest available mapping dated 1848 indicates the Site to be located within an area of combined residential and industrial use. London Road Railway Station is indicated approximately 250m northeast of the Site and a Cotton Mill and Dye Works are indicated approximately 250m east of Site. From the 1850s until the mid-1960s, a large number of significant industrial activities are indicated within 250m of Site including Cotton Mills, Wharves, Medlock Oil Works, Engineering Works, Soap Works, East India Printing Works, Old Garratt Dye Works, Iron Foundries, Saw Mills, Smithy, Boiler Houses, Rubber Works, Printing Works, Tanks, Zara Mills (Wadding), Warehouses and Timber Yards to the northwest, west and southwest of the Site, and Cotton Mills, Ardwick Print Works/Dye Works, Timber Yards and Adwick Chemical Works to the northeast, east and southeast. From the mid-1960s, the scale of industrial activities in the area began to reduce with their progressive redevelopment into commercial and residential structures.
- 17.45. Published BGS mapping indicates that the Site area is anticipated to be underlain by Till (Diamicton). Superficial deposits of Alluvium are indicated in the south of the Site along the historical route of the River Medlock, and therefore may be present where the river historically flowed. The superficial deposits are indicated to be underlain by the Chester Formation (Sandstone). A northwest-southeast trending fault in the bedrock is indicated to cross the western part of the wider SRF area. Deposits of Made Ground are also indicated across the study area.
- 17.46. The superficial deposits of Alluvium and Till are designated as Secondary Undifferentiated aquifers. The underlying Chester Formation sandstone bedrock is designated as a Principal aquifer. The Site and wider SRF area are not located within a groundwater Source Protection Zone (SPZ). Following the River Medlock's historical diversion into a culvert, the river no longer flows within the wider SRF area, and is understood to be currently located within a culvert to the south of the wider SRF area. Shooters Brook is identified to travel below Granby Row to the north of the Site, within the wider SRF area, south down Sackville Street passing below the Viaduct arches, then south-southwest beneath Charles Street Car Park before discharging into the River Medlock at Charles Street bridge. Regional groundwater flow direction is anticipated to be towards the southwest.
- 17.47. A historical site investigation was undertaken by AEG/Arup in 2020 which comprised a series of cable/rotary boreholes, dynamic sample boreholes, trial pits and horizontal cores across the wider SRF area including the Site. The exploratory holes undertaken across the Site typically recorded a variable thickness of Made Ground overlying superficial deposits of Alluvium or the bedrock of the Chester Formation. Two groundwater bodies were recorded; perched water within the Made Ground and the Principal aquifer within the Chester Formation.
- 17.48. Site investigations were undertaken by Civic Earth between April and October 2024 to obtain information to support detailed design of the Site and detailed design of a new river channel in the south of the wider SRF area, with some site investigation located within the wider SRF area to obtain information to understand the wider ground model, and to delineate hydrocarbon contamination encountered in the Site during the initial phase of site investigation.
- 17.49. The ground conditions were typically found to comprise a variable thickness of Made Ground (typically up to 3m to 4m in thickness), with areas of local deepening (up to 8.4m in thickness) along the route of the historically infilled River Medlock as well as in the east of the Site where existing ground level is raised to the level of Altrincham Street. Obstructions were recorded within the Made Ground including brick and concrete slabs and suspected brick walls. Superficial deposits of Alluvium and Glacial Till were inconsistently recorded across the wider SRF area. Made Ground deposits were recorded to directly overlie the Chester Formation sandstone bedrock in the majority of boreholes, suggesting that the previous development of the wider SRF area has resulted in the removal of the superficial deposits above the bedrock.
- 17.50. Perched water was recorded in the Made Ground and Glacial Till which is variable in level and appears to be limited in nature, confined by surrounding cohesive deposits. The Principal aquifer within the Chester Formation was recorded between 29.24mOD and 23.0mOD during the spot groundwater monitoring rounds, with the continuous groundwater monitoring indicating similar levels between 28.5mOD and 27.0mOD. Groundwater flow is indicated towards the southwest, although it is noted that groundwater flow is likely to be influenced by fractures within the sandstone

bedrock, buried infrastructure across the wider Sister area (e.g. historical buried structures, existing basements and foundations) and the historical channel of the River Medlock. Regional groundwater flow direction is considered to be towards the southwest.

- 17.51. Human Health Risk Assessment: Shallow soils and perched water are impacted with elevated contaminant concentrations and asbestos was detected within the Made Ground soils within the Site. Hardstanding and/or buildings are proposed across large areas which will act as a barrier between receptor and contamination in the underlying soils. Capping layers will be required to mitigate the risks to future site users in areas of soft landscaping. Assessment of contaminant concentrations from dissolved phase contaminants indicates a low risk to human health via vapour intrusion.
- 17.52. Ground Gas Risk Assessment: The conceptual site model includes a historically infilled river channel, contaminative historical industries and variable thicknesses of Made Ground recorded during site investigations (up to approximately 7m). Ground gas monitoring recorded elevated concentrations of carbon dioxide (above 5%v/v). The Site is considered to be representative of CS2 and ground gas protection measures considered to be required. It is noted that further detailed ground gas risk assessment could be undertaken once the detailed design has progressed where proposed formation levels, ventilated basement / service vehicle access routes, waterproofing and ground slab thickness details can be considered, which may allow the ground gas protection level to be reduced.
- 17.53. Controlled Waters Risk Assessment: Elevated soil leachate concentrations have been recorded against the EQS and the DWV, and elevated concentrations of total phenols, total cyanide, total TPH, fluoranthene, ammoniacal nitrogen in the perched water of the Made Ground have been recorded against the EQS and DWV. However, concentrations of free cyanide are recorded as less than the laboratory limit of detection and PAH concentrations are less than 1µg/l. Elevated TPH and ammoniacal nitrogen are noted to be inconsistent. A continuous groundwater table was not observed within the Made Ground or superficial deposits and the cohesive horizons of the Made Ground and Glacial Till (where present) are considered to limit lateral and vertical migration of potential contaminants. Where proposed, buildings and hardstanding will also limit infiltration and leaching potential. In addition, the DWVs are considered to be a conservative assessment as the shallow Secondary undifferentiated aquifer is unlikely to be used as a drinking water source. Therefore the potential risks to controlled waters are generally considered to be low. Notwithstanding the above, hotspots of higher concentrations of heavy metal and hydrocarbon contamination has been identified within the Made Ground which may pose a potential risk to the Principal aquifer. It is recommended that the hotspots of contamination are delineated and excavated / remediated to mitigate the potential risks to controlled waters. In addition, localised hydrocarbon contamination was encountered at depth within the Principal aquifer at BH1005. Gross contamination has not been encountered in surrounding (upgradient and downgradient) boreholes indicating that the contamination is localised to BH1005. Further investigation of BH1005 is recommended to confirm vertical extent of hydrocarbon contamination and localised remediation of hydrocarbon contamination likely to be required.
- 17.54. Plants and Vegetation Risk Assessment: Elevated concentrations of phytotoxic contaminants have been recorded within the Made Ground. In addition, it is considered unlikely that the Made Ground will provide a suitable growth medium for new plants and vegetation. A growth medium will likely be required for areas of proposed new soft landscaping.
- 17.55. Buried Water Supply Pipes Risk Assessment: Based on the historical contaminative industries that have been identified at the Site and the wider SRF area, and elevated hydrocarbon concentrations and acidic / alkaline pH levels recorded in the shallow soils and perched water, it is considered that barrier pipes will be required for new buried water supply pipes.
- 17.56. It is noted that further investigation and assessment will be required for the wider SRF area as the development of those plots progresses but the information obtained has been used to evaluate Scenarios 1, 2 and 5.
- 17.57. A remediation strategy, including a verification plan, are to be produced by Civic Earth to outline the remediation requirements in consideration of the recommendations within this report. The document will be provided to the EHO and EA for review during the determination period or be conditioned. Based on the findings of the site investigation and subsequent contamination assessments, recommended additional investigation and remedial measures to be included within the remediation strategy include:
- further investigation and delineation of the localised hydrocarbon contamination at BH1005;

- removal of Made Ground hotspots considered to present a potential risk to controlled waters;
- a watching brief is carried out by the Contractor during the enabling works, earthworks and construction works;
- decommissioning of existing monitoring wells prior to commencement of significant earthworks and measures implemented to mitigate the potential impact to controlled waters during construction works;
- ground gas protection measures;
- installation of capping layers in areas of soft landscaping; and
- installation of barrier pipes for new water supply pipes. Completion of a United Utilities Risk Assessment including sampling of soils at depth and location of proposed water supply pipes will likely be required.

17.58. In addition, it is recommended a piling works risk assessment including groundwater reassurance monitoring is completed to demonstrate that the works do not result in deterioration of the groundwater quality of the Principal aquifer. The Contractor should be responsible for the material management and waste classification and the “waste hierarchy” should be used to rank waste management options.

17.59. By considering the baseline conditions (Scenario 1), and construction and proposed future use (Scenarios 2 and 5), a number of potential receptors with respect to land contamination at the Site have been identified. These are listed below:

- Future site users;
- Off-site occupiers/visitors of neighbouring land;
- Construction workers;
- Controlled Waters - Groundwater: Principal Aquifer (Chester Formation) and Secondary Undifferentiated Aquifers (Alluvium and Glacial Till);
- Controlled waters - Surface Water: River Medlock and culverted Shooters Brook. The assessment also considered the proposed new River channel in the south of wider SRF area;
- Ecological receptors (flora);
- Built Environment - Potable water supply pipework and building structures (concrete).

Identification and Evaluation of Likely Significant Effects

Construction

Off-site occupiers/visitors (includes occupiers and visitors of plots on the Site as the scheme develops):

17.60. The site investigation has identified that shallow soils are impacted with elevated contaminant concentrations and asbestos was detected within the Made Ground soils. There is a potential risk to off-site occupiers and visitors via the pathway of off-site migration of contaminants via windblown dust and nuisance odours/vapours during earthworks activities associated with the enabling works and construction works. This would also apply to occupiers and visitors of on-site completed areas of development should a phased development approach be implemented. The significance of the potential effect prior to mitigation is considered to be temporary and minor to moderate adverse. Mitigation measures to be implemented are set out below.

Controlled Waters: Groundwater (Principal Aquifer (Chester Formation) and Secondary Undifferentiated Aquifers (Alluvium and Glacial Till) and Surface Water (River Medlock, culverted Shooters Brook and the proposed new River channel in the south of wider IDM Masterplan area):

17.61. During enabling and construction works there is the potential for contaminants in the underlying soils to be mobilised to a greater extent than naturally occurs. It is noted that the majority of the Site is currently covered in buildings and hard standing which are limiting infiltration. These hard surfaces will be removed temporarily during the enabling works, and reinstated with some areas of soft landscaping during the construction phase. In addition, there is the potential for preferential pathways for the migration of contaminants to be created during piling activities.

- 17.62. On this basis there is considered to be the potential for a temporary minor to moderate adverse effects to controlled waters and therefore mitigation will be required, which are set out below.

Ecological Receptors (flora):

- 17.63. Whilst there is only limited vegetation currently on the Site, the site investigation and risk assessment has indicated that there is currently a potential risk to vegetation and plants from phytotoxic contaminants within the Made Ground, and localised within the natural ground. The majority is to be removed as part of the Proposed Development with growth mediums to be constructed in areas of proposed soft landscaping. Therefore, the potential effect during the construction phase is considered to be minor.

Construction Workers:

- 17.64. The site investigation has identified that shallow soils are impacted with elevated contaminant concentrations and asbestos was detected within the Made Ground soils. Construction workers are likely to be in close contact with Made Ground soils during remediation, enabling works, earthworks and other below ground construction activities. Therefore there is the potential for temporary and permanent moderate effects to construction workers. Mitigation measures are to be put in place, which are set out below.
- 17.65. With respect to potential unexploded ordnance (UXO), the UXO assessment has identified that the majority of the Site is within an area of low risk. There is an area of moderate risk within the south of the SRF area, which extends slightly into the southeastern part of the Site, which presents a potential temporary moderate adverse effect. Therefore, mitigation measures are to be put in place through a UXO risk mitigation plan, which are set out below.

Operational

Future Site Users:

- 17.66. The site investigation and risk assessment has identified that shallow soils are impacted with elevated contaminant concentrations and asbestos was detected within the Made Ground soils across the Site, which present a potential risk to future site users in areas of soft landscaped areas during the operation of the Proposed Development. In addition the ground gas risk assessment has indicated a potential risk from ground gases and that standard water supply pipes would not be appropriate based on the concentrations of contaminants recorded in soil.
- 17.67. Therefore, there is considered to be the potential for permanent low to moderate adverse effects. It is considered that these risks can be mitigated through conventional development remediation, which will be set out in a Remediation Strategy and are discussed in the mitigation section below.

Groundwater: Principal Aquifer (Chester Formation)

- 17.68. Based on the findings of the site investigation and risk assessment, the potential risks to controlled waters were generally considered to be low. However, hotspots of higher concentrations of heavy metal and hydrocarbon contamination was identified within the Made Ground which may pose a potential risk of minor to moderate adverse effects to the Principal aquifer. It was therefore recommended that the hotspots of contamination be delineated and excavated / remediated to mitigate the potential risks to controlled waters. In addition, localised hydrocarbon contamination was encountered at depth within the Principal aquifer at BH1005. Gross contamination had not been encountered in surrounding (upgradient and downgradient) boreholes indicating that the contamination is localised to BH1005. Further investigation of BH1005 is recommended to confirm vertical extent of hydrocarbon contamination and localised remediation of hydrocarbon contamination likely to be required. Proposed mitigation measures are discussed further below.
- 17.1. In addition, there is the potential for preferential pathways to be created by piled foundations which present a potential permanent minor to moderate adverse effect to controlled waters and therefore mitigation will be required through the adoption of appropriate piling methodologies, which are set out below.

Controlled waters - Groundwater and Surface Water: Secondary Undifferentiated Aquifers (Alluvium and Glacial Till), River Medlock, the culverted Shooters Brook and the proposed new River channel in the south of wider SRF area:

- 17.2. The site investigation and risk assessment has identified that the potential risks to the Secondary Undifferentiated Aquifers and identified surface water receptors from potential contamination is low to very low and will remain low to very low on completion of the development.

Ecological Receptors: flora

- 17.3. The site investigation and risk assessment have indicated that there is currently a potential risk to vegetation and plants from phytotoxic contaminants within the Made Ground, and localised within the natural ground, with the potential for permanent minor adverse effects to plant growth. Growth mediums comprising an appropriate thickness and quality of topsoil and subsoil will be installed in areas of proposed soft landscaping. The depth and quality of the growth mediums will be specified by the landscape architect and will include local deepening for large shrubs and trees. Material used to form the growth medium will be suitable soils either site won or imported and will be assessed to meet human health assessment criteria appropriate for the proposed land use and imported materials will need to comply with the relevant British Standard for topsoil and subsoil. On this basis, there is considered to be a minor beneficial effect.

Built Environment

- 17.4. Buried concrete is to be designed based on the testing and assessment undertaken within the Site Investigation report and water supply pipes will be installed using appropriate material to be agreed with the water supply company (United Utilities). On this basis, the potential for adverse effects to the built environment is considered to be negligible.

Cumulative Effects

- 17.5. Given the proposed end use of the Site, cumulative effects associated with the Proposed Development were not anticipated with respect to ground conditions and were therefore scoped out of the assessment.

Mitigation Measures

Construction

Off-site occupiers/visitors (includes occupiers and visitors of plots on the Site as the scheme develops):

- 17.6. A Construction and Environmental Management Plan (CEMP) will be developed and implemented under a planning condition, which is standard practice used to commonly manage environmental effects and is therefore considered to be embedded mitigation. The CEMP will include measures to mitigate risks to off-site occupiers and visitors from dusts and odours including stockpile management, damping down of soils and excavated soils will also be appropriately stored with preventative measures against nuisance odours to protect human health during temporary storage on site. Vehicles transporting contaminated Made Ground soils off site (if required) will be sheeted and wheel washes will be used to manage the potential for soils to be tracked onto the public highway.
- 17.7. Following the implementation of the CEMP and good construction practice, the potential for adverse effects to off-site occupiers/visitors would be negligible.

Controlled Waters: Groundwater (Principal Aquifer (Chester Formation) and Secondary Undifferentiated Aquifers (Alluvium and Glacial Till) and Surface Water (River Medlock, culverted Shooters Brook and the proposed new River channel in the south of wider SRF area):

- 17.8. Measures will be implemented to mitigate the potential impact to controlled waters during the enabling and construction works. These will be set out in the CEMP and the remediation method statement and include:

- Appropriate management of stockpiles including stockpiling in designated areas away from drainage channels, segregation of different types of material (e.g. Made Ground and natural soils), and controlling surface water run-off with bunds, liners and coverings. Stockpiling areas will be positioned away from sensitive locations.
- Appropriate management and discharge/disposal of perched water and groundwater encountered in excavations and water used during enabling works (e.g. for dust suppression and wheel washing). Temporary drainage systems to be designed and implemented so that they capture waterborne pollution prior to entering any existing drainage systems.
- Appropriate storage of all hazardous liquids, chemicals and materials where materials are to be stored in accordance with the Control of Substances Hazardous to Health (COSHH) Regulations.

- 17.9. In addition, a Piling Works Risk Assessment (PWRA) is to be completed under a planning condition to demonstrate that the proposed piling methodology / methodologies will not lead to the creation of new pathways for contaminant migration once the detailed design of the development has progressed. It is anticipated that the PWRA will include a groundwater reassurance monitoring programme for the Principal aquifer, to include groundwater monitoring prior to, during and following soil / groundwater remediation and significant groundworks (e.g. cut and fill works and piling works), to demonstrate that the works do not result in deterioration of the groundwater quality of the Principal aquifer. Groundwater monitoring wells not required for future monitoring will be decommissioned prior to commencement of significant earthworks and wells to be retained will be protected. Where required by the remediation strategy, service trenches will be designed to mitigate the risk of them becoming preferential pathways.
- 17.10. Following the implementation of the requirements of the Remediation Strategy (to be based on the findings of the Site Investigation Report), a Piling Works Risk Assessment, decommissioning/protection of monitoring wells, the CEMP and good construction practices, the potential for adverse effects associated with increased migration of contamination vertically, horizontally and along preferential pathways would be temporary and negligible to minor.

Construction Workers:

- 17.11. It is considered that the potential risks to construction workers can be mitigated by the use of routine health, safety and hygiene procedures, including the use of personal protective equipment. These measures will be set out in the CEMP and the Contractor's Construction Phase Health and Safety Plan and risk assessments and method statements, which will be implemented during the construction phase.
- 17.12. With respect to potential UXO, a UXO risk mitigation plan will be developed, which will be implemented on site during the works. It is anticipated that this will include safety briefings to site operatives and attendance on site by UXO specialists during excavation in the areas identified as being a moderate risk.
- 17.13. It is therefore considered that the potential effects to construction workers following mitigation would be temporary and minor to negligible. It is noted that future site users and built environment have not been considered under construction phase effects (as this section considers construction effects only) and are considered under operational phase effects, below.

Operational

Future Site Users:

- 17.14. It is considered that the potential risks to future site users can be mitigated through conventional development remediation, which will be set out in a Remediation Strategy based on the findings of the site investigation and implemented during the construction. The remediation measures will include:
- Where present, buildings and hard standing will mitigate the potential risks from direct contact pathways. Within areas of soft landscaping, soil capping layers will be installed to mitigate the risk of dermal contact/ingestion of the underlying impacted soils. Material used to form the capping layers will be suitable soils either site won or imported and will be assessed to meet human health assessment criteria appropriate for the proposed land use and imported materials will need to comply with the relevant British Standard for topsoil and subsoil.

- Ground gas protective measures will be implemented appropriate for the ground gas regime (Characteristic Situation 2), such as a membrane, reinforced concrete slab and/or ventilation;
- Appropriate selection of water supply pipe material (anticipated to be barrier pipe) to be agreed with the water supply company (United Utilities).

17.15. Following implementation of these conventional development remediation measures, the potential for adverse health effects to future site users is considered to be negligible.

Groundwater: Principal Aquifer (Chester Formation)

- 17.16. The remediation requirements with respect to potential risks to controlled waters are anticipated to include delineation and excavation / remediation of identified hotspots of contamination. In addition, further investigation is to be undertaken of the identified potential source of contamination at BH1005 to confirm vertical extent of hydrocarbon contamination, following which localised remediation of hydrocarbon contamination is likely to be required.
- 17.17. These mitigation measures will be set out in the Remediation Strategy report and implemented during the enabling and construction works. Once implemented, it is considered that this will have a moderate beneficial effect to groundwater (the Principal aquifer). It is noted that this will also have a minor beneficial effect with respect to the potential risk to surface water and the Secondary Undifferentiated aquifers.
- 17.18. In addition, a Piling Works Risk Assessment (PWRA) is to be completed under a planning condition to demonstrate that the proposed piling methodology / methodologies will not lead to the creation of new pathways for contaminant migration.

Residual Effects

Construction

- 17.19. Table 17. presents the residual effects during the construction phase after effective implementation of the mitigation measures described above. It is noted that no significant post mitigation residual adverse effects have been identified.

Table 17.4. Operational Phase - Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Potential for exposure to dust emissions during construction	Off-site occupants/visitors	Measures including stockpile management, damping down of soils, sheeting of vehicles transporting contaminated Made Ground soils off site (if required), wheel washes	To be defined within CEMP, secured via planning condition.	Negligible (Temporary)
Potential for increased infiltration / mobilisation and migration of contamination	Controlled waters – Secondary Undifferentiated aquifers (Alluvium and Glacial Till)	Appropriate management of stockpiles, discharge/disposal of water in excavations and storage of hazardous substances. Implementation of appropriate piling methodologies.	To be defined within CEMP and piling works risk assessment, secured via planning condition.	Negligible to minor adverse (Temporary)
Potential for increased infiltration / mobilisation and	Controlled waters – Principal aquifer	Appropriate management of stockpiles, discharge/disposal of water	To be defined within CEMP and piling works risk assessment, secured via planning condition.	Negligible to minor adverse (Temporary)

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
migration of contamination	(Chester Formation)	in excavations and storage of hazardous substances. Implementation of appropriate piling methodologies.		
Potential for increased infiltration / mobilisation and migration of contamination	Controlled waters – surface water (River Medlock, culverted Shooters Brook, proposed new river channel)	Appropriate management of stockpiles, discharge/disposal of water in excavations and storage of hazardous substances. Implementation of appropriate piling methodologies.	To be defined within CEMP and piling works risk assessment, secured via planning condition.	Negligible to minor adverse (Temporary)
Potential exposure to phytotoxic contaminants	Ecological receptors - flora	Growth media to be constructed in areas of proposed soft landscaping.	To be defined within the Remediation Strategy, secured via planning condition.	Minor adverse (Temporary)
Potential for exposure to contaminated soils / dusts and contaminated shallow perched water	Construction workers	Implementation of appropriate health and safety measures include hygiene and PPE.	The be defined in Contractor's Construction Phase Health and Safety Plan	Negligible to minor adverse (Temporary)
Potential for explosion from contact with UXO	Construction workers	UXO risk mitigation	To be defined in UXO Risk Mitigation Plan, secured via planning condition.	Negligible to minor adverse (Temporary)

Operational Phase

17.20. Table 17.5 presents the residual effects resulting from the Proposed Development after effective implementation of the mitigation measures described above. No significant adverse residual effects have been identified resulting from the Proposed Development. It is noted that during the development remediation is to be undertaken of identified hotspots of contamination within the Made Ground and groundwater at BH1005, which will result in a moderate beneficial effect to Controlled Waters (Principal aquifer).

Table 17.5. Operational Phase - Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase				
Contact with underlying contaminated materials	Future site users	Soil capping layers to be constructed in areas of soft landscaping	To be defined within the Remediation Strategy, secured by planning condition.	Negligible (Permanent)
Potential explosion/asphyxiation from hazardous ground gases	Future site users	Incorporation of ground gas protection measures into buildings	To be defined within the Remediation Strategy and detailed design, secured by planning condition.	Negligible (Permanent)
Permeation of water supply pipes	Future site users	Appropriate selection of water supply pipes	To be defined within the Remediation Strategy, secured and planning condition and agreed with water supply company.	Negligible (Permanent)
Leaching and vertical/lateral migration of	Controlled waters – Secondary Undifferentiated	Remediation of identified hotspots of contamination.	To be defined within the Remediation Strategy and piling works risk assessment, secured by planning condition.	Minor beneficial (Permanent)

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
contamination from Made Ground	aquifers (Alluvium and Glacial Till)	Implementation of appropriate piling methodology.		
Leaching and vertical/lateral migration of contamination from Made Ground	Controlled waters: Principal Aquifer	Remediation of identified hotspots of contamination and further investigation/remediation at BH1005. Implementation of appropriate piling methodology.	To be defined within the Remediation Strategy and piling works risk assessment, secured by planning condition.	Moderate beneficial (Permanent)
Leaching and vertical/lateral migration of contamination from Made Ground	Controlled waters – surface water (River Medlock, culverted Shooters Brook, proposed new river channel)	Remediation of identified hotspots of contamination and further investigation/remediation at BH1005. Implementation of appropriate piling methodology.	To be defined within the Remediation Strategy and piling works risk assessment, secured by planning condition.	Minor beneficial (Permanent)
Potential exposure to phytotoxic contaminants	Ecological receptors - flora	Growth media to be constructed in areas of proposed soft landscaping.	To be defined within the Remediation Strategy, secured by planning permission.	Minor beneficial (Permanent)
Aggressive attack on below ground concrete	Built environment	Appropriate concrete design	Concrete to be designed in accordance with findings of site investigation report.	Negligible (Permanent)
Permeation of water supply pipes	Built environment	Appropriate selection of water supply pipe material	To be defined within the Remediation Strategy, secured by planning condition and agreed with water supply company.	Negligible (Permanent)

Monitoring

- 17.21. It is anticipated that during the Construction phase, reassurance groundwater monitoring will be undertaken during significant ground works (for example piling); this will be set out and agreed within the Piling Works Risk Assessment.
- 17.22. No monitoring is anticipated relating to ground conditions during the Operation phase.

Reference List

- Civic Earth (2025) Sister – Plot C and Enabling Works Area. Phase 1 Desk Study and Data Review. January 2025. Reference 51019-CE-XX-XX-R-G-1001. Revision P04.
- Civic Earth (2025) Sister – Plot C. Site Investigation Report. April 2025. Reference 51019-CE-02-XX-R-G-1002. Revision P03.
- Environmental Protection Act 1990 (as amended). Available at <https://www.legislation.gov.uk/ukpga/1990/43/contents>
- National Planning Policy Framework (NPPF) 2024. Available at <https://www.gov.uk/guidance/national-planning-policy-framework>
- Places for Everyone Joint Development Plan Document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan (2024). Available at <https://www.greatermanchester-ca.gov.uk/what-we-do/planning-and-housing/strategic-planning/places-for-everyone/pfe-adoption/>
- Manchester's Core Strategy Development Plan Document (DPD), 11 July 2012. Available at https://www.manchester.gov.uk/downloads/download/5672/core_strategy

- Land Contamination Risk Management (Environment Agency, 2023). Available at <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>
- British Standard (2019) Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings. BS 8485:2015+A1:2019.
- British Standards Institution (2017) Investigation of potentially contaminated sites – Code of practice. BS 10175:2011+A2:2017
- CIRIA (2007) Assessing risks posed by hazardous ground gases to buildings. CIRIA Report C665, London.
- CIRIA (2009). Unexploded Ordnance (UXO): A Guide for the Construction Industry. CIRIA Report 681, London.
- CIRIA (2014). Environmental good practice on site. CIRIA C692, London
- CIRIA (2014). Good practice on the testing and verification of protection systems for buildings against hazardous ground gases. CIRIA C735, London.

18. Summary of Residual Effects

Introduction

18.1. This chapter summarises the residual effects that are set out in each individual relevant chapter.

Townscape and Visual Impact

Residual Effects

18.2. As required by the EIA Regulations (2017), “moderate or above” are deemed to be significant and therefore relevant townscape and visual receptors are reported below.

Table 18.1: Summary of Residual Effects (TVIA)

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Construction Phase (scenario 5)				
Moderate/major Adverse	Viewpoint 6) Altrincham St, Hollaway Wall	Solid site hoardings and maintenance of tidy construction site. Retention of long distance view along Altrincham Street.	Hoarding and maintenance is responsibility of works contractor. Construction phasing will determine scope to maintain pedestrian connection along Altrincham Street. Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate/major Adverse, Temporary
Moderate/major Adverse	Viewpoint 8) Former bowling green	Solid site hoardings and maintenance of tidy construction site.	Hoarding and maintenance is responsibility of works contractor. Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate/major Adverse, Temporary
Moderate/major Adverse	Viewpoint 12) Former bowling green	Solid site hoardings and maintenance of tidy construction site.	Hoarding and maintenance is responsibility of works contractor. Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate/major Adverse, Temporary
Moderate/major Adverse	Viewpoint 13) Vimto Park	Controlled working hours to minimise	Details agreed with the LPA via CEMP required as planning condition	Moderate/major Adverse, Temporary

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
		visibility of moving cranes.	attached to consent and implemented accordingly.	
Moderate/major Adverse	Viewpoint 15) Altrincham Street, Renold Building	Controlled working hours to minimise visibility of moving cranes.	Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate/major Adverse, Temporary
Moderate Adverse	Building height	None	n/a	Moderate Adverse, Temporary
Moderate Adverse	Site character	Solid site hoardings and maintenance of tidy construction site.	Hoarding and maintenance is responsibility of works contractor. Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate Adverse, Temporary
Minor/Moderate Adverse	Viewpoint 3) London Road	Controlled working hours to minimise visibility of moving cranes.	Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Minor/Moderate Adverse, Temporary
Moderate Neutral	Viewpoint 10) Station platform 13/14	Controlled working hours to minimise visibility of moving cranes.	Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate Adverse, Temporary
Moderate Neutral	Viewpoint 11) Morton Labs	Controlled working hours to minimise visibility of moving cranes. Solid site hoardings and maintenance of tidy construction site.	Planning condition regarding working hours. Hoarding and maintenance is responsibility of works contractor. Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate Neutral, Temporary
Moderate Neutral	Viewpoint 18) Lockton Close	Controlled working hours to minimise visibility of moving cranes.	Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate Neutral, Temporary
Operational Phase (scenario 5)				
Moderate/major Neutral	Viewpoint 6) Altrincham St,	Architectural design and massing. Public	Development to be delivered in-line with approved plans. Planning conditions requiring details	Moderate/major Neutral

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
	Hollaway Wall	realm design and delivery.	of building and public realm materials to be submitted and approved by the LPA prior to works.	
Moderate/major Neutral	Viewpoint 13) Vimto Park			Moderate/major Neutral
Moderate/major Beneficial	Viewpoint 8) Former bowling green			Moderate/major Beneficial
Moderate/major Beneficial	Viewpoint 12) Former bowling green			Moderate/major Beneficial
Moderate/major Beneficial	Viewpoint 15) Altrincham Street, Renold Building			Moderate/major Beneficial
Moderate Adverse Minor/ Moderate – Moderate Neutral	Viewpoint 3) London Road			Minor/Moderate - Neutral
Moderate Neutral	Viewpoint 10) Station platform 13/14			Moderate Neutral
Moderate Neutral	Viewpoint 11) Morton Labs			Moderate Neutral
Moderate Neutral	Viewpoint 18) Lockton Close			Moderate Neutral
Moderate Neutral	Building height	None	n/a	Moderate Neutral
Moderate Beneficial	Site character	Partial retention of Hollaway Wall, activation of railway arches and materials palette complementary to heritage assets	Details agreed with the LPA via CEMP required as planning condition attached to consent and implemented accordingly.	Moderate Beneficial

Heritage

- 18.3. The residual impacts, i.e. the remaining impacts of the proposed development following implementation of proposed mitigation, are summarised in the Construction and Operational phases in Table 18.2 below.

Table 18.2: Summary of Residual Effects (Heritage)

Receptor	Sensitivity / significance value	Scale of Impact	Mitigation Measure	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Sculptural Wall (Hollaway Wall) (Grade II)	Medium	Major adverse	Planning conditions requiring CEMP and detailed method statements for works to listed assets addressing recommendations of heritage strategy to be submitted and agreed prior to works taking place. To be implemented and adhered to thereafter.	Moderate adverse (temporary)
Manchester South Junction and Altrincham Railway Viaduct (Grade II)	Medium	Minor adverse		Minor adverse (temporary)
Institute of Science and Technology (University of Manchester) (Grade II)	Medium	Negligible adverse		Negligible adverse (temporary)
Train Shed and Undercroft at Manchester Piccadilly Station (Grade II)	Medium	Negligible adverse		Negligible adverse (temporary)
Former Goods Offices to Manchester Piccadilly Station (Grade II)	Medium	Negligible adverse		Negligible adverse (temporary)
Police and Fire Station (Grade II*)	High	Minor adverse		Minor adverse (temporary)
Star and Garter Public House (Grade II)	Medium	Negligible adverse		Negligible adverse (temporary)
Ardwick Drill Hall (Grade II)	Medium	Negligible adverse		Negligible adverse (temporary)
Whitworth Street Conservation Area	High	Minor adverse		Minor adverse (temporary)
Barnes Wallis and Wright Robinson	Low	Major adverse	n/a	Moderate adverse (permanent)
Butterfly Stairs	Low	Major adverse	n/a	Moderate adverse (permanent)
Morton Laboratory	Low	Major adverse	n/a	Moderate adverse (permanent)
Manchester Meeting Place (Staff House)	Low	Major adverse	n/a	Moderate adverse (permanent)
Archimedes statue	Low	Moderate adverse	Planning conditions requiring CEMP and detailed method statements for works to listed assets addressing	Minor adverse (temporary)
Havelock mill structure	Low	Moderate adverse		Minor adverse (temporary)
Generations of Possibilities (Magnet)	Low	Moderate adverse		Minor adverse (temporary)

Receptor	Sensitivity / significance value	Scale of Impact	Mitigation Measure	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Renold Building (setting)	Low	Moderate adverse	recommendations of heritage strategy to be submitted and agreed prior to works taking place. To be implemented and adhered to thereafter.	Minor-to-moderate adverse temporary)
The Mill (setting)	Low	Moderate (neutral)		Minor (neutral)
Pariser	Low	Moderate adverse		Minor-to-moderate adverse (temporary)
MSS Tower	Low	Moderate adverse		Minor-to-moderate adverse (temporary)
Operational Phase				
Sculptural Wall (Hollaway Wall) (Grade II)	Medium	Moderate adverse	Embedded design quality and optioneering process. Appropriate protection measures for the Hollaway Wall.	Moderate adverse (permanent)
Manchester South Junction and Altrincham Railway Viaduct (Grade II)	Medium	Minor beneficial	Embedded design quality	Minor beneficial (permanent)
Institute of Science and Technology (University of Manchester) (Grade II)	Medium	Negligible (neutral)	Embedded design quality	Neutral (permanent)
Train Shed and Undercroft at Manchester Piccadilly Station (Grade II)	Medium	Minor (neutral)	Embedded design quality	Neutral (permanent)
Former Goods Offices to Manchester Piccadilly Station (Grade II)	Medium	Minor (neutral)	Embedded design quality	Neutral (permanent)
Police and Fire Station (Grade II*)	High	Minor adverse	Embedded design quality	Minor adverse (permanent)
Star and Garter Public House (Grade II)	Medium	Negligible (neutral)	Embedded design quality	Neutral
Ardwick Drill Hall (Grade II)	Medium	Negligible adverse	Embedded design quality	Negligible adverse
Whitworth Street Conservation Area	High	Negligible (neutral)	Embedded design quality	Neutral
Archimedes statue	Low	Minor beneficial	Appropriate restoration / cleaning measures	Minor beneficial (permanent)
Havelock mill structure	Low	Minor beneficial	Appropriate restoration / cleaning measures	Minor beneficial (permanent)
Generations of Possibilities (Magnet)	Low	Minor beneficial	Appropriate restoration / cleaning measures	Minor beneficial (permanent)
UMIST Cube	Low	Minor beneficial	Appropriate restoration / cleaning measures	Minor beneficial (permanent)
Renold Building	Low	Minor-Moderate adverse	Embedded design quality	Minor adverse (permanent)
The Mill	Low	Minor-Moderate (neutral)	Embedded design quality	Minor (neutral)

Receptor	Sensitivity / significance value	Scale of Impact	Mitigation Measure	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Pariser	Low	Minor-Moderate adverse	Embedded design quality	Minor adverse (permanent)
MSS Tower	Low	Minor-Moderate adverse	Embedded design quality	Minor adverse (permanent)

Air Quality

Construction Phase

18.4. The conclusions on residual effects for construction phase are presented in Table 18.3.

Table 18.3: Summary of Construction Phase Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Effects of emissions arising from dust generated during the construction of Proposed Development on human health	Surrounding sensitive uses, e.g. residential properties and schools (high)	Recommended mitigation measures has been outlined within Appendix 8.2.	Mitigation measures typically implemented through a Construction environmental Management Plan (CEMP) submitted and approved by the LPA as a condition of planning permission before construction works commence.	Negligible
Effects of emissions arising from traffic generated by the construction of Proposed Development on human health	Surrounding sensitive uses, e.g. residential properties and schools (high)	No mitigation is required	N/A	Negligible

Operational Phase

18.5. The conclusions on residual effects for operational phase are presented in Table 18.4.

Table 18.4: Summary of Operational Phase Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase				
Effects of emissions arising from traffic generated by the	Surrounding sensitive uses, e.g. residential	No mitigation is required	N/A	Negligible

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
operation of Proposed Development on human health	properties and schools (high)			
Effect of air pollution on new exposure introduced by the Proposed Development	Future sensitive uses on-site, including residential properties (high)	No mitigation is required	N/A	Negligible

Climate Change

Construction Phase

Table 18.8 - Assessment of residual effect significance during the construction stage

Receptor	Compliance with existing and emerging policy	Effect significance
Global atmosphere	<p>The Proposed Development has been considered in relation to local, regional, and national policy. The key construction phase mitigation measures which are relevant to this GHG emissions assessment include:</p> <ul style="list-style-type: none"> • The re-use of materials on site where suitable; • Reduction in demolition waste through re-use and recycling of materials; • The implantation of a Sustainable Procurement Plan; • A Whole Life-cycle Carbon Assessment to be conducted throughout the design stages; • The Contractor will minimise construction water use on site; and • Materials with high recycled content will be chosen. <p>As set out in Table 6.9, it is considered that the Proposed Development is consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. Therefore, in line with the IEMA GHG Guidance, this is considered to be a minor adverse effect. In line with the guidance, this effect is considered to be not significant.</p>	Minor adverse, direct, long term and permanent.

Operational Phase

Table 18.9 - Assessment of residual effect significance during the operational stage

Receptor	Compliance with existing and emerging policy	Effect significance
Global atmosphere	<p>The Proposed Development has been considered in relation to local, regional, and national policy. The key operational phase mitigation measures which are relevant to this GHG emissions assessment include:</p> <ul style="list-style-type: none"> • An all-electric approach with no reliance on fossil fuels; • The fabric performance will ensure that heating and cooling demands are minimised; • PV solar panels will be maximised; • Water demand will be minimised; and • The Proposed Development will be designed for disassembly. <p>As set out in Table 6.9 Error! Reference source not found., it is considered that the Proposed Development is consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. Therefore, in line with the IEMA GHG Guidance, this is considered to be a minor adverse effect. In line with the guidance, this effect is considered to be not significant.</p>	Minor adverse, direct, long term and permanent.

Wind

Construction Phase

- 18.6. All residual construction effects would be negligible (not significant).

Operational Phase

Scenario 5a: Baseline + Phase A + Phase B + Phase C + Mitigation

- 18.7. An additional scenario consisting of Phases A, B and C (i.e. the full Proposed Development), within existing surrounds, plus the proposed landscaping and mitigation was tested in CFD. The results for Scenario 5a are presented graphically within figures 10.29 - 10.34:
- Wind safety at ground level for Scenario 5a is shown in Figure 10.29
 - Winter Comfort at ground level for Scenario 5a is shown in Figure 10.30
 - Summer Comfort at ground level for Scenario 5a is shown in Figure 10.31
 - Wind safety at terrace and balcony level for Scenario 5a is shown in Figure 10.32

- Winter Comfort at terrace and balcony level for Scenario 5a is shown in Figure 10.33
- Summer Comfort at terrace and balcony level for Scenario 5a is shown in Figure 10.34

- 18.8. The impact of the proposed mitigation can be seen from comparison of the results for Scenario 5 with those for Scenario 5a. Any receptors which were suitable for the intended use, or consistent with the baseline, for Scenario 5 would remain so for Scenario 5a. The conditions for those receptors which were subject to adverse effects in Scenario 5 are set out below.
- 18.9. The exceedances of the S15 (distress) criteria which had been introduced in Scenario 5 at the southeast corner of the Site (marked 3 on Figure 10.29) and within the roadway of London Road (marked 4) have been eradicated. There is no longer a wind safety risk in these locations and any residual effects would be negligible (not significant).
- 18.10. The exceedances of the S15 (distress) criteria which had been introduced in Scenario 5 at the northeast corner balconies at levels 13 to 17 of Building C2 have been eradicated. There is no longer a wind safety risk in these locations and any residual effects would be negligible (not significant).
- 18.11. An additional scenario consisting of Phases A, B and C (i.e. the full Proposed Development), within cumulative surrounds, plus the proposed landscaping and mitigation (Scenario 6a) was also tested in CFD. The results for this scenario are shown in Figures 10.35 to 10.40, which do not show any material differences between the conditions for Scenario 5a and Scenario 6a, so the residual effects for the Proposed Development in Cumulative Surrounds would be consistent with those for the Proposed Development in Existing Surrounds.

Table 18.10: Residual Wind Effects (Operational Phase)

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Negligible effect	All	None	N/A	Negligible temporary effects (not significant)
Operational Phase				
Major Beneficial effect on wind safety risk due to strong winds	Echo Street thoroughfare to north of Site	None	N/A	Major Beneficial permanent effects on wind safety risk due to strong winds (not significant)
Major Adverse effect on wind safety risk due to strong winds	At the southeast corner of the Site and in London Road to the east of the Site	Proposed Landscaping consisting of deciduous trees ranging between 3m, 4m and 5m across the site, and 8 evergreen trees ranging between 3m, 4m and 5m immediately east of the southeast corner of Building C2.	Identified mitigation to be secured via planning condition.	Negligible (not significant) on finalisation of additional mitigation measures.
Major Adverse effect on wind safety risk due to	Proposed Balconies at levels 13 to 17 of Building C2	1200mm tall, glazed screens behind the balustrade on the eastern elevation of the level 13 to 17 balconies on Building C2.	Identified mitigation to be secured via planning condition.	Negligible (not significant) on finalisation of additional mitigation measures.

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
strong winds				

Solar Glare

Construction Phase

- 18.12. The likely effects in relation to solar glare for the surrounding road users and train drivers would vary throughout the demolition and construction works, starting from installation of the first glazed façade panels and gradually increasing as all reflective cladding is installed. Once the glazed façade elements have been installed, the potential solar glare effects would be similar to those once the Proposed Development is complete and operational therefore the overall effect in terms of solar glare would range from being temporary negligible effects during demolition, then gradually changing to post mitigation residual effects of negligible to permanent, minor adverse and not significant, once the Proposed Development is complete.

Operational Phase

- 18.13. The likely significant effects of solar glare from the Proposed Development described above are considered a worst-case scenario. All solar glare effects are considered moderate to high sensitivity depending on the whether it is a controlled junction or not, and the effects are permanent and long term.

Table 18.11 - Summary of Residual Effects for Solar Glare

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase				
Negligible or Minor adverse and not significant effects on Solar Glare	Road users at nearby road junctions		N/A	Negligible or Minor adverse and not significant effects on Solar Glare
	Train Drivers on nearby Westbound tracks			
Minor to Moderate adverse and significant effects on Solar Glare	Train Drivers on nearby Eastbound tracks	Para 11.63: Proposed Glazing VLR Specification for western elevations of C1 and C2 may need to be restricted subject to further detailed testing post-planning.	Mitigation to be designed and developed in detail, secured via planning condition.	Minor adverse and not significant effects on Solar Glare

Human Health

Construction Phase

- 18.14. Residual effects during the construction phase after implementing the mitigation measures are provided in table 18.12.

Table 18.12: Residual effects during operation

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Construction dust.	Local residents	Follow the recommendations outlined in Appendix 8.2 of the Air Quality ES Chapter.	Implementation as outlined in Appendix 8.2 of the Air Quality ES Chapter. Mitigation will be secured through a CEMP. A Construction Logistics Plan will further enhance the mitigation against construction dust. To be submitted and approved by the LPA as condition of planning permission prior to works taking place.	Negligible
Construction noise	Local residents	Follow recommendations outlined in the Noise and Vibration ES Chapter: Implementing an approved CEMP and BPM. Where construction is predicted to have a significant adverse effect, implementation of monitoring should be considered.	Adherence to BPM guidance and agreed methodologies in CEMP. Mitigation will be secured through a CEMP to be submitted and approved by the LPA as condition of planning permission prior to works taking place.	Local, Temporary, Moderate or Minor Adverse

Operational Phase

- 18.15. No mitigation has been recommended for the operational phase in relation to human health. Residual effects during the operational phase are provided in Table 18.13.

Table 18.13: Residual effects during operation

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase				
No negative impacts have been identified for human health.	Local residents	n/a	n/a	n/a

Socio-Economic

Construction Phase

Table 18.14: Residual effects during Construction

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Change in temporary employment during the construction stage	Individuals seeking construction employment	N/A	N/A	Scenarios 2 and 5 – Temporary, short term and negligible (not significant) (Scenario 2 and 5) Scenario 6 – Direct, short term, Moderate Beneficial (significant)

Operational Phase

Table 18.15: Residual effects during operation

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase				
Change in direct operational employment	Individuals seeking employment	N/A	N/A	Scenario 2 – permanent, negligible (not significant) at both the LIA and district levels. Scenario 5 – permanent, minor beneficial (not significant) at the LIA level; Permanent, negligible (not significant) at the district level. Scenario 6 – permanent, direct, long term, Moderate Beneficial (significant) at LIA and district levels.
Change in economic performance (GVA)	Local economy	N/A	N/A	Scenario 2 – permanent, negligible (not significant) at both the LIA and district levels. Scenario 5 – permanent, minor beneficial (not significant) at the LIA level; Permanent, negligible (not significant) at the district level. Scenario 6 – permanent, direct, long term,

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
				Moderate Beneficial (significant) at LIA and district levels.
Change in annual fiscal contributions in the form of business rates contributions	Contribution to local authority fiscal income	N/A	N/A	Scenario 2 – permanent, negligible (not significant) Scenario 5 – permanent, minor beneficial (not significant) Scenario 6 – permanent, direct, long term, Moderate Beneficial (significant)
Change in employment and skills opportunities and open space provision	Deprivation levels	N/A	N/A	Scenario 2 – permanent, minor beneficial (not significant) Scenario 5 – permanent, minor beneficial (not significant) Scenario 6 – permanent, direct, long term, Moderate Beneficial (significant) at local and district levels.

Traffic and Transport

Construction Phase

- 18.16. No significant effects have been identified on Traffic and Transport in the Demolition and Construction Stage of the Proposed Development, nor when committed developments or the wider IDM masterplan are taken into consideration.

Table 18.16: Construction Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Negligible	Severance of Communities, Non-motorised User Delay, Non-motorised User Amenity, Fear and Intimidation on and by Road Users, Road User and Pedestrian Safety	Mitigation measures captured within CEMP to be agreed with LPA and Highways prior to works taking place.	CEMP to be submitted and approved by the LPA as a condition of planning permission, prior to works taking place.	Negligible, Not Significant

Operational Phase

- 18.17. No significant effects have been identified on Traffic and Transport in the Operational Stage of the Proposed Development, nor when committed developments or the wider IDM masterplan are taken into consideration.

Table 18.17: Operational Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase				
Negligible	Severance of Communities, Non-motorised User Delay, Non-motorised User Amenity, Fear and Intimidation on and by Road Users, Road User and Pedestrian Safety	N/A	N/A	Negligible, Not Significant

Daylight, Sunlight and Overshadowing

Operational Phase

Table 18.18: Summary of Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Scenario 2: Baseline + Phase A + Phase C - Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)	Scenario 5: Baseline + Phase A + Phase B + Phase C - Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase					
Reduction in daylight	Fletcher House	None	n/a	Negligible – Permanent	Negligible – Permanent
	8 Fairfield Street	None	n/a	Negligible – Permanent	Negligible – Permanent
	Lambert Hall	None	n/a	Negligible – Permanent	Negligible – Permanent
	Fairfield House	None	n/a	Negligible – Permanent	Minor Adverse – Permanent (not significant)
	Bulls Head	None	n/a	Negligible – Permanent	Negligible – Permanent
	IQ Echo Street	None	n/a	Minor Adverse – Permanent (not significant)	Minor Adverse – Permanent (not significant)

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Scenario 2: Baseline + Phase A + Phase C - Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)	Scenario 5: Baseline + Phase A + Phase B + Phase C - Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Reduction in sunlight	Fletcher House	None	n/a	Negligible – Permanent	Negligible – Permanent
	8 Fairfield Street	None	n/a	Negligible – Permanent	Negligible – Permanent
	Lambert Hall	None	n/a	Negligible – Permanent	Negligible – Permanent
	Fairfield House	None	n/a	Negligible – Permanent	Minor Adverse – Permanent (not significant)
	Bulls Head	None	n/a	Negligible – Permanent	Negligible – Permanent
	IQ Echo Street	None	n/a	Negligible – Permanent	Negligible – Permanent
Increase in shadow	Vimto Park	None	n/a	Negligible – Permanent	Negligible – Permanent
	IQ Echo Street Courtyards (1&2)	None	n/a	Minor Adverse – Permanent (not significant)	Minor Adverse – Permanent (not significant)

Noise and Vibration

Construction Phase

- 18.18. Residual effects during the construction phase after implementing the mitigation measures are provided below in Table 18.19

Table 18.19: Construction Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Construction Noise & Vibration	NSR1, NSR3	CEMP & BPM	Adherence to BPM guidance and agreed methodologies in CEMP secured by suitably worded condition.	Local, Temporary, Moderate or Minor Adverse (Significant)
Construction Noise & Vibration	NSR10, NSR11	CEMP & BPM	Adherence to BPM guidance and agreed methodologies in CEMP secured by suitably worded condition.	Local, Temporary, Minor Adverse (Not Significant)

Operational Phase

Table 18.20: Operational Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase				
Noise from Building Services	NSR1, NSR3	None	Not Applicable	Local, Permanent, Moderate or Minor Adverse (Significant)
Noise from Commercial Operational Activities	NSR1, NSR3	None	Not Applicable	Local, Permanent, Moderate or Minor Adverse (Significant)
Noise from Temporary Events	NSR1, NSR3, NSR5	NMP	Adherence to NMP limits and guidance to be agreed with MCC on a per-event basis. Principle can be secured by suitably worded condition.	Local, Temporary, Moderate or Minor Adverse (Significant)

Ground Conditions

Construction

- 18.19. Table 1 presents the residual effects during the construction phase after effective implementation of the mitigation measures described above. It is noted that no significant post mitigation residual adverse effects have been identified.

Table 18.21. Operational Phase - Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Demolition and Construction Phase				
Potential for exposure to dust emissions during construction	Off-site occupants/visitors	Measures including stockpile management, damping down of soils, sheeting of vehicles transporting contaminated Made Ground soils off site (if required), wheel washes	To be defined within CEMP, secured via planning condition.	Negligible (Temporary)
Potential for increased infiltration / mobilisation and migration of contamination	Controlled waters – Secondary Undifferentiated aquifers (Alluvium and Glacial Till)	Appropriate management of stockpiles, discharge/disposal of water in excavations and storage of hazardous substances. Implementation of	To be defined within CEMP and piling works risk assessment, secured via planning condition.	Negligible to minor adverse (Temporary)

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
		appropriate piling methodologies.		
Potential for increased infiltration / mobilisation and migration of contamination	Controlled waters – Principal aquifer (Chester Formation)	Appropriate management of stockpiles, discharge/disposal of water in excavations and storage of hazardous substances. Implementation of appropriate piling methodologies.	To be defined within CEMP and piling works risk assessment, secured via planning condition.	Negligible to minor adverse (Temporary)
Potential for increased infiltration / mobilisation and migration of contamination	Controlled waters – surface water (River Medlock, culverted Shooters Brook, proposed new river channel)	Appropriate management of stockpiles, discharge/disposal of water in excavations and storage of hazardous substances. Implementation of appropriate piling methodologies.	To be defined within CEMP and piling works risk assessment, secured via planning condition.	Negligible to minor adverse (Temporary)
Potential exposure to phytotoxic contaminants	Ecological receptors - flora	Growth media to be constructed in areas of proposed soft landscaping.	To be defined within the Remediation Strategy, secured via planning condition.	Minor adverse (Temporary)
Potential for exposure to contaminated soils / dusts and contaminated shallow perched water	Construction workers	Implementation of appropriate health and safety measures include hygiene and PPE.	The be defined in Contractor's Construction Phase Health and Safety Plan	Negligible to minor adverse (Temporary)
Potential for explosion from contact with UXO	Construction workers	UXO risk mitigation	To be defined in UXO Risk Mitigation Plan, secured via planning condition.	Negligible to minor adverse (Temporary)

Operational Phase

- 18.20. Table 18.22 presents the residual effects resulting from the Proposed Development after effective implementation of the mitigation measures described above. No significant adverse residual effects have been identified resulting from the Proposed Development. It is noted that during the development remediation is to be undertaken of identified hotspots of contamination within the Made Ground and groundwater at BH1005, which will result in a moderate beneficial effect to Controlled Waters (Principal aquifer).

Table 18.22. Operational Phase - Residual Effects

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Operational Phase				
Contact with underlying contaminated materials	Future site users	Soil capping layers to be constructed in areas of soft landscaping	To be defined within the Remediation Strategy, secured by planning condition.	Negligible (Permanent)
Potential explosion/asphyxiation from hazardous ground gases	Future site users	Incorporation of ground gas protection measures into buildings	To be defined within the Remediation Strategy and detailed design, secured by planning condition.	Negligible (Permanent)
Permeation of water supply pipes	Future site users	Appropriate selection of water supply pipes	To be defined within the Remediation Strategy, secured and planning condition and agreed with water supply company.	Negligible (Permanent)
Leaching and vertical/lateral migration of contamination from Made Ground	Controlled waters – Secondary Undifferentiated aquifers (Alluvium and Glacial Till)	Remediation of identified hotspots of contamination. Implementation of appropriate piling methodology.	To be defined within the Remediation Strategy and piling works risk assessment, secured by planning condition.	Minor beneficial (Permanent)
Leaching and vertical/lateral migration of contamination from Made Ground	Controlled waters: Principal Aquifer	Remediation of identified hotspots of contamination and further investigation/remediation at BH1005. Implementation of appropriate piling methodology.	To be defined within the Remediation Strategy and piling works risk assessment, secured by planning condition.	Moderate beneficial (Permanent)
Leaching and vertical/lateral migration of contamination from Made Ground	Controlled waters – surface water (River Medlock, culverted Shooters Brook, proposed new river channel	Remediation of identified hotspots of contamination and further investigation/remediation at BH1005. Implementation of appropriate piling methodology.	To be defined within the Remediation Strategy and piling works risk assessment, secured by planning condition.	Minor beneficial (Permanent)
Potential exposure to phytotoxic contaminants	Ecological receptors - flora	Growth media to be constructed in areas of proposed soft landscaping.	To be defined within the Remediation Strategy, secured by planning permission.	Minor beneficial (Permanent)
Aggressive attack on below ground concrete	Built environment	Appropriate concrete design	Concrete to be designed in accordance with findings of site investigation report.	Negligible (Permanent)

Likely Significant Effect	Receptor	Mitigation Measure	Means of Mitigation Implementation	Post Mitigation Residual Effect – Significance and Duration (Temporary/Permanent)
Permeation of water supply pipes	Built environment	Appropriate selection of water supply pipe material	To be defined within the Remediation Strategy, secured by planning condition and agreed with water supply company.	Negligible (Permanent)

Planning Conditions or Obligations

- 18.21. The above includes reference to a mitigation measure that will be required to be secured on any subsequent planning approval. To further assist, the below provides a summary of potential mechanisms to secure the proposed mitigation measures identified as part of the ES.
- 18.22. Where inherent mitigation is included in the design of the Proposed Development, and as such will be included as the proposals, it is anticipated that suitably worded planning conditions requiring the Proposed Development to be constructed in accordance with the approved plans or details would be appropriate.
- 18.23. A suitably worded planning condition could be appropriate to secure the submission of a Construction Management Plan(s) for the construction phase of the Proposed Development in line with Chapters 2, 5, 6, 7, 8, 12, 14, 16 and 17 of the ES.
- 18.24. It has been anticipated that suitably worded planning conditions or obligations may be required where necessary in relation to the following measures:
- Chapter 6 (Built Heritage) – Detailed method statements to works affecting the listed assets to ensure that works are carried out in an appropriate manner that protects the asset’s significance. The detailed method statements include the demolition and construction phase whereby the listed assets will need to be protected. A management plan to manage ongoing protection/ cleaning works to ensure the fabric and character of the Hollaway Wall is preserved.
 - Chapter 7 (TVIA) - Development to be delivered in-line with approved plans. Planning conditions requiring details of building and public realm materials to be submitted and approved by the LPA prior to works commencing.
 - Chapter 8 (Air Quality) – Implementation of a Dust Management Plan (see table 8.13 within Appendix 8.2).
 - Chapter 10 (Wind) Table 10.6 – Validation of wind mitigation measures through further wind testing once detailed design of public realm and building details, including balustrades to the balconies on Building C2, developed to demonstrate acceptable wind environment delivered throughout the development.
 - Chapter 11 (Solar Glare) Table 11.7 - Glazing VLR Specification for western elevations of C1 and C2
 - Chapter 13 (Socio Economic) – Paragraph 13.65 Local Labour Agreement
 - Chapter 14 (Traffic and Transport) – Paragraph 14.12 Travel Plan
 - Chapter 16 (Noise and Vibration) – Paragraph 16.179 Glazing Specification
 - Chapter 16 (Noise and Vibration) – Paragraph 16.200 Implementation of noise and vibration monitoring.
 - Chapter 16 (Noise and Vibration) – Paragraph 16.202 A Noise Management Plan for each event.
 - Chapter 16 (Noise and Vibration) – Alongside the CEMP, to use Best Practicable Means (BPM).

- Chapter 17 (Ground Conditions) – Paragraph 17.9 Piling Works Risk Assessment (PWRA).
- Chapter 17 (Ground Conditions) – Table 17.4 Submission of a Remediation Strategy.
- Chapter 17 (Ground Conditions) – Table 17.4 Submission of a Contractor’s Construction Phase Health and Safety Plan.
- Chapter 17 (Ground Conditions) – Table 17.4 Submission of a UXO Risk Management Plan.

18.25. Mitigation identified in Chapter 12 (Human Health) are identified above.

19. Type 1 Cumulative Effects

Introduction

- 19.1. This Chapter gives consideration to 'Type 1' cumulative effects. The assessment is informed by the results of the technical assessments as set out in Chapters 6 to 17 inclusive of the ES.
- 19.2. Type 1 cumulative effects are also known as 'inter-project' effects, which are the combined effects arising from the Proposed Development upon a set of defined sensitive receptors.
- 19.3. Type 2 cumulative effects are considered within the ES technical chapters. The technical chapters also had regard to the potential for Type 1 cumulative effects, however for robustness the results of a standalone assessment of these are provided below.

Legislation Policy and Guidance

Legislation

- 19.4. There is no legislation outlining how cumulative effects should be assessed or determined as significant. However, there is a requirement in Part 1, Schedule 4 of the EIA Regulations to consider cumulative effects. Cumulative is not defined in the EIA Directive or Regulations however a dictionary definition is 'increasing by one addition after another'.
- 19.5. The EIA Regulations require 'a description of the likely significant effects', including cumulative effects.
- 19.6. In the context of this assessment, 'cumulative effects' refers to the interactions between different likely residual effects resulting from the Proposed Development (Type 1). Both positive and negative effects are considered across the construction and operational phases.

Policy

- 19.7. As this Chapter considers the cumulative effects of the technical areas within the ES, all relevant policy has already been reviewed within the individual technical chapters.

Guidance

- 19.8. A number of guidance documents which relate to assessing cumulative effects have been used to inform the assessment and include:
- European Commission (EC) Environment DG (May 1999), 'Study on the Assessment of Indirect and Cumulative Impacts as well as Impact Interaction', Hyder Consulting; and
 - Institute of Environmental Management and Assessment (1992), Guidelines for the Environmental Assessment of Road Traffic.
- 19.9. The EC guidelines 'are not intended to be formal or prescriptive but are designed to assist EIA practitioners in developing an approach which is appropriate to a project'.
- 19.10. Paragraph 24 of the National Planning Practice Guidance (NPPG) (Reference ID: 4-024-20170728) outlines the consideration to be given to cumulative effects in the context of EIA:

“Each application (or request for a screening opinion) should be considered on its own merits. There are occasions, however, when other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a Proposed Development. The local planning authorities should always have regard to the possible cumulative effects arising from any existing or approved development.”

Assessment Methodology and Significance Criteria

Methodology

- 19.11. This assessment is primarily concerned with where there is a likelihood of significant Type 1 cumulative effects occurring, in accordance with EIA practice and the NPPG guidance.
- 19.12. The assessment is based on experience and professional judgement, drawing upon relevant guidance set out above and the residual environmental effects identified within the results of the EIA technical assessments. The assessment has been undertaken by suitably qualified and experienced EIA practitioners.
- 19.13. The assessment has primarily focused on sensitive receptors identified within close proximity to the Site (e.g. local residents and businesses located in close proximity to the Site), likely cumulative effects, and their capacity to accommodate changes that will occur as a result of the combined residual environmental effects.
- 19.14. Relevant guidance has been reviewed, and an approach has been developed which uses the residual environmental effects identified within the ES. An exercise which tabulates the residual effects against receptors or receptor groups has then been carried out in order to identify the potential for Type 1 cumulative effects.
- 19.15. Negligible or neutral residual effects have been excluded from the assessment as, by their nature, they are considered to be imperceptible. Therefore, only minor, moderate or major effects have been given consideration during the assessment.
- 19.16. For the purposes of the assessment, receptor groups have been identified as those surrounding the Site and those identified within the individual technical assessments.

Significance Criteria

- 19.17. The following terms have been used to define the significance of the effects identified:
- Major effect: where the Proposed Development could be expected to have a very significant effect (either positive or negative) cumulatively;
 - Moderate effect: where the Proposed Development could be expected to have a noticeable effect (either positive or negative) cumulatively;
 - Minor effect: where the Proposed Development could be expected to result in a small, barely noticeable effect (either positive or negative) cumulatively; and
 - Negligible: where no discernible effect is expected as a result of the Proposed Development cumulatively.
- 19.18. The significance level attributed to each effect has been assessed based on the magnitude of change due to the combination of residual effects and the sensitivity of the affected receptor/receiving environment to change, as outlined in Chapter 2 of the ES. Magnitude of change is assessed on a scale of major, moderate, minor and negligible and the sensitivity of the affected receptor/receiving environment is assessed on a scale of high, medium, low and negligible.

Limitations and Assumptions

- 19.19. Due to the reliance on qualitative data and subjective opinion, there are limitations related to the range and depth in which the cumulative effects have been investigated. It must be realised that analysing the cumulative effects of developments is often speculative and cannot be predicted as clearly as individual effects such as the effects upon traffic of a development, which relies heavily upon quantitative data to inform the assessment.
- 19.20. As a result, a number of assumptions have been made throughout in terms of the outcome of the accumulation of effects and based upon professional judgement. This section and the assessment process of identifying the likely significant Type 1 cumulative effects have, however, provided a reasoned consideration of and insight into the potentially significant Type 1 cumulative effects of the Proposed Development.

Identification of Likely Significant Type 1 Cumulative Effects

Construction Phase

- 19.21. Based on the methodology detailed above, Table 19.1 presents the results of the review of the potential for interactions of individual effects during the construction phase of development. The potential effect interactions are then discussed further.

Table 19.1; Type 1 Cumulative Effects Construction Phase

Sensitive Receptor Group	Construction Phase Residual Effects	Likely Significant Cumulative Effects
Humans	<p><u>Noise and vibration:</u> Construction noise for existing local residents/users of the site and surroundings .</p> <p><u>Socio-economic:</u> positive change in employment during the construction stage to increase expendable income. Moderate beneficial, temporary.</p> <p><u>Ground Conditions:</u> potential for increased infiltration / mobilisation and migrations of contamination for controlled waters, namely: Undifferentiated aquifers (Alluvium and Glacial Till), Principal aquifer (Chester Formation), surface water (River Medlock, culverted Shooters Brook, proposed new river channel. Negligible to minor adverse, temporary.</p> <p><u>Ground conditions:</u> potential for negligible to minor effect on construction workers with regard to potential exposure to contaminated soils / dusts and contaminated shallow perched water and Potential for explosion from contact with UXO. Negligible to minor adverse, temporary.</p>	<p>Negligible to Minor adverse (Not significant)</p> <p>Temporary and Short-Term</p>

Sensitive Receptor Group	Construction Phase Residual Effects	Likely Significant Cumulative Effects
Ecology	<u>Ground Conditions</u> : potential exposure to phytotoxic contaminants which may impact flora. Minor adverse, temporary.	No likely significant Type 1 cumulative effects
Views, Visual Setting Townscape	<u>TVIA</u> : Temporary adverse effects on visual setting during the construction period from identified viewpoints. The effects range from neutral to moderate-major adverse, temporary.	No likely significant Type 1 cumulative effects
Historic Environment	<u>Built Heritage</u> : physical impact on heritage asset including Hollaway Wall and the Railway Viaduct, and demolition of Non-Designated Heritage Assets. Setting impact on remaining heritage assets on Site. Effects range from minor to moderate adverse both temporary and permanent.	No likely significant Type 1 cumulative effects
The Climate	<u>Climate change</u> : impact on the Global Atmosphere.	No likely significant Type 1 cumulative effects

19.22. Table 19.1 shows that there is unlikely to be in-combination operational phase Type 1 cumulative effects to arise. This is due to the extensive technical assessments throughout the design process and the identified mitigation in-built into the design.

Operational Phase

19.23. Based on the methodology detailed above, Table 19.2 presents the results of the review of the potential for interactions of individual effects during the operational phase of development. The potential effect interactions are then discussed further.

Table 19.2: Type 1 Cumulative Effects – Operational Phase

Sensitive Receptor Group	Operational Phase Residual Effects	Likely Significant Cumulative Effects
Humans	<p><u>Socio-Economic</u>: Beneficial effects on the change in employment and skills and open space provision. Moderate beneficial, permanent.</p> <p><u>Daylight, Sunlight and overshadowing</u>: Adverse reduction in daylight at 2 local receptors - Fairfield House and IQ Echo Street. With 2 instances of a reduction in daylight, 1 reduction in sunlight and an increase in shadow on courtyards. Minor adverse impact, permanent.</p>	Minor adverse

Sensitive Receptor Group	Operational Phase Residual Effects	Likely Significant Cumulative Effects
	<p><u>Solar Glare:</u> Negligible to Minor adverse effects on Solar Glare for road users at nearby road junctions and Train/Tram Drivers on nearby tracks both east and west bound.</p> <p><u>Ground Conditions:</u> The remediation of contamination will lead to Minor to Moderate beneficial effects on leaching and vertical/lateral migration of contamination from Made Ground with regard to controlled waters, namely: Undifferentiated aquifers (Alluvium and Glacial Till), Principal aquifer, surface water (River Medlock, culverted Shooters Brook, proposed new river channel).</p> <p><u>Noise:</u> Minor to moderate adverse impacts from the building services and commercial operational activities.</p>	
Ecology	<u>Ground Conditions:</u> new subsoil and topsoil will have a beneficial impact on plant growth. Minor beneficial.	No likely significant Type 1 cumulative effects
The Economy	<u>Socio-economic:</u> Positive change in direct operational employment and change in economic performance (GVA and spend). Change in annual fiscal contributions in the form of business rates and council tax contributions. Moderate beneficial, permanent.	No likely significant Type 1 cumulative effects
The Climate	<u>Climate Change:</u> Effect on the Global Atmosphere.	No likely significant Type 1 cumulative effects
Historic Environment	<u>Built Heritage:</u> Minor to moderate impact on heritage assets including Hollaway Wall, Railway Viaduct and Non-Designated Heritage Assets located on Site. Setting impact on remaining heritage assets located on Site.	No likely significant Type 1 cumulative effects
Views, Visual Setting Townscape	<u>TVIA:</u> Neutral to moderate-major beneficial effects on visual setting from identified viewpoints.	No likely significant Type 1 cumulative effects

Sensitive Receptor Group	Operational Phase Residual Effects	Likely Significant Cumulative Effects

- 19.24. Table 19.2 shows that there is unlikely to be in-combination operational phase Type 1 cumulative effects to arise. This is due to the extensive technical assessments throughout the design process and the identified mitigation in-built into the design.

Mitigation Measures

- 19.25. Where relevant, the individual residual effects which contribute to the potential cumulation have been considered within the ES and mitigated where necessary and feasible.
- 19.26. No mitigation is proposed for the identified Type 1 cumulative effects.



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