Hotspur Press, Manchester

Environmental Statement Contents Page

December 2023

Turley

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1. Introduction

Overview

1.1 This Environmental Statement (ES) is part of a suite of documents that supports the detailed planning application (hereafter referred to as the 'Application') submitted by Manner (hereafter referred to as the 'Applicant') for a purpose built student accommodation (PBSA) development (hereafter referred to as the 'Proposed Scheme'). The Proposed Scheme is for up to 578 purpose built student accommodation units (Use Class Sui Generis) and commercial / community use (Use Class E / F1 / F2).

1.2 The Proposed Scheme will be delivered on an approximately 0.3 hectare (ha) site bound by Cambridge Street / Gloucester Street to the east, to the north by a railway viaduct (carrying the Manchester Deansgate to Manchester Oxford Road railway line) and to the west and south by the River Medlock and the Home Complex (hereafter referred to as the 'Site'). The Site is currently occupied by the former Hotspur Press complex.

1.3 A previous application[a] was submitted on the Site in 2018 (the '2018 application'), supported by an ES, seeking permission for the following:

'Part demolition and redevelopment and part retention and refurbishment of the former Hotspur Press Complex (Medlock Mill) to deliver 171 residential units (10 no. 1 bed, 1 person apartments, 49 no. 1 bed, 2 person apartments, 2no. 2 bed, 3 person apartments and 110 no. 2 bed 4 person apartments) - Use Class C3, within refurbished mill space and 28 storey building (including two levels of basement), commercial floorspace (Use Classes A1 (shop), A2 (financial and professional services), A3 (restaurants and cafes), B1 (office), D1 (medical clinic, health centre, art gallery and museum only) and / or D2 (gymnasium or bowling alley only) together with servicing, access, landscaping including a new public space and pedestrian route between Gloucester Street and First Street, and other associated works'

1.4 This 2018 application was granted approval by Manchester City Council (MCC) in October 2020.

1.5 Turley are commissioned by the Applicant to undertake a new Environmental Impact Assessment (EIA) and subsequent ES for the Application, with the support from a competent project team (as set out in **Table 1.2**). The ES reports the assessment of likely significant effects of the construction and operation of the Proposed Scheme. For the purpose of planning permission, the Proposed Scheme is defined as:

"Partial demolition of the former Hotspur Press Complex (Medlock Mill) with partial façade retention and redevelopment of the site to provide Purpose Built Student Accommodation (Sui Generis Use Class) within a part 4-storey and part 36-storey building with ground floor commercial or community uses (Use Classes F(e), F2(a)(b) and E(b)), associated ancillary internal and external amenity space, public realm (including a new public square), hard and soft landscaping and associated highway works"

[a] MCC Ref: 120635/FO/2018. Approved in October 2020.

1.6 Further details of the Proposed Scheme are set out within **Chapter 4: Development Specification.**

1.7 This ES is one of the documents submitted in support of the Application and has the status of a material consideration during the determination of the Application[1] by MCC who are the determining authority. The ES is the output of the EIA process undertaken in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (SI2017/571)[2] (hereafter referred to as the 'EIA Regulations').

1.8 The remainder of this Chapter is structured as follows:

- Definition of EIA;
- Legal Framework for the EIA;
- Planning Context;
- The Project Team and Their Roles;
- Application Reports and Plans;
- Structure of the ES; and
- Availability of the ES.

Definition of EIA

1.9 The term 'EIA' has the meaning given by Regulation 4 of the EIA Regulations, as "*a process consisting of-*

(a) the preparation of an environmental statement;

(b) any consultation, publication and notification required by, or by virtue of, these Regulations or any other enactment in respect of EIA development; and

(c) the steps required under regulation 26' (consideration of whether planning permission or subsequent consent should be granted)".

1.10 Under Regulation 4(2), the EIA must:

"identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors—

(a) population and human health;

(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC(1) and Directive 2009/147/EC(2);

(c) land, soil, water, air and climate;

(d) material assets, cultural heritage and the landscape;

(e) the interaction between the factors referred to in sub-paragraphs (a) to (d)."

1.11 The aim of EIA, as defined by online national Planning Practice Guidance (PPG)[3] is:

"*to protect the environment by ensuring that a local planning authority when deciding whether to grant planning permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision-making process. The regulations set out a procedure for identifying those projects which should be subject to an Environmental Impact Assessment, and for assessing, consulting and coming to be a decision on those projects which are likely to have a significant environmental effect. The aim of EIA is also to ensure that the public are given early and effective opportunities to participate in the decision making procedures*".

Legal Framework for the EIA

Overview of the EIA Process

1.12 The EIA Regulations require that prior to consent being granted, for certain types of development, an EIA must be undertaken. The EIA Regulations set out the types of development which must always be subject to an EIA (referred to as Schedule 1 development) and other development which may require an EIA, if they are likely to give rise to significant environmental effects (referred to as Schedule 2 developments). The EIA process for the Proposed Scheme is summarised below.

Stage 1: EIA Screening

1.13 The Proposed Scheme does not fall within the description of any project listed within Schedule 1 of the EIA Regulations. However, the Proposed Scheme falls within the remit of the EIA Regulations as it meets the threshold/criteria within Schedule 2 10(b) (Urban development projects), as it includes over 150 dwellings. The threshold/criteria does not determine the requirement for EIA but requires a subsequent stage to determine "*whether the development is likely to have significant effects on the environment by virtue of factors such as its nature, size or location*", normally presented within an EIA Screening Report and submitted to the determining authority for their opinion. However, given the characteristics of the Proposed Scheme, receiving environment (the Site), and the precedent for the need for EIA (given the 2018 application was EIA development), a number of potentially significant effects were identified and therefore an EIA has been undertaken.

Stage 2: EIA Scoping

1.14 Formal EIA Scoping in accordance with Regulation 15 of the EIA Regulations has not been undertaken as part of this EIA process. Instead, in determining the appropriate scope for the EIA, this ES has taken on board the scoping process undertaken for the 2018 project, as well as an internal scoping process completed by the project team. Further details are provided in **Chapter 2: Approach to EIA**.

Stage 3: Environmental Statement

1.15 The findings of the EIA are presented in this ES which has been prepared in accordance with Regulation 18, Paragraphs 3 **–** 5 and Schedule 4 of the EIA Regulations, as well as PPG. An overview of the EIA procedure and methodology adopted throughout the ES is provided in **Chapter 2: Approach to EIA**. The specific methodology adopted for each technical topic is detailed within the respective **Technical Chapters 7 – 14**.

1.16 **Table 1.1** provides a breakdown on the information required to be included within an ES as defined by Regulation 18, Paragraph 3 **–** 4 and Schedule 4 of the EIA Regulations, and where the respective information is located within this ES.

Table 1.1: Required information, as Specified by the EIA Regulations, and its Location within the ES

Regulation 18	Schedule 4	Location within this ES
(3) an environmental statement is a statement which includes at least - (a) a description of the proposed development comprising information on the site, design, size and other relevant features of the development.	(1) A description of the development, including in particular: (a) a description of the location of the development; (b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational stages; (c) a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; and (d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.	**Chapter 3: Site Context**, **Chapter 4: Development Specification**; and **Technical Chapters 7 – 14** where relevant.
(3)(b) a description of the likely significant effects of the proposed development on the environment.	(5) a description of the likely significant effects of the development on the environment resulting from, inter alia: (a) the construction and existence of the development, including, where relevant, demolition works; (b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources; (c) the emissions of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;	**Technical Chapters 7 – 14** where relevant and **Chapter 15: Assessment of Cumulative Effects.**

Regulation 18	Schedule 4	Location within this ES
	(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters); (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources; (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; and (g) the technologies and the substances used. The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effect and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC and Directive 2009/147/EC.	

Regulation 18	Schedule 4	Location within this ES
(3)(c) a description of any features of the proposed development, or measure envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment.	(7) a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational stages.	**Chapter 4: Development Specification, Technical Chapters 7 – 14** where relevant and **Chapter 15: Assessment of Cumulative Effects.**
(3)(d) 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.	(2) 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.	**Chapter 5: Consideration of Alternatives.**
(3)(e) a non-technical summary of the information referred to in sub-paragraph (a) to (d).	(9) a non-technical summary of the information provided under paragraphs 1 to 8.	**Volume 4: Non-Technical Summary.**
(4) an environmental statement must— (a) where a scoping opinion or direction has been issued in accordance with regulation 15 or 16, be based on the most recent scoping opinion or direction issued (so far as the proposed development remains	**–**	**Chapter 2: Approach to EIA** and **Technical Chapters 7 – 14** where relevant.

Regulation 18	Schedule 4	Location within this ES
materially the same as the proposed development which was subject to that opinion or direction[2]); (b) include the information reasonably required for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment; and (c) be prepared, taking into account the results of any relevant UK environmental assessment, which are reasonably available to the person preparing the environmental statement, with a view to avoiding duplication of assessment.		
(5) In order to ensure the completeness and quality of the environmental statement - (a) the developer must ensure that the environmental statement is prepared by competent experts; and (b) the environmental statement must be accompanied by a statement from the developer	–	**Chapter 1: Introduction** and **Appendix 1.1: Statement of Technical Competence.**

[2] This is further discussed in **Chapter 2: Approach to the EIA**.

Regulation 18	Schedule 4	Location within this ES
outlining the relevant expertise or qualifications of such experts.		
–	(3) a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	**Chapter 3: Site Context** and **Technical Chapters 7 – 14.**
–	(4) a description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	**Chapter 3: Site Context** and **Technical Chapters 7 – 14.**
–	(6) a description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the new required information and the main uncertainties involved.	**Chapter 2: Approach to EIA** and **Technical Chapters 7 – 14.**

Regulation 18	Schedule 4	Location within this ES
–	(8) a description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the details of preparedness for and proposed response to such emergencies.	**Chapter 2: Approach to EIA**; **Technical Chapters 7 – 14** and **Chapter 16: Summary of ES.**
	(10) a reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	**Chapters 1 – 16** (at the end of each Chapter with references made throughout).

Competent Expertise

1.17 Regulation 18, Paragraph 5(a) of the EIA Regulations requires the ES to be prepared by competent experts.

1.18 Turley have been responsible for the coordination, compilation and procedural review of the ES. The Institute of Environmental Management & Assessment (IEMA) has awarded Turley the EIA Quality Mark is recognition of our technical quality and commitment to improvement in practice.

1.19 All technical assessment has been undertaken by a suitably qualified project team, inclusive of a thorough technical review to assure technical credibility, followed by a subsequent procedural review by the EIA coordination team and EIA Project Director.

1.20 A statement outlining the relevant expertise/qualification is provided as **Appendix 1.1**.

Planning Context

1.21 The EIA Regulations do not require the ES to assess planning policy or guidance with respect to the Proposed Scheme. The **Planning Statement**, which accompanies the Application, examines the merits of the Proposed Scheme against the relevant national, regional and local planning policy context.

1.22 Where planning policy has informed assessments within specific technical chapters, this has been clearly referenced within the respective **Technical Chapters 7 – 14.**

The Project Team and Their Roles

1.23 Turley have been responsible for the coordination of the ES in conjunction with a full project team, the details for which are identified within **Table 1.2**.

Table 1.2: Project Team

Team Member	Role
Manner	Applicant
Hodder & Partners	Architect
Turley	Planning, EIA, Socio-Economics and Human Health consultants
Exterior Architecture	Townscape and Visual consultants
Heritage Architecture	Built Heritage consultants
Hoare Lea	Climate Change consultants
AEC	Noise and Vibration consultants
Urban Microclimate	Wind Microclimate consultants
GIA	Daylight, Sunlight and Overshadowing consultants

Team Member	Role
Civic Engineers	Flood Risk and Drainage consultants
Tetratech	Air Quality consultants
Estrada Ecology / TEP	Biodiversity consultants
Salford Archaeology	Archaeology consultants
LK Group	Ground Conditions and Contamination consultants

Application Reports and Plans

1.24 As stated, the ES is one of the supporting documents submitted in support of the Application. For a full list of documents and plans and their planning status (i.e. for approval or supporting information) please refer to the **Planning Application Cover Letter**.

1.25 Those application plans and reports that have been used to inform this ES, in terms of baseline, assessment or secondary mitigation, are detailed below. Reference to these is clearly identified and signposted throughout the ES. All information for the assessment within the ES is provided as part of the ES.

1.26 In addition, we have set out other application reports submitted that do not inform the ES but provide additional detail for information purposes.

Plans

1.27 The ES has been based on the detailed plans which are submitted for approval as part of the Application.

1.28 The detailed plans have informed the ES and are presented as part of **Chapter 4: Development Specification**.

Application Reports

1.29 The following reports are appended to the ES in **Volume 2: Technical Appendices**:

- Heritage Statement;
- Wind Microclimate; and
- Flood Risk Assessment and Drainage Strategy.

1.30 The above documents technically inform the evidence within the ES.

1.31 There are a number of other documents which provide a greater level of detail on how the Proposed Scheme is likely to come forward, how the Proposed Scheme complies with policy or provide assessments for technical topics for which no likely significant effects are considered to arise. Where information from these documents has informed the Proposed Scheme upon which the ES is based, this is clearly stated within **Chapter 4: Development Specification**. However, they do not inform the assessment of likely significant effects and so

they do not feature in the ES. These documents are therefore submitted as standalone Application Reports.

- Planning and Tall Building Statement;
- Design and Access Statement;
- PBSA Assessment of Need;
- Air Quality Assessment;
- Transport Assessment;
- Framework Travel Plan;
- Socio-economic Regeneration Impact Statement;
- Ground Investigation / Contaminated Land Reports;
- Detailed UXO Risk Assessment;
- Ecological Assessment (including Bat Activity Report);
- Black Redstart Report;
- Blue Green Infrastructure Strategy;
- Waste Management Strategy;
- Broadband Connectivity Assessment;
- TV Reception Survey;
- Crime Impact Statement;
- Environmental Standards Statement;
- Circular Economy Statement;
- Energy Strategy Report (including, BREEAM, Building Services Strategy and overheating / ventilation);
- Student Management Strategy;
- Statement of Community Engagement;
- Fire Strategy Statement;
- Interim / Outline Construction Management Plan;
- Archaeological Desk-Based Assessment and Written Scheme of Investigation;
- Landscape Scheme;

- Structural Survey;
- Accessibility Statement (within DAS); and
- Viability Appraisal.

Structure of the ES

1.32 The ES is provided in four parts:

- **Volume 1: Primary Report and Supporting Graphics;**
- **Volume 2: Technical Appendices;**
- **Volume 3: Environmental Management Plan;** and
- **Volume 4: Non-Technical Summary.**

1.33 **Volume 1: Primary Report and Supporting Graphics** provides the main text of the ES which is divided into 'Chapters' which are supported by a series of figures and technical appendices as required (see **Volume 2: Technical Appendices** below).

1.34 The structure of **Volume 1: Primary Report and Supporting Graphics** is outlined in **Table 1.3**.

Table 1.3: Structure of Volume 1: Primary Report and Supporting Graphics

Chapter No.	Chapter Title	Description of Content
1	Introduction	Introduction to the ES, including definitions of EIA, legal procedure and requirements of EIA and setting out the structure of the ES.
2	Approach to EIA	Description of the overall method adopted through the EIA process and presented within the ES, including assessment criteria for determining sensitivity, magnitude, level of effect and significance alongside adherence to best practice guidance.
3	Site Context	Overview of the location of the Site, and the sensitive receptors for assessment within this ES.
4	Development Specification	Comprehensive description of all elements of the Proposed Scheme including its physical characteristics across the construction and operational stages. It is this description which has informed the assessment undertaken as part of the EIA. This description is inclusive of committed primary and tertiary mitigation considered in **Technical Chapters 7 – 14**.

Chapter No.	Chapter Title	Description of Content
5	Consideration of Alternatives	Outline of the main alternatives considered by the Applicant as required by Schedule 4 of the EIA Regulations.
6	Topics which are Not Significant	Presentation of technical evidence base for topics which are not considered to be significant.
7	Townscape and Visual	Presentation of assessment of likely significant effects arising from the Proposed Scheme and secondary mitigation required to avoid, offset or reduce anticipated adverse effects or improve beneficial effects.
8	Built Heritage	
9	Climate Change	
10	Socio-Economics and Human Health	
11	Noise and Vibration	
12	Wind Microclimate	
13	Daylight, Sunlight, and Overshadowing	
14	Flood Risk and Drainage	
15	Assessment of Cumulative Effects	Provides a single and comprehensive assessment of cumulative effects, including effect interactions and in-combination effects.
16	Summary of ES	Summarises the outputs of the technical assessments presented within the ES.

1.35 **Volume 2: Technical Appendices** encompasses a range of technical reports which have informed the technical assessments presented in **Volume 1: Primary Report and Supporting Graphics.** The full suite of technical appendices are listed in the **Environmental Statement Contents Page**.

1.36 **Volume 3: Environmental Management Plan** provides a schedule of the mitigation committed to throughout the ES. This acts as the checklist for all mitigation which is required to be implemented as part of the approved plans and planning conditions (or other appropriate mechanism) and acts as an Environmental Management Plan (EMP) which can be updated throughout subsequent stages of the project.

1.37 **Volume 4: Non-Technical Summary** provides a summary of the ES in non-technical language to aid communication and understanding of the Proposed Scheme and the EIA process undertaken.

Availability of the ES

1.38 The Application will be submitted as digital copy to MCC. All documentation, including the ES will be published on the MCC website for viewing and downloading.

1.39 A digital file can be requested for £15, via the following contact details:

Turley EIA Team

EIA Team Tel: 0161 233 7676
1 New York St
Manchester
M1 4HD

1.40 During the determination of the Application, members of the public may view and comment on the Application via MCC, either in writing or through the MCC planning portal website. Comments can be sent via the following contact details:

Manchester City Council

Town Hall Extension
Albert Square
Manchester
M2 5DB
Tel: 0161 234 4490
Email: building.control@manchester.gov.uk

References

[1] The Town and County Planning Act 1990. Available at: http://www.legislation.gov.uk/ukpga/1990/8/contents [Accessed 23/08/23].
[2] The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) Statutory Instrument 2017/517. Available at: http://www.legislation.gov.uk/uksi/2017/571/contents [Accessed: 23/08/2023].
[3] Ministry of Housing, Communities and Local Government [Online Tool]. Planning Practice Guidance Environmental Impact Assessment. Available at: https://www.gov.uk/guidance/environmental-impact-assessment [Accessed: 24/08/2023].

2. Approach to EIA

Introduction

2.1 This Chapter sets out the approach and methodology that has been undertaken to complete the assessment of the likely significant environmental effects of the Proposed Scheme (as described in **Chapter 4: Development Specification** and supporting plans).

2.2 This Chapter sets out the following:

- Adoption and application of best practice within the EIA process;
- Scope of the ES, including approach to determining scope of topics to be assessed;
- Stakeholder engagement, summarising the level of engagement with statutory and non-statutory consultees, and other forms of engagement; and
- Approach to the assessment of likely significant effects, specifically covering: consideration of the full extent of the development; approach to the assessment against a consistent baseline; consideration of future baseline and receptors; development specification and detailed plans; quantum of development; massing; assessment scenarios; implementation of mitigation and monitoring; determining the level of effect and significance criteria; and limitations and assumptions.

Adoption of Best Practice

2.3 As confirmed within **Chapter 1: Introduction**, this ES meets the requirements set out in Regulation 18, Paragraphs 3 – 4 and Schedule 4 of the EIA Regulations.

2.4 In addition, the EIA (and therefore the ES) has been undertaken with due consideration of the following guidance documents:

- Department for Levelling Up, Housing and Communities, Planning Practice Guidance (PPG)[1];
- IEMA, EIA Guide to Shaping Quality Development[2]; and
- IEMA, EIA Guide to Delivering Quality Development[3].

Scope of the ES

EIA Scoping

2.5 As set out within Paragraph 036 of PPG, there is no legal requirement for the Applicant to consult with or seek a formal scoping opinion from MCC. As such, no formal request for an EIA Scoping Opinion from MCC has been made.

2.6 In order to determine the scope of topics to be assessed within this ES, the 2018 application (which was accompanied by an ES) was reviewed as a starting point, given the similarities with the Proposed Scheme.

2.7 Whilst the scope of the 2018 ES was used as a starting point, an internal EIA scoping process was undertaken with the project team to determine the appropriateness of the 2018 scope for the Proposed Scheme. This generally concluded agreement with the 2018 scope, with the exception of socio-economics and climate change, which were considered appropriate to scope in now as a result of the proposed use as PBSA/changing socio-economic baseline and the declaration of a climate emergency by MCC in 2018.

Technical Topics 'Scoped In'

2.8 Using the 2018 Environmental Statement and professional judgement considering the characteristics of the Proposed Scheme (**Chapter 4: Development Specification**) and the current baseline, the following technical topics and their associated likely significant environmental effects have been assessed within the ES:

- Townscape and Visual (**Chapter 7**);
- Built Heritage (**Chapter 8**);
- Climate Change (**Chapter 9**);
- Socio-Economics and Human Health (**Chapter 10**);
- Noise and Vibration (**Chapter 11**);
- Wind Microclimate (**Chapter 12**);
- Daylight, Sunlight and Overshadowing (**Chapter 13**); and
- Flood Risk and Drainage (**Chapter 14**).

2.9 The likely significant environmental effects considered within each technical topics are detailed within the **Technical Chapters 7-14**.

Technical Topics 'Scoped Out'

2.10 As part of the EIA process, there are several technical topics and their associated environmental effects which are not considered to be significant and therefore 'scoped out' of the EIA. These are as follows:

- Air Quality;
- Transport and Access;
- Biodiversity;
- Archaeology;
- Ground Conditions and Contamination;
- Lighting;
- Major Accidents and / or Disasters; and
- Waste.

2.11 The evidence base to support 'scoping out' these technical topics is presented in **Chapter 6: Topics which are Not Significant**.

Stakeholder Engagement

2.12 The Project Team have undertaken technical consultation with relevant consultees to inform the scope, assessment methodology/approach and in some instances the outputs of baseline studies/surveys. The specifics of technical consultation are reported within **Technical Chapters 7 – 14**.

2.13 In addition, consultation with the public was undertaken during October and November 2023, and included the issue of leaflets, a consultation website, and webinar. The environmental related comments raised and where these are considered within the ES are summarised in **Table 2.1**.

Table 2.1: Summary of Environment Related Public Feedback

Topic	General Comment	Relevant Technical Chapter
Building height / preservation of the existing building's heritage	Concerns regarding the height of the building being out of scope in the historical context of the existing building and area. Clarity on what elements were being retained and demolished in the existing building.	**Chapter 8: Built Heritage** **Chapter 4: Development Specification**
Enhancements to the River Medlock	Welcomed enhancements to the River Medlock and clarity sought on how they would be implemented.	**Chapter 14: Flood Risk and Drainage** **Chapter 4: Development Specification**
PBSA need	Queries on the need for PBSA and whether the Site is an appropriate location.	**Chapter 10: Socio-Economics and Human Health**
Site safety and security	Questions raised about the current safety and security of the area and how this would be managed.	**Chapter 10: Socio-Economics and Human Health**
Lighting	Details sought on the lighting scheme for the public realm (for security and a creative standpoint).	**Chapter 4: Development Specification**
Accessibility / traffic management	Assurance sought on the accessibility of the Site for disabled individuals. Concerns on the impact of move in/move out days and parking.	**Chapter 4: Development Specification** **Chapter 6: Topics which are Not Significant**
Tree planting	Planting and urban greenery was a priority for may consultees.	**Chapter 4: Development Specification** **Chapter 7: Townscape and Visual**

Topic	General Comment	Relevant Technical Chapter
Noise	Concerns regarding the increase in noise caused by students.	**Chapter 11: Noise and Vibration**
Construction	Impact of construction on noise, dust and traffic in the area, and how these will be mitigated.	**Chapter 4: Development Specification** **Chapter 6: Topics which are Not Significant** **Chapter 11: Noise and Vibration**
Daylight and sunlight	Request for details on how sunlight in the area would be impacted.	**Chapter 13: Daylight, Sunlight and Overshadowing**

Approach to Assessment

2.14 This section outlines the approach to the assessment of likely significant environment effects adopted, as reported within this ES.

2.15 The exact methodology for the assessment of likely significant effects of the Proposed Scheme during the construction and operational stages is varied across each of the technical topics considered within the EIA, largely due to technical specific guidance and best practice. Therefore, each of the **Technical Chapters 7 – 14** specifically sets out the relevant technical assessment methodologies.

2.16 However there are several aspects to the approach which require consistency across the ES. Where necessary, this is discussed below with the aim to identify any nuances and how these have been accommodated with the approach.

Consideration of the Full Extent of Development

2.17 The boundary upon which baseline data has been collected (i.e. study areas) varies between the technical topics and therefore these are reported specifically within **Technical Chapters 7 – 14**. However, all study areas include the Site, as defined in the Site Location Plan shown on **Figure 1.1**. This represents the maximum extent of permanent and temporary development and associated works for which permission will be sought.

Approach to Assessment against a Consistent Baseline

2.18 Schedule 4, Paragraph 3 of the EIA Regulations, states that an ES should include:

"a description of the relevant aspects of the current state of the environment (baseline scenario)".

2.19 Likely significant effects as a result of the Proposed Scheme have been described in the ES in relation to the deviation from the baseline environment within the Site and relevant technical study areas. Therefore, it is necessary to establish the existing baseline environmental condition of the Site and study area.

2.20 The baseline environment comprises the prevailing existing environmental characteristics and conditions of the Site and relevant technical study areas, based upon (where relevant and required):

- Site visits and surveys;
- Desk-based studies;
- Review of existing site-specific information or public literature;
- Modelling;
- Review of relevant national and local planning policies; and
- Consultation with the relevant statutory consultees through the EIA process.

2.21 The baseline conditions for the purpose of the ES will vary dependent on the timing of the survey or the date when data sources will have been accessed. All baseline conditions are based upon data accessed or surveys in 2023.

2.22 Throughout the EIA, the origin of all third-party data, the dates of surveys and the dates when data sources have been accessed are clearly outlined within the relevant **Technical Chapters 7 – 14**, alongside any limitations or assumptions.

Consideration of the Future Baseline and Receptors

2.23 Schedule 4, Paragraph 3 of the EIA Regulations states that an ES should include:

"…an outline of the likely evolution thereof (without implementation of the development) as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of availability of environmental information and scientific knowledge"

2.24 As required under the EIA Regulations, the ES reports the future baseline scenario under a 'do nothing' scenario, which is further discussed in **Chapter 5: Consideration of Alternatives**. However, the future baseline scenario is discussed within each of the **Technical Chapters 7 – 14**. The discussion is associated with how the Site and study area may change assuming the Site was not developed further, and the existing management regime was maintained.

2.25 The assessments presented in the ES are based on the deviation from the existing baseline scenario. **Technical Chapters 7 – 14** present a future baseline condition for information only. Consideration has been given to future sensitive receptors of the Proposed Scheme (i.e. future residents or users of the existing highways and footpaths and the proposed public realm). Although the consideration of such receptors is not specifically required by the EIA Regulations, these receptors have been considered to provide certainty to MCC that the Proposed Scheme is unlikely to create future issues when operational.

Identification of Sensitive Receptors

2.26 Schedule 4, Paragraph 4 of the EIA Regulations states that an ES should include:

"a description of the factors specified in Regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora); land (for example land-take), soil, (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes,

quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaption), material assets, cultural heritage, including architectural and archaeological aspects, and landscape"

2.27 Consistent with the EIA Regulations, the identification of the aspects of the environment likely to be significantly affected by the Proposed Scheme has been identified and set out within the 'Sensitive Receptors' section of each **Technical Chapters 7 – 14**. These are summarised in **Table 3.1** in **Chapter 3: Site Context**.

Development Specification and Detailed Plans

2.28 As indicated in **Chapter 1: Introduction**, the Application is detailed in nature.

2.29 The ES is required to provide sufficient information about the Proposed Scheme to meet the requirements of the EIA Regulations and to ensure that MCC can reasonably be satisfied that they have sufficient information of the likely significant environmental effects of the Proposed Scheme.

2.30 The assessments undertaken as part of the EIA and reported in this ES are based on **Chapter 4: Development Specification** and Detailed Plans (**Figure 4.1 – 4.22**) which contains all information required to inform the EIA in a single location.

2.31 **Chapter 12: Wind Microclimate** has been based on a higher height than set out in **Chapter 4: Development Specification** (approximately 149.525mAOD). This is due to the timing of the wind tunnel testing and evolution of the design of the Proposed Scheme beyond the point of testing. It is not considered that the difference in height would amend the overall conclusions of **Chapter 12: Wind Microclimate** (as effects are negligible and no secondary mitigation has been identified as being required), given that the assessment is based on a more conservative and worst case height.

Quantum of Development

2.32 The quantum of development, set out in detail in **Chapter 4: Development Specification**, is an upper limit to represent the possible development that will come forward and has been a key parameter used to assess likely significant effects. The ES has been based on a PBSA development of 577 units (Use Class Sui Generis) and 1,485m^2 GIA commercial / community space. This has informed the assessment of the following topics:

- Socio-economics and Human Health; and
- Climate Change.

Massing

2.33 The scale and location of development as defined on the Detailed Plans and described in **Chapter 4: Development Specification** are the key parameters used to assess likely significant environmental effects for the following topics:

- Townscape and Visual;
- Built Heritage;

- Noise and Vibration;
- Wind Microclimate;
- Daylight, Sunlight and Overshadowing; and
- Flood Risk and Drainage.

Assessment Scenarios

2.34 As set out in **Chapter 4: Development Specification,** construction is anticipated to commence in 2024, with the construction being completed over approximately 3 years with the Proposed Scheme being anticipated to be fully operational in 2027. Where relevant, the assessments within **Technical Chapters 7 – 14** have therefore considered the construction and operational stage of the Proposed Scheme in line with these dates.

Implementation of Mitigation and Monitoring

2.35 Schedule 4, Paragraph 7 of the EIA Regulations states that an ES should include:

"a description of the measures to avoid, prevent, reduce, or if possible offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover construction and operational phases."

2.36 Regulation 26 states that when determining an application consideration should be given to 'whether it is appropriate to impose monitoring measures' including the parameters to be monitored and the duration of the monitoring.

2.37 In accordance with IEMA Guidance, three types of mitigation have been identified and used within the ES, comprising;

- **Primary:** modifications to the location or design of the Proposed Scheme made during the pre-application stage that are an inherent part of the project;
- **Secondary:** actions that will require further activity in order to achieve the anticipated outcome. These would be included within the ES following the assessment of effect, under the 'Secondary Mitigation or Enhancement' section, before the reporting of the 'residual' effects. It is anticipated that such measures would be secured by condition; and
- **Tertiary:** actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects. There needs to be a 90% level of confidence that these will be implemented, and they need to be specific with a clear timescale for implementation and responsibility.

2.38 The Proposed Scheme has evolved to take account of the environmental constraints and opportunities within the Site and study area. Such evolution, as defined above, constitutes primary mitigation and therefore for the purpose of the EIA such measures are considered as part of the Proposed Scheme and therefore set out in **Chapter 4: Development Specification**.

2.39 Those measures considered to constitute tertiary mitigation are also considered part of the Proposed Scheme and set out in **Chapter 4: Development Specification**.

2.40 Therefore, **Technical Chapters 7 – 14** have considered relevant primary and tertiary mitigation for both the construction and operational stages prior to undertaking their assessment of likely significant effects. Following the conclusion of effects based on the Proposed Scheme (inclusive of primary and tertiary mitigation) any further mitigation measures or monitoring arrangements have been identified (i.e. secondary mitigation).

2.41 The application of secondary and tertiary mitigation is only considered appropriate if there is a high level of confidence (i.e., >90%) in the mechanism for implementation (by the Applicant or third party).

2.42 Consideration is then also given to any indirect effects of the secondary mitigation alongside the likelihood and confidence of implementation which is evaluated when determining the residual effect.

2.43 The primary, tertiary and secondary mitigation detailed within **Technical Chapters 7 – 14** are summarised in **Volume 3: Environmental Management Plan**.

Determining Level of Effect and Significance Criteria

2.44 A four-step approach has been adopted to define effects as outlined below.

2.45 The method for assessing the level of effect has varied between technical topics but in principle has been based on:

- The environmental sensitivity (or value / importance etc., as appropriate to the environmental topic) of a receptor or receiving environment to change, including aspects such as adaptability, tolerance or recoverability; and
- The magnitude of change (or impact) from the baseline conditions, including aspects such as probability / likelihood of occurrence, geographical extent, complexity, duration, frequency and reversibility (i.e. temporary and permanent).

2.46 Sensitivity (or value/importance etc.) has been assessed on a scale of high, medium, low and negligible and magnitude of change on a scale of large, medium, small and negligible. Where deviations from these scales is required to meet specific technical guidance this is outlined, where relevant, in **Technical Chapters 7 – 14**.

2.47 Other factors such as feedback from stakeholders, relevant legislation, international / national / regional / local standards and guidance and the inter-relationship between effects (both cumulatively and in terms of potential effect interactions) have also been considered, where appropriate.

2.48 The assignment of the level of effect has been based on professional judgement and the matrix below (**Table 2.2**) is intended to be a tool to assist with the process. Whilst the matrix provides ranges, this is to guide the competent expert and a definitive assessment of level of effect has been provided for each effect.

Table 2.2: Matrix to support determining the level of effect

		Sensitivity (or value / importance)			
		High	Medium	Low	Negligible
Magnitude of Change	Large	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

2.49 The following terms have been used to define the level of the effects identified and these can be 'beneficial' or 'adverse':

- **Major effect**: Where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
- **Moderate effect**: Where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;
- **Minor effect**: Where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity or a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change and / or can recover from the change; and
- **Negligible**: Where the Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

2.50 For some specific Chapters, guidance on the nature of the effect requires that differing criteria or scales for determining significance are to be used. However, there has been consistency of terminology and conclusions to tie in with the above matrix. This ensures that the conclusions of the different effects can be compared during the decision-making process and robustly considered within the cumulative effects assessment. The assessment methodology adopted is set out in **Technical Chapters 7 – 14**.

2.51 A conclusion has then been provided as to whether the effect is 'Significant' or 'Not Significant' based on professional judgement. As such, significance has only been concluded for residual effects (i.e. following the application of 'Secondary Mitigation or Enhancement' measures).

2.52 Effects have also been described in line with the requirements of the EIA Regulations (i.e. as direct or indirect, short / medium / long-term and temporary or permanent).

2.53 **Technical Chapters 7 – 14** provide a summary of effects table, which outlines the effects assessed, associated sensitive receptors, residual effects and whether the effect is 'Significant' or 'Not Significant'.

2.54 Cumulative effects have been considered as a single co-ordinated assessment (**Chapter 15: Assessment of Cumulative Effects**).

Limitations and Assumptions

2.55 Schedule 4, Paragraph 6 of the EIA Regulations state that an ES should include:

"...details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the require information and the main uncertainties involved"

2.56 Where **Technical Chapters 7 – 14** experience limitations or are based on assumptions these have been clearly identified within the relevant chapter.

References

[1] Department for Levelling Up, Housing and Communities (2020) Planning Practice Guidance [Online], available at: https://www.gov.uk/guidance/environmental-impact-assessment [Accessed: 25/08/2023].
[2] IEMA, Environmental Impact Assessment Guide to: Shaping Quality Development, November, 2015.
[3] IEMA, Environmental Impact Assessment Guide to: Delivering Quality Development, July, 2016.

3. Site Context

Introduction

3.1 This Chapter aims to provide a high-level overview of the existing Site characteristics and the surrounding area and identifies the sensitive receptors considered in the EIA. A high-level description of the Site has been provided in this Chapter to avoid the need for repetition within **Technical Chapters 7 – 14**.

3.2 The relevant detailed baseline characteristics of the Site and the surrounding area in relation to the technical topics 'scoped into' the EIA are considered within the relevant Chapter (**Technical Chapters 7 – 14**). A summary of the sensitive receptors included in **Technical Chapters 7 – 14** is included in **Table 3.1**.

3.3 The baseline characteristics for the technical topics 'scoped out' of the EIA and which are not reported in the ES are provided in **Chapter 6: Topics which are Not Significant**.

Location and Setting

3.4 The Site (**Figure 1.1**) is approximately 0.3ha, located in the administrative area of MCC. The Site is bound by Cambridge Street / Gloucester Street to the east, to the north by a railway viaduct (carrying the Manchester Deansgate to Manchester Oxford Road railway line) and to the west and south by the River Medlock and the Home Complex.

3.5 The former Hotspur Press complex currently stands on Site in a derelict state.

3.6 The wider surrounding area comprises; Oxford Road and Manchester Oxford Road station to the east beyond Gloucester / Cambridge Street, Whitworth Street West to the north beyond the railway viaduct, various leisure facilities and public realm at the Home Complex to the west, and residential development further to the south.

Historic Context

3.7 The former Hotspur Press complex comprises four buildings constructed between 1801 and 1880.

3.8 Medlock Mill which originally stood on-site is considered an example of the historic textile industry in Manchester. Following a fire in January 1801, the original mill building was demolished and a new mill constructed on the Site, with further additions in 1880.

3.9 Following the purchase of the Site by the Percy Brothers in 1900, several phases of alteration were undertaken in 1907, 1910, 1911, and 1955 in order to convert the mill for use as a paper printing works. These successive alterations have eroded the original purpose of the initial textile mill use, compromising the historic value of Medlock Mill.

3.10 The Hotspur Press complex remains on Site and has been vacant since 2014, when the previous tenants vacated the premises.

Topography

3.11 The Site is covered completely by buildings, with the basement level to the west of the Site being 25.74mAOD, the central rectangular building ground floor level being 31.08m, and the shed to the north and east being 30.79m to 31.47m.

Sensitive Receptors Considered Within the EIA

3.12 **Table 3.1** lists the sensitive receptors at which likely significant effects may[a] occur and their relationship to the aspects of the environment outlined in Schedule 4 of the EIA Regulations[1].

Table 3.1: Identified Sensitive Receptors

Chapter	Sensitive Receptors Identified for Assessment in this ES	Schedule 4 'factor'
Chapter 7: Townscape and Visual	Residents, City Centre visitors, members of travelling public and workers	Population and Human Health
	Users of National Cycle Route 6, Conservation Areas, Listed Buildings and Local Townscape Character within the ZTV	Landscape
Chapter 8: Built Heritage	Hotspur House (non-designated heritage asset)	Cultural Heritage
Chapter 9: Climate Change	The atmosphere	Climate
Chapter 10: Socio-Economics and Human Health	Local labour force Students requiring accommodation	Population and Human Health
Chapter 11: Noise and Vibration	The Assembly, 1 Cambridge Street (Some 25m to the east of the Site) Vita House	Population and Human Health
Chapter 12: Wind Microclimate	Pedestrians and users of Proposed Scheme and surrounding area Pedestrians and users of Proposed Scheme (thoroughfares, building entrances, amenity spaces)	Population and Human Health

[a] The level of effects and significance upon the identified receptors is detailed within the relevant technical chapters.

Chapter	Sensitive Receptors Identified for Assessment in this ES	Schedule 4 'factor'
	Pedestrians and users of surrounding area (thoroughfares, building entrances, amenity spaces)	
Chapter 13: Daylight, Sunlight, and Overshadowing	21-35 Whitworth Street West 84-88 Great Bridgewater Street The Assembly, 1 Cambridge Street Macintosh Mills Vita House	Population and Human Health
Chapter 14: Flood Risk and Drainage	Public sewer system River Medlock	Water
	Proposed buildings	Population and Human Health

References

[1] Her Majesty's Stationery Office (2017) The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 SI 2017/517 (as amended by The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018, SI 2018/695). Available at: http://www.legislation.gov.uk/uksi/2017/571/contents and https://www.legislation.gov.uk/uksi/2018/695/contents/made [Accessed: 11/10/2023].

4. Development Specification

Introduction

4.1 This Chapter provides a description of the Proposed Scheme, including a description of how the Proposed Scheme would be constructed and its timescales. This description, together with the supporting spatial plans within the ES, form the basis for the technical assessments presented in **Technical Chapters 7 – 14**.

4.2 The Proposed Scheme is described as:

"Partial demolition of the former Hotspur Press Complex (Medlock Mill) with partial façade retention and redevelopment of the site to provide Purpose Built Student Accommodation (Sui Generis Use Class) within a part 4-storey and part 36-storey building with ground floor commercial or community uses (Use Classes F(e), F2(a)(b) and E(b)), associated ancillary internal and external amenity space, public realm (including a new public square), hard and soft landscaping and associated highway works"

4.3 All temporary and permanent works will take place within the Site boundary, as shown on **Figure 1.1: Location Plan**. The description of the completed project should be read in conjunction with the supporting detailed plans, as follows:

- **Figure 4.1: Existing Plan;**
- **Figure 4.2: Proposed Site Plan;**
- **Figure 4.3: Demolition Plan (Basement);**
- **Figure 4.4: Demolition Plan (Ground Floor);**
- **Figure 4.5: Demolition Plan (Upper Ground Floor);**
- **Figure 4.6: Demolition Plan (Level 01);**
- **Figure 4.7: Demolition Plan (Level 02);**
- **Figure 4.8: Demolition Plan (Level 03);**
- **Figure 4.9: Demolition Elevations;**
- **Figure 4.10: Demolition North Elevations;**
- **Figure 4.11: Demolition East Elevations;**
- **Figure 4.12: Demolition South Elevations;**
- **Figure 4.13: Demolition West Elevations;**
- **Figure 4.14: Lower Ground Floor Plan;**

- **Figure 4.15: Ground Floor Plan;**
- **Figure 4.16: Ground Floor Mezzanine Plan;**
- **Figure 4.17: Level 01 and Level 02 Plan;**
- **Figure 4.18: Level 03 Plan;**
- **Figure 4.19: Level 04 Plan;**
- **Figure 4.20: Typical Floor Plan (Levels 05, 09, 13, 17);**
- **Figure 4.21: Typical Floor Plan (Levels 06-08, 10-12, 14-16);**
- **Figure 4.22: Level 18 Plan;**
- **Figure 4.23: Typical Floor Plan (Levels 19-25);**
- **Figure 4.24: Typical Floor Plan (Levels 26, 30, 34);**
- **Figure 4.25: Typical Floor Plan (Levels 27-29, 31, 33, 35);**
- **Figure 4.26: Level 36 Plan;**
- **Figure 4.27: Roof Plan;**
- **Figure 4.28: Proposed South Elevation;**
- **Figure 4.29: Proposed North Elevation;**
- **Figure 4.30: Proposed West Elevation;**
- **Figure 4.31: Proposed East Elevation;**
- **Figure 4.32: Proposed South-North Section;**
- **Figure 4.33: Proposed North-South Section;**
- **Figure 4.34: Proposed West-East Section;**
- **Figure 4.35: Landscaping General Arrangement Plan – Level 00;**
- **Figure 4.36: Planting Plan – Level 00;**
- **Figure 4.37: Landscaping General Arrangement Plan – Level 03;**
- **Figure 4.38: Planting Plan – Level 03;**
- **Figure 4.39: Landscaping General Arrangement Plan – Level 04;** and
- **Figure 4.40: Planting Plan – Level 04.**

The Completed Project

Land Use Classes and Maximum Quantum

4.4 The Proposed Scheme is for the following use classes and quantum:

- Purpose built student accommodation (Use Class Sui Generis) – up to 578 units.

4.5 A mixture of cluster (49%) and studio (51%) bedrooms will be provided across Levels 01 up to Level 35. Typical arrangements are set out within **Figures 4.17 – 4.25.**

4.6 As defined on **Figure 4.14 – 4.16** supporting community / commercial uses (Use Classes F(e), F2(a)(b) and E(b)) will be located at Ground Level (GL), including mezzanine. The Proposed Scheme will include 1,483m^2 community / commercial use. The Proposed Scheme includes residential amenity spaces (i.e., breakout spaces, gym, multi-media lounge / games, TV / cinema room, service areas, etc.) at various levels.

Layout / General Arrangement and Amenity Space (including Landscaping and Biodiversity)

4.7 The Proposed Scheme will incorporate the retention of the existing Hotspur Press façade, with a tower extending out of this. Outdoor amenity space will be provided on a terrace at GL (**Figure 4.15**) and Level 03 (**Figure 4.18**). No outdoor amenity will be provided at the roof level.

4.8 A new public square and public realm will be provided to the north of the tower. The new public square, 'Hotspur Yard', will connect First Street through to Cambridge Road enhancing pedestrian movement through this part of the city. The floorscape of the square will be a high quality natural stone to stitch into the adjoining public realm. Street furniture will provide external amenity and flexibility for internal amenity space at ground level to spill out into Hotspur Yard. The proposals will increase tree cover to provide shade and a green outlook.

4.9 The landscaping proposals will seek to maximise the ecological value of the Site through the provision of native and/or wildlife friendly landscape planting. This will provide a public space within the Site and will subsequently provide new and enhanced opportunities for faunal species. This will include the selection of climate change tolerant species as part of the projects' biodiversity strategy. Tree planting is proposed to soften close-range views of the Proposed Scheme.

4.10 A post works enhancement strategy will be undertaken to include for a brown or green roof to provide and enhance habitat for black redstart. Additional enhancements will be provided via the installation of integrated bird boxes to ensure long term breeding habitat within the Proposed Scheme.

4.11 Key features of the landscape proposals include:

- Proposed tree planting to new public space;
- Flexible space adjacent to internal building uses;
- External covered seating area;

- Footpath improvements to Cambridge Street;
- Biodiversity rood to Level 4;
- In-ground paving detailing / artwork;
- Lighting columns with Gobo projection;
- Paving detail referencing historic workshops;
- Fixed timber seating elements; and
- Flexible furniture.

4.12 Specifically to control wind effects, the following measures are included within the public realm:

- Semi-mature trees, of around 6 to 8m height and comprising a deciduous species with substantial retained solidity in winter (i.e. significant canopies with numerous branches), distributed across the Public Square within the Site;
- A 1.1m high solid wall extending from the northwest corner of the proposed building, along the Site boundary, towards the neighbouring First Street North development; and
- A 1.1m high glazed balustrade around the perimeter of the ground floor terrace overhanging the river

4.13 PBSA uses will be located at levels 01 and above, including nearby to the railway line.

4.14 Plant will be located on the roof.

Heights

4.15 The retained brick façade of Hotspur Press will be retained at 45.8mAOD. As set out within **Figures 4.28 – 4.31,** the tower will then extend from within it up to a total maximum height of 147.125mAOD).

4.16 Basement level will be at 27.7mAOD.

4.17 The River Medlock is at 25mAOD.

Building Materials

4.18 The brick façade of Hotspur Press will be retained. A number of repairs will be required to the original building façade to provide its structural integrity, and these are largely associated with localised areas of the brickwork repair to the elevations. These areas are summarised below. The extent of the works noted below is not exhaustive and will be subject to the detail design stage and further material surveys to be carried out be a specialist.

4.19 The proposed tower will generally be constructed using concrete to create the superstructure and provide the necessary structural stability of the building. The

external façade of the tower will comprise complimentary brick peers with infill glazed panels of anodised aluminium.

Operational Access Arrangements

4.20 There will be no vehicular access to the Site (save for emergency services, loading bays and disabled parking). Appropriate loading and unloading space will be provided adjacent to Cambridge Street, which will also serve refuse collection.

4.21 The Site will be accessed by pedestrians and cyclists from Cambridge Street / Gloucester Street.

4.22 There may be additional traffic movements on specific days of the year when students arrive / depart at the beginning and end of term. The Applicant will implement a management plan in place on these days to help control the movement of vehicles around the area to minimise the potential for any disruption to the operation of the highway. Measures will include (but are not limited to):

- Time slots for arrival being available to book to avoid congestion;
- Information provided about local car parks; and
- Offering arrival up to three days prior to the start of the tenancy date.

Operation Traffic and Parking Provision

4.23 The Proposed Scheme would result in 59 two-way movements per day – in the region of two to three vehicular movements per hour and approximately four two-way movements during the AM and PM peak hours. This is based on a trip generation assessment for the proposed use of the Site using the TRICS database. On move-in/move-out day at the start/end of term, the level of vehicular activity at the Site will increase. However, this activity would typically occur only twice per year, and would be managed by a strategy to manage traffic movements and spread them across the day (se set out above).

4.24 The Proposed Scheme does not include any vehicular parking provisions. However, there will be one disabled bay and one loading bay.

4.25 The Proposed Scheme include cycle parking within the basement level, with spaces for up to 124 cycles.

Operational Hours

4.26 The residential elements of the Proposed Scheme will be operational 24 hours a day/7 days a week. It is assumed that the commercial elements of the Proposed Scheme will be operational 07:00 - 23:00 daily.

Lighting Strategy

4.27 Given the urban nature of the Site and surrounding area, artificial lighting will largely be contained to the areas of public realm and the interior of the building, as it is assumed that existing lighting on the surrounding road network will be retained.

4.28 Lighting within the public realm will comprise amenity/ architectural lighting, designed to accentuate the architectural value of the structure, including the retained Hotspur Press Signage, and the elements of the public realm (details of which can be found in the Design and Access Statement, submitted with the Application). This will be achieved through various lighting elements, including ambient lighting, task lighting, accent lighting and decorative lighting elements. In addition, illuminated advertisements/signage associated with non-residual uses are likely.

4.29 Where lighting is proposed it will be designed and installed in line with relevant industry best practice and guidance, including:

- CIE 150: 2017 – Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations, 2nd Edition[1];
- ILP GN01 - Guidance Notes for the Reduction of Obtrusive Light 2021[2];
- ILP PLG05: The Brightness of Illuminated Advertisements[3];
- ILP PLG08: Guidance on the Application of Adaptive Lighting within the Public Realm[4];
- ILP Lighting Landscapes[5];
- BS 5489-1 : 2020 – Code of Practice for the Design of Road Lighting[6];
- BS EN 13201-2:2015 – Road Lighting – Part 2: Performance Requirements[7];
- BS EN 12464 – 2 2014 – Outdoor Work Spaces; SLL Guide to Limiting Obtrusive Light 2012[8];
- SLL Lighting Handbook 2009[9];
- LG 6 (CIBSE) – The Exterior Environment 2016[10]; and
- ILP Guidance Note 08/18 Bats and Artificial Lighting in the UK[11].

4.30 Lighting is assumed to be operational 24 hours a day to provide a safe place for pedestrians, members of the public and future users of the Site (i.e. reduction in crime measures) as well as to ground the Proposed Scheme within the context of the surrounding urban realm. All external lighting will be controlled by photocell overrides whereby luminaires are held off while natural daylight is sufficient.

4.31 A bat friendly lighting scheme following guidance outlined in The Institution of Lighting Professionals (ILP) Guidance Note 08/23[12] will be implemented. The lighting strategy will focus on minimising splay over the river corridor from the Proposed Scheme onto adjacent ecological receptors via lighting design measures, such as sensitive site configuration, light spectrum and lumen specification.

Building Safety

4.32 The final building management company will have in place the required emergency producers/practices (i.e. Fire Emergency Evacuation Plan (FEEP)) or

apparatus/instruments (i.e. smoke detectors/sprinklers) required by law for these uses. In addition, the buildings will be designed, in line with Building Regulations Approved Document D: Fire Safety, with appropriate fire preventative measures (i.e. fire doors, extinguishers etc.) and all external façades and materials will meet the necessary fire resistance standards set out within Building Regulations and by law.

4.33 The design of the Proposed Scheme will be informed by 'Secure by Design' principles and appropriate design and site management measures (including appropriate lighting and digital entry systems at each building). The Proposed Scheme will have on-Site security staff, with staff present 24 hours a day. Whilst the majority of the Site has been purposely developed to be publicly accessible, there will be areas where controlled access is required (i.e. entry to the accommodation blocks), and this will be controlled through means of managed control such as intercom, fob, bollards, or a keypad locking system (to be agreed).

4.34 Plant rooms and equipment will be designed to contain any spills through bunds and prevent infiltration into ground.

Surface Water Drainage Strategy

4.35 The proposed surface water drainage will not increase the runoff rate and will include an allowance for climate change in accordance with relevant guidance[13].

4.36 The proposed drainage system will be designed in accordance with BS EN 752:2017 and Sustainable Drainage Systems (SuDS) will be incorporated into the surface water drainage network as rain gardens and permeable surfacing, in accordance with CIRIA 753 – The SuDS Manual[14] where practical.

4.37 The Drainage Strategy (**Appendix 14.1**) allows for a reduction in the surface water runoff rate through the provision of storm water attenuation storage and SuDS features. Storage volumes have been determined to restrict peak surface water runoff rates from impermeable areas of the Proposed Scheme.

4.38 The pre-development brownfield discharge rate has been determined based on the modified rational method taking the existing impermeable catchment (100% of the site area) into account. This results in a discharge rate of 37.8l/s for the 1 year return period storm. Approximately 61% of the existing site discharges to the adoptable sewer in Gloucester Street. The proposed discharge rate aims to reduce this to a maximum discharge rate of 18.9l/s (50% reduction) for all storms up to the 1:100 + climate change allowance event.

4.39 The finished floor levels (FFL) of the proposed residential units, which are classified by the Technical Guidance to the NPPF as being more vulnerable, will be set a minimum level equivalent to the 1 in 200 year plus climate change level plus an additional 600mm. All commercial units, classified as less vulnerable, will have the FFL set at a minimum of the equivalent to the 1 in 200 year plus climate change level plus an additional 300mm.

4.40 The existing flood zone cannot be altered without wider interventions within the River Medlock catchment area. However, locally with the development site, the basement window sill levels are proposed to be raised to mitigate the risk of flooding to the lower

ground / basement level of the building. The basement level will also not include any habitable space. All other floor levels will be at or above existing floor ground floor level which is at least 30.79m AOD and is therefore higher than the 1:100 year flood event plus 240mm freeboard of 29.85m AOD.

4.41 The proposed connection to the public sewer system will be subject to agreement with United Utilities under a Section 106 Agreement.

Foul Water Strategy

4.42 An independent foul water drainage system, separate to the surface water drainage system, will be provided and will discharge solely to public sewers within the adjacent highway.

4.43 The proposed drainage system will be designed in accordance with BS EN 752:2017, Building Regulation Approved Document Part H.

4.44 The proposed connections to the public sewer system will be subject to agreement with United Utilities under the Section 106 Agreement.

Potable Water Strategy

4.45 The United Utilities Water Resources Management Plan[15] states that there is forecasted to be a surplus of water available from 2020 – 2040, with a very small deficit occurring from 2041 – 2045. This accounts for future economic and population growth and climate change. A resilience risk is identified for Manchester, associated with numerous single points of failure on the regional aqueduct system which supplies Manchester. United Utilities have identified five solutions to remove this risk, which are set out in their plan.

4.46 Measures to reduce water consumption, including the provision of water efficient fixtures and fittings, i.e. low flow taps and low water use WCs will be implemented.

4.47 Manual external watering points will be provided at ground level, Level 03, Level 04 and roof level to provide a water supply for the establishment of the soft landscape areas, cleaning of surfaces and photo voltaic panels.

Energy Strategy

4.48 The Proposed Scheme will conform to the requirements set out in Parts L2A (Conservation of Fuel & Power) of the Building Regulations 2021 and Manchester Councils key Local and Core Strategy policies.

4.49 The new build elements of the Proposed Scheme will take a fabric first[a] strategy approach to reduce the buildings energy demands.

[a] A 'fabric first' approach involves maximising the performance of the components and materials that make up the building fabric itself to reduce capital and operational costs, improve energy efficiency and reduce carbon emissions Key considerations are: Maximising air-tightness; increased levels of insulation; optimising solar gain through the provision of openings and shading; optimising natural ventilation; and using the thermal mass of the building fabric.

4.50 Overheating modelling has been undertaken and demonstrates that through the fabric efficiency and performance, use of openable windows and mechanical ventilation, the residential rooms within the development can meet TM59 and Approved Document Part O.

4.51 The Proposed Scheme is all-electric and combustion-free (with the exception of emergency generators). It is therefore in a position to decarbonise as the electricity grid decarbonises in the future.

4.52 The proposed new build elements will aim to achieve greater than the following reductions in CO_2 emissions over current Building Regulations based on the following the Energy hierarchy:

- Energy Efficiency (to achieve at least a further 10% reduction);
- Centralised Energy (e.g. energy centre, connection to district heat network); and
- Low or Zero Carbon Technologies (e.g. ASHP, solar PV).

4.53 The Site is located in an area where no proposed or existing district heat networks appear to be planned. Consultation will be carried out with MCC and local ESCO to review further.

4.54 The key sustainability principals will be:

- Air Source Heat Pump for efficient generation of hot water feeding an Energy Centre;
- Air Source Heat Pumps for heating and cooling to amenity spaces;
- Low use water equipment;
- LED lighting throughout;
- Mechanical Ventilation Heat Recovery (MVHR) on ventilation systems; and
- Photovoltaic panels for electricity generation.

4.55 A BREEAM rating of “Excellent” is being targeted.

Waste Arisings and Strategy

4.56 The Proposed Scheme has been designed in order to take account of appropriate provision for waste storage and handling facilities/areas, inclusive of areas for segregation of waste and recycling. In addition, all waste storage/handling facilities have been designed in accordance with British Standard (BS) 5906:2005 Waste Management in Building – Code of Practice.

Resilience to Climate Change

4.57 The evolving climate has been considered throughout the design of the Proposed Scheme. The evolving climate is expected to include an increase in mean summer and

winter temperatures; increase in annual precipitation; decrease in mean summer precipitation; and extreme weather events. The following key climate resilience measures are integral to the Proposed Scheme:

- The Building Regulations[16] will be met in relation to the impact of ground movement in foundation design;
- Incorporation of landscaping proposals to maximise ecological value which will include the selection of climate change tolerant species;
- The proposals will integrate habitat for Black Red Start at Level 04;
- The proposals seeks to enhance the River Medlock corridor adjacent to the Site through a clean up and marginal planting to increase biodiversity and wellbeing of residents in the building;
- In accordance with national guidance the mitigation proposed in the Flood Risk Assessment will take into account the potential effects of climate change to minimise risk of flooding. This will include consideration of climate change effects on river levels and the design of the surface water drainage system which will take into account the 1 in 100 year storm event and required climate change allowances;
- An overheating analysis of the Proposed Scheme will be undertaken. Where measures are required to reduce the risk of overheating this will be done in accordance with the cooling hierarchy[b].; and
- Provision of water efficient fixtures and fittings, i.e. low flow taps and low water use WCs.

Construction of the Proposed Scheme

Construction Programme and Phasing

4.58 Site preparation and construction of the Proposed Scheme is anticipated to commence in 2024, with the construction being completed over approximately 3 years. The Proposed Scheme is anticipated to be fully operational in 2027.

4.59 Construction works are anticipated to comprise the following key stages, broadly in chronological order:

- Site securement;

[b] The cooling hierarchy is as follows: 1. minimise internal heat generation through energy efficient design; 2. reduce the amount of heat entering a building in summer through orientation, shading, albedo, fenestration, insulation and green roofs and walls; 3. manage the heat within the building through exposed internal thermal mass and high ceilings; 4. passive ventilation; 5. mechanical ventilation; and 6. active cooling systems (ensuring they are the lowest carbon options).

- Formation of construction access(s) and temporary construction compound (within the Site);
- Site preparation works, including clearance works, utilities diversions (where appropriate), provision of retained features, etc.;
- Construction of new access junctions, including temporary closures/diversions (where required);
- Demolition and Site clearance works, including the existing Hotspur Press Timber Structure (with the exception of the façade) and other features to be removed, utilities (where applicable) and below-ground services / structures (where applicable);
- Excavation, earthworks, levels and material management;
- Temporary works to retain the integrity of the historic brick façade;
- Construction of buildings and associated infrastructure (i.e. services and plant); and
- Implementation of proposed landscaping, lighting, internal and external finishing.

4.60 Where appropriate, these activities are discussed in further detail below. Where assumptions have been made these have been clearly stated.

4.61 A commitment has been made to a number of environmental mitigation measures (as set out within **Volume 3: Environmental Management Plan**) to be adopted throughout the construction stage, intended to be secured and managed through a Construction Environmental Management Plan (CEMP).

Site Securement

4.62 Securing the Site will be achieved through a combination of secure fencing, barriers and 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 if appropriate.

Construction Access and Vehicle Movements

4.63 Construction access will be situated on from Cambridge Street / Gloucester Street.

4.64 Consideration has been given to the likely daily construction vehicular movements, which would result in c.28 vehicular movements per day (9 HGVs and 19 LGVs). This equates to three vehicular movements per hour throughout the working day.

4.65 A Construction Traffic Management Plan (CTMP) will be prepared by the principal contractor (when appointed) which will set out the proposed routing of construction traffic and measures to enforce such routing (i.e. signage). This will be agreed with MCC Highways.

Construction Compound

4.66 During construction, either a central compound and/or a number of satellite compounds will be required for the contractor and appointed subcontractors. The exact location of the construction compound(s) is unknown at this time, but it will be within the Site curtilage.

4.67 The principal contractor will identify the proposed compound locations within a Site Layout Plan as part of a CEMP (**Volume 3: Environmental Management Plan**) for submission and approval by MCC prior to commencement of construction activities on-site.

Temporary Drainage Strategy

4.68 The Principal Contractor will be responsible for managing storm water run-off and foul water effluent generated during the temporary construction stage (including water arising from excavations, rainfall and staff welfare). Management of this water may include the ongoing use of the existing channels, gullies and outlets, construction in part of the final development drainage system or by providing temporary connections into the existing public sewer network. All connections will require approval from MCC and United Utilities prior to implementation.

4.69 A Surface Water Management Plan (in accordance with best practice guidance such as The SuDS Manual (C753)[17] and BS8582:2013 Code of practice for surface water management for development sites[18]) will be required to be established on Site by the contractor to control and manage surface water run-off. This will include the installation of a temporary drainage system to collect and contain run-off including any discharge agreements with the local sewer authority. It may also be necessary to introduce perimeter cut off drains to prevent overland run-off and additional interceptors for pollution and debris collection.

Utilities Strategy

4.70 The Proposed Scheme will apply for new mains cold water and new electrical supplies into the building. Applications will be made with the network operators to obtain details and agree final locations and details.

4.71 Any utilities requiring diversion, stopping up or temporary relocation will be undertaken in line with an agreed strategy with the relevant network operators.

4.72 The works / route of any new connections are not fully known at this stage. However, it is assumed that the works will be limited in nature temporary and short-term, for a limited time within the overall construction programme. In addition, a small number of receptors (predominantly comprising pedestrians, cyclists and drivers of vehicles) would be likely be affected. Therefore, no significant effects are anticipated to arise.

Features for Retention / Removal

4.73 The Proposed Scheme will require part demolition of the structure of the existing Hotspur Press building (all internal structure to be removed) (see **Figure 4.3 – Figure 4.13**). The façade of the existing Hotspur Press (except for the west elevation) will be retained and incorporated into the Proposed Scheme.

4.74 The demolition of the building will likely comprise the following general practices:

- Internal 'soft-strip' exercise, with all waste arisings removed from the building and segregated into allocated skips for appropriate processing/recycling/disposal;

- Any hazardous materials (including asbestos) will be removed, handled and disposed of in line with appropriate guidance and regulations;

- Demolition works will be undertaken using mechanical demolition techniques (i.e. no form of explosive demolition will be required) from the highest point downward. All waste arisings will be separated into allocated skips to maximise material recycling;

- Where required appropriate fencing/exclusion zones will be identified and implemented by the appointed contractor; and

- Removal of floor slabs, foundations, and other areas of hardstanding.

4.75 All vegetation growing on the external façade will be removed.

Earthworks, Levels and Material Management

4.76 To obtain appropriate development plateau levels, it is anticipated there will be both areas where levels will reduce (areas of cut) and areas where level will increase (area of fill). Existing basement level to the west of the site is 27.30mAOD. The central rectangular building ground floor level is 31.13m, and the shed to the north and east is 30.81m. At this stage it is assumed that existing levels will be kept.

4.77 Local excavation and trenching works will be required to install services, drainage runs and foundations for structures. Any diversion or reinforcement of utilities will happen as part of the enabling works and any off-site works will be the responsibility of the utility provider.

4.78 All waste arisings during construction are to be controlled through the implementation of a CEMP and a best practice waste management strategy (described further in **Volume 3: Environmental Management Plan**).

4.79 Prior to and during any earthworks the recommendations of the **Written Scheme of Investigations (WSI) for an Historic Building Survey and Evaluation**[19] will be followed to ensure any potential below ground remains are evaluated and recorded through archive in accordance with current Historic England guidelines, and current CIfA guidance[20].

Remediation Strategy

4.80 The remediation will be confirmed following the site investigation and risk assessment. At this stage, it can be assumed that it will incorporate build phase remediation including clean cover soils in soft landscaping areas and barrier pipe for potable water supply.

Foundations Solution

4.81 Given the anticipated loading of the proposed building, along with the likely ground conditions on the Site, it is anticipated that piled foundations will be required for the construction of the buildings.

4.82 Foundation design will be undertaken in accordance with relevant industry guidance, including but not limited to CIRIA Report C572: Treated ground engineering properties and performance, British Research Establishment document FB75: Building on Fill - Geotechnical Aspects and British Standard 6031:2009: Code of Practice for Earthworks.

Cranes

4.83 The use of mobile cranes and tower cranes is anticipated for the construction of the Proposed Scheme.

Working Hours

4.84 Construction working hours[21] (noisy work) will be 07:30 to 18:00 Monday to Friday; 08:30 to 14:00 on Saturday; and no noisy work on Sundays and Bank Holidays. Operations outside of these hours will be agreed with MCC.

Site Security

4.85 The site security arrangements for the Proposed Scheme during the construction stage will be in line with the requirements set out in the Construction (Design and Management) Regulations 2015 and appropriate levels of security (personnel / CCTV) will be provided.

Demolition and Construction Waste Arisings and Strategy

4.86 Sources of waste during the construction stage are assumed to relate to construction materials (including packaging) and surplus cut to create finished floor levels and the proposed basement. The remedial solution may include the removal of soil (which may be contaminated). Such waste will be handled, processed and removed from Site by suitability qualified contractors, all being undertaken in line with The Hazardous Waste (England and Wales) Regulations 2005.

4.87 It is anticipated that generic waste produced during construction would be controlled through the implementation of a CEMP, secured by planning condition. The CEMP will be informed by the waste provisions of the Environmental Protection Act 1990[22] and the Environmental Protection (Duty of Care) Regulations 1991[23] and will set out the principles and legal requirements relating to waste, including any hazardous waste that is encountered and required to be exported off-site for disposal.

4.88 The CEMP will also describe how materials will be managed efficiently and disposed of legally during construction. It will also outline the aims, objectives and on-going management responsibilities, including management practices, to be implemented during the construction stage, and will set targets for the reduction, diversion from landfill and reuse of waste.

Construction Environmental Management Commitments

4.89 The proposed construction works will be carried out by a competent contactor, who will comply with current legislation (including the Health and Safety at Work etc. Act 1974, the Control of Pollution Act 1974 and Construction (Design and Management)

Regulations 2015). This will be captured within the CEMP, the contract documents, methods statement and risk assessments issued by the appointed contractor(s) ahead of the works.

4.90 A commitment has been made to a number of environmental measures and management practices during the construction stage and, where appropriate, these will be set out as part of the CEMP and will be agreed with MCC.

4.91 As an overview, the CEMP will include the following:

- Programme and phasing details of proposed construction works;
- A plan of site preparation and construction works, highlighting the various stages and their context within the project, including a full schedule of materials, manpower resources, and plant and equipment schedules;
- Detailed layout arrangements, plans for storage, accommodation, vehicular movements, delivery and access;
- Prohibition or restricted operations;
- Details of plant used;
- Identification of roles and responsibilities of key staff in relation to environmental management;
- Details of operations that are likely to result in disturbance, with an indication of the expected duration of each phase with key dates; and
- A mechanism for the public to register complaints and procedures for handling complaints and requirements for monitoring and record-keeping.

4.92 At present, an outline CEMP has been submitted as part of the Application and will ultimately inform the final detailed CEMP, alongside all mitigation identified within this ES that relates to the construction stage (including demolition activities).

4.93 Full details of the CEMP measures committed to are provided within **Volume 3: Environmental Management Plan (EMP)**, in order to suitably manage environmental effects during the construction stage.

References

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[17] CIRIA (2015). The SuDS Manual (C753).
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[22] Environmental Protection Act 1990 No. 43 Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents
[23] Environmental Protection (Duty of Care) Regulations 1991 No. 2839. Available at: https://www.legislation.gov.uk/uksi/1991/2839/made#:~:text=The%20duty%20requires%20such%20persons,person%20or%20to%20a%20person

5. Consideration of Alternatives

Introduction

5.1 This Chapter reports the 'reasonable alternatives' considered with respect to the Proposed Scheme.

5.2 Paragraph 2, Schedule 4, of the EIA Regulations[1] 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".

5.3 Planning Practice Guidance (PPG)[2] indicates that where alternative approaches to development have been considered, the ES should include a description of the reasonable alternatives studied which are relevant to the Proposed Scheme and its specific characteristics. In evaluating the reasonable alternatives studied, an indication should be provided of the environmental effects.

5.4 As such, in line with the EIA Regulations, if no alternatives have been studied, the EIA does not necessarily need to report or assess reasonable alternatives.

5.5 Neither the EIA Regulations, nor PPG identify a specific methodology for the assessment of alternatives, or the criteria to be used to inform the assessment of reasonable alternatives. Therefore, the methodology to be adopted for the purpose of the EIA is based on professional experience of similar projects and an understanding of the Proposed Scheme and its characteristics, as well as focus on delivery of a proportionate assessment, in line with PPG.

Approach to Consideration of Alternatives

5.6 The consideration of alternatives has followed a two-step approach, set out as follows:

- **Step 1**: Consideration of 'factors' that constitute alternatives and justification / discussion for the inclusion / exclusion from further assessment; and
- **Step 2**: Assessment of the 'factors' brought forward from Step 1 and, where applicable, comparison of environmental effects.

Step 1: Consideration of 'Factors'

5.7 **Table 5.1** reports Step 1.

Table 5.1: Step 1: Consideration of 'factors'

Alternative 'factors'	Considered at Step 2	Justification / discussion
Alternative sites (location)	×	Alternative sites have not been considered as the Applicant owns the Site and other sites are outside of the Applicant's control. Whilst the Application for the Proposed Scheme is standalone to any other planning application, the Site has undergone a previous planning application in 2018 and sits on the edge of the First Street Strategic Regeneration Framework (SRF) Area. Given the above, alternative sites were not considered by the Applicant and will not be taken forward to Step 2.
Alternative technologies	×	Whilst alternative technologies are available in terms of the construction of the Proposed Scheme these are largely dictated by 'build-ability' and cost exercises rather than environmental-focused considerations. The Proposed Scheme is PBSA, and given this alternative 'technologies' are not considered to be applicable as they would be for other types of development (i.e. industrial processes or energy generation). Specific energy strategy technologies have been considered as part of the overarching Environmental Standards Statement for the Proposed Scheme, but again this is driven more by requirements of planning policy and other regulatory compliance (i.e. Building Regulations) than environmental considerations. Therefore, alternative technologies were not considered to be applicable and will not be taken forward to Step 2.
Alternative development designs (including size and scale)	✓	The design of the Proposed Scheme has evolved in response to stakeholder engagement, market demand / feedback, technical studies and environmental constraints and opportunities (where present in an urban context). Therefore a design process has been undertaken where 'alternatives' have been considered and disregarded. Therefore, alternative development designs are considered to be applicable and will be taken forward to Step 2.
'Do nothing' scenario	×	The EIA (as reported within this ES) has assessed the likely significant effects largely based on a deviation from the baseline environment, which is in essence the current scenario. **Technical Chapters 7 – 14** have also stated a 'future baseline' in the absence of the Proposed Scheme coming

Alternative 'factors'	Considered at Step 2	Justification / discussion
		forward (i.e. a 'do nothing' scenario) (albeit this has not informed the assessment of likely significant effects). Broadly, the 'do nothing' scenario hypothesises that the likely significant effects identified and reported in this ES would not occur (i.e. no adverse or beneficial effects). In addition, given the strategic position of the Site within Manchester City Centre, is considered likely that if the Proposed Scheme was not to come forward another form of proposed re-development would likely be proposed, the environmental effects of which are unknown at this time as they would be based on the nature of any other proposal(s). Therefore, the 'do nothing' scenario was not considered to be applicable and will not be taken forward to Step 2.

Step 2: Assessment of 'Factors'

5.8 As identified above, alternative development designs are the only 'factor' considered relevant for assessment in terms of alternatives.

5.9 The design of the Proposed Scheme has developed to adapt to site constraints as well as feedback from stakeholders, with the evolution of design being outlined below.

2018 Application

5.10 The previous iteration of the Proposed Scheme which was granted under the 2018 application was for a residential development to provide 171 residential units on the Site. However, due to the current demand for PBSA within Manchester City Centre and the Sites proximity to both the University of Manchester and Manchester Metropolitan Universities campuses on Oxford Road, it was deemed that PBSA was a more suitable fit for the Site and the surrounding area.

5.11 A summary of the outputs of the 2018 ES is provided below in **Table 5.2**.

Table 5.2: Outputs of 2018 ES

Technical topic	Significant residual effects identified[a]?	
	Construction	Operation
Water Resources and Flood Risk	×	×
Noise and Vibration	×	×

[a] i.e., after the implementation of mitigation measures.

Technical topic	Significant residual effects identified[a]?	
	Construction	Operation
Heritage	✓[b]	✓[c]
Townscape and Visual Impact	-	✓[d]
Daylight and Sunlight	✗	✗
Wind Microclimate	✗	✗

5.12 Overall, the different use of the Proposed Scheme now has no material difference on environmental effects[e], as the effects are largely driven by the creation of new built form (which remains similar).

Design Evolution

5.13 The initial PBSA scheme proposed was 31 storeys, with a roof top amenity level. The design team then worked with the wider team to develop this design into the current proposal as described in **Chapter 4**.

5.14 The proposed height of 36 storeys was developed due to its proportional relationship to the base plinth whose height is set by the historic fabric, its relationship to other towers in the city, and its impact on key views from ground level within the city. It is considered a taller tower would go beyond the optimal, particularly in regard to the proportional relation between the tower and its base. Floor to ceiling heights were reduced by 75mm, somewhat reducing the visual prominence of the Proposed Scheme.

5.15 The reorientation of the tower so that it aligns with Gloucester Street creates a strong frontage to the Hotspur Press façade and signage.

5.16 The Proposed Scheme has retained some aspects of earlier design iterations which have a positive influence on the population and human health and cultural heritage receptor groups, including:

- The proposal for a new square located where the existing weaving sheds are to allow fluid pedestrian access from First Street all the way through to Cambridge Street / Gloucester Street;
- Retention of the 1801 mill's eastern façade;
- Retention of the Hotspur Press and Percy Brothers Ltd signage on the eastern façade; and

[b] Both significant adverse and beneficial effects were identified.
[c] Both significant adverse and beneficial effects were identified.
[d] Significant beneficial effects were identified.
[e] Note that climate change and socio-economics have been scoped in since the preparation of the 2018 ES due to changed guidance and evolving baseline conditions.

- Retaining the 1880 warehouse block.

5.17 The materiality of the Proposed Scheme aligns with the existing/retained Hotspur Press, which retains its overall value.

5.18 The Proposed Scheme has also added commercial space to the ground level which wasn't in previous design options, which will positively impact the economic productivity and social value of the area.

5.19 Overall, as the Site is small and constrained (e.g. the presence of the River Medlock, railway lines and road nearby) and the existing Hotspur Press building (with local heritage value) has been designed into the Proposed Scheme, there have been limited opportunities for major design alternatives.

References

[1] Her Majesty's Stationery Office (2017) The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 SI 2017/517 (as amended by The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018, SI 2018/695). Available at: http://www.legislation.gov.uk/uksi/2017/571/contents and https://www.legislation.gov.uk/uksi/2018/695/contents/made [Accessed: 25/08/2023].

[2] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government: Planning Practice Guidance Environmental Impact Assessment. Available at: https://www.gov.uk/guidance/environmental-impact-assessment#the-purpose-of-environmental-impact-assessment [Accessed: 25/08/2023].

6. Topics which are Not Significant

Introduction

6.1 The approach to determining the scope of topics to be assessed within the ES is detailed within **Chapter 2: Approach to EIA**. As set out in **Chapter 2: Approach to EIA**, as part of the EIA process, based on the information available (**Chapter 4: Development Specification**), there are a number of environmental topics for which a further detailed assessment as part of the EIA is not justified, as they are not considered to be significant. These topics (and related effects) are appraised below, and have not been reported further within the ES.

6.2 The environmental topics for which no likely significant environmental effects have been identified are:

- Transport and Access;
- Air Quality;
- Biodiversity;
- Archaeology;
- Ground Conditions and Contamination;
- Lighting;
- Major Accidents and/or Disasters; and
- Waste.

6.3 The environmental topics listed above are considered in turn below in this Chapter. Based on the technical baseline and understanding of the Proposed Scheme, the effects for these topics are considered unlikely to be significant and will not be considered further in the ES. A factual evidence base has been provided for each effect scoped out to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within **Volume 3: Environmental Management Plan** (EMP).

6.4 For some technical topics which are proposed to be 'scoped out', a standalone application report has been prepared and submitted with the Application, though this is not the case for all topics. The application documents are set out in **Chapter 2: Approach to EIA**.

Transport and Access

Technical Baseline

6.5 The Site is located centrally in Manchester City Centre. It is connected to the adopted highway on its eastern extent with Cambridge Street/Gloucester Street providing onward movement towards Whitworth Street West to the north-east of the Site.

6.6 From a review of accident data, there do not appear to be any accident clusters adjacent to or in proximity of the Site. The signalised junction with Whitworth Street West is complete with dropped kerbs, tactile paving, and pedestrian call facilities. They also have advanced-stop cycle provision which compliments an advisory cycle lane along much of the road in each direction.

6.7 It is recognised that as a City Centre location, there are various modes in travel used on local roads/footways, including active travel (walking, cycling and wheeling), public transport and motor users. There are no Public Rights of Way (PRoW) located in the immediate vicinity of the Site.

Effects Unlikely / Not Significant

6.8 As agreed with MCC Highways as part of the 2018 Application (App Ref: 120635/FO/2018) and considering the highly accessible nature of the Site (particularly regarding proximity to City Centre amenities, educational facilities and to public transport options) no standard car parking is proposed. However, as set out in **Chapter 4: Development Specification,** there is a requirement for disabled parking and servicing access; as such 1no. disabled bay and 1no. loading bay is proposed. The loading bay is considered sufficient to cater for all refuse collections, deliveries, servicing and movements required at the start/end of terms.

6.9 Consideration has been given to the likely daily construction vehicular movements, which would result in c.28 vehicular movements per day (9 HGVs and 19 LGVs). This equates to three vehicular movements per hour throughout the working day.

6.10 Consideration has also been given to potential daily operational vehicular movements associated with the Proposed Scheme and this would result in 59 two-way movements per day – in the region of two to three vehicular movements per hour and approximately four two-way movements during the AM and PM peak hours. This is based on a trip generation assessment for the proposed use of the Site using the TRICS database.

6.11 On an average day, the forecast number of vehicular movements is negligible (two to three movements per hour when operational and three movements per hour during the temporary construction period). On this basis, it is considered that the proposals would have no residual adverse impact in terms of traffic impacts with consideration to the construction and operational scenarios.

6.12 Furthermore, this is noted to be a reduction when compared with the previously consented scheme where the worst-case forecast number of vehicular movements was 177 vehicles per day, equating to seven movements per hour. The Proposed Scheme would therefore result in a decrease of five vehicles per hour when operational.

6.13 On move-in/move-out day at the start/end of term, the level of vehicular activity at the Site will increase. However, this activity would typically occur only twice per year, and would be managed by a strategy to manage traffic movements and spread them across the day. The remainder of this assessment therefore focusses on the average day only.

6.14 The IEMA Guidance[1] notes the importance of identifying particular population groups that may be sensitive to changes in traffic conditions. The following user groups are outlined at Paragraph 1.28 of the IEMA Guidance:

- *"Non-motorised users*
- *Public right of way users*
- *Motorists and freight vehicles*
- *Public transport*
- *Emergency services"*

6.15 The IEMA Guidance provides assessment categories as follows. These categories are discussed within the subsequent corresponding subheadings:

- *"Severance of communities;*
- *Road vehicle driver and passenger delay;*
- *Non-motorised user delay;*
- *Non-motorised amenity;*
- *Fear and intimidation on and by road users;*
- *Road user and pedestrian safety; and*
- *Hazardous/large loads."*

Severance of Communities

6.16 Severance is a perceived division that occurs when a traffic link separates part of an existing community. This can occur when a road becomes too heavily trafficked (making crossing the road a problem) or when a new route divides existing land creating a physical barrier.

6.17 Based on the negligible level of vehicular traffic that is likely to be generated by the Proposed Scheme, as set out above, it is not considered that there would be any adverse severance impacts.

6.18 Therefore, severance to relevant identified receptors is not considered to be significant and will not be considered further in the ES.

Road vehicle driver and passenger delay

6.19 Road vehicle driver and passenger delay is the time lost to a specific journey as a result of other users on a given network. If a development generates vehicular trips and as they are distributed onto the surrounding road network, they impact the operation of that network. Impacts on the surrounding road network can manifest in additional delay and/or queuing for drivers and their passengers and public transport users where applicable.

6.20 Based on the negligible level of vehicular traffic that is likely to be generated by the Proposed Scheme, as set out above, it is not considered that any impact on road vehicle driver and passenger delay would occur. Furthermore, the net trip generation falls well

below Transport for Greater Manchester's (TfGM) 30 trip threshold, therefore no junction capacity assessments are required.

6.21 Therefore, impacts with respect to road vehicle driver and passenger delay to relevant identified receptors is not considered to be significant and will not be considered further in the ES.

Non-motorised user delay

6.22 Non-motorised user delay is the time lost to a specific journey as a result of other users on a given network. If a development generates vehicular trips, the vehicular demand affects the ability of users to cross local routes, which results in an impact on delay. Impacts on the surrounding road network can manifest in additional delay for pedestrians, runners, cyclists and equestrians where applicable.

6.23 Based on the negligible level of vehicular traffic that is likely to be generated by the Proposed Scheme, as set out above, it is not considered that any impact on non-motorised user delay would occur.

6.24 Therefore, impacts with respect to non-motorised user delay to relevant identified receptors is not considered to be significant and will not be considered further in the ES.

Non-motorised amenity

6.25 Non-motorised amenity is the relative pleasantness of a journey as a result of other users on a given network. Influencing factors can be traffic flow, traffic composition and separation from traffic. It is recognised that the footways in the vicinity of the Site are wide and connect to signalised pedestrian crossings in the north where Cambridge Street meets Whitworth Street West.

6.26 Based on the negligible level of vehicular traffic that is likely to be generated by the Proposed Scheme, as set out above, it is not considered that any impact on non-motorised amenity would occur.

6.27 Therefore, impacts with respect to non-motorised amenity to relevant identified receptors is not considered to be significant and will not be considered further in the ES.

Fear and intimidation on and by road users

6.28 Fear and intimidation can change as a result of changes in baseline traffic flows. This is influenced by a number of things including the volume of traffic, HGV content, nature and frequency of pedestrian/cycle/ equestrian infrastructure, and the width of such infrastructure.

6.29 It is noted that there will be a minor short term increase in HGV movements associated with the temporary construction stage (nine per day) and an increase in daily HGV movements associated the operational stage with servicing and refuse requirements equating to one – two movements per day. This is not considered to impact on fear and intimidation on and by road users. For context, this level of movements associated is not considered to be any higher than the HGV movements associated with the consented scheme.

6.30 Therefore, impacts with respect to fear and intimidation on and by road users to the relevant identified receptors is not considered to be significant and will not be considered further in the ES.

Road user and pedestrian safety

6.31 Road user and pedestrian safety is concerned with current and future collision rates; with a particular emphasis on serious and fatal collisions. IEMA Guidance notes that, whilst collision cluster analysis is still relevant, the 'Safe System' should be adopted as an international best practice.

6.32 Based on the negligible level of vehicular traffic, it is not considered the low levels of vehicular movement generated by the Proposed Scheme would result in an impact on road user and pedestrian safety.

6.33 From a review of accident data, there do not appear to be any accident clusters adjacent to or in proximity of the Site. In addition, the proposed public realm areas will provide enhanced provision for pedestrians and the footways in the vicinity of the Site are of suitable width, connecting into controlled crossing facilities in the north at Whitworth Street West and uncontrolled crossing places in the south along Cambridge Street.

6.34 Therefore, impacts with respect to road user and pedestrian safety to relevant identified receptors is not considered to be significant and will not be considered further in the ES.

Hazardous/large loads

6.35 Given the Proposed Scheme is residential in nature, the movement of hazardous loads is not necessary during either the construction or operational stage.

6.36 Therefore, impacts with respect to hazardous loads to the relevant identified receptors is not considered to be significant and will not be considered further in the ES.

Air Quality

Technical Baseline

Air Quality Monitoring

6.37 Monitoring of air quality within MCC is conducted through both continuous and non-continuous monitoring methods. These have been reviewed in order to provide an indication of existing air quality in the area surrounding the Site.

6.38 MCC operated three automatic monitoring stations during 2019. The closest automatic monitoring station is located approximately 400m south-east from the Site. The most recently available automatic monitoring data from 2019[a] is presented in **Table 6.1**.

[a] The most recent, available and representative monitoring to a current baseline is 2019 due to the COVID-19 pandemic and associated governmental restrictions. Therefore, 2019 has been used as the baseline year for this assessment.

Table 6.1: Monitored Annual Mean NO_2 and PM_{10} Concentrations

Site ID	X	Y	Location	Site Type	NO_2 Annual Mean Concentration 2019 (µg/m^3)	PM_{10} Annual Mean Concentration 2019 (µg/m^3)
MAN1	384233	397287	Manchester Oxford Street	Kerbside	59.0	26.0

6.39 As indicted in **Table 6.1**, monitoring station MAN1 was above the relevant NO_2 air quality objective (AQO) (40 µg/m^3 annual mean) in 2019 and below the relevant PM_{10} AQO (40 µg/m^3 annual mean) in 2019. MAN1 lies within the extents of the main study area[b].

6.40 MCC operated a network of 38 diffusion tubes during 2019. The closest diffusion tube is located approximately 200m west from the Site. The most recently available diffusion tube data is from 2019, which is presented in **Table 6.2**.

Table 6.2: NO_2 Annual Mean Concentration 2019

Site ID	X	Y	Location	Site Type	NO_2 Annual Mean Concentration 2019 (µg/m^3)
MAN29A	384117	397505	Oxford Street	Urban Traffic	55.4
MAN77	383602	397488	Hewitt Street	Urban Background	43.7
MAN82	384233	397287	Manchester Oxford Road	Urban Traffic	51.6

6.41 As indicated in **Table 6.2**, all diffusion tubes were above the relevant AQO (40 µg/m^3 annual mean) in 2019.

Defra Published Background Concentrations for 2019

6.42 Background concentrations, as used within the prediction calculations, were referenced from the UK National Air Quality Information Archive database based on the National Grid Co-ordinates of 1 x 1 km grid squares nearest to the Site. In August 2020, Defra issued revised 2018 based background maps for nitrogen oxide (NOx), NO_2, PM_{10} and $PM_{2.5}$. The mapped background concentrations used in the assessment are summarised in **Table 6.3**.

[b] The study area for the road traffic emissions assessment has been defined reflecting the Site and the surrounding environment over which significant effects would potentially occur both from the Proposed Scheme and in combination with approved projects. The study area for the construction dust assessment comprises all sensitive receptors within 350m of the Site. The extent of the study area is presented in **Figure 6.1**.

Table 6.3: Published Background Air Quality Levels (µg/m3)

	2019			
Receptor Location	NO_2	NO_x	PM_{10}	$PM_{2.5}$
PR1 - PR24	26.07	39.95	13.47	8.69

6.43 All proposed receptors associated with the Site are deemed to be below the relevant AQOS for NO_2, PM_{10} and $PM_{2.5}$. The AQO exceedances recorded through the Local Authority monitoring are focussed in the immediate vicinity of primary sources of emissions such as Oxford Road and the M57. As the Site is set back up to 400m from these primary air pollution sources, the concentration at the Site will be lower as is reflected in the DEFRA backgrounds in **Table 6.3**. There is a trend of decreasing NO_2 emissions from 2015 to 2019 recorded through the Local Authority monitoring which is expected to continue into the future.

Effects Unlikely / Not Significant

Emissions from construction traffic

6.44 Construction traffic has the potential to cause nuisance and disturbance from an increase in dust levels. However, owing to the size of the Proposed Scheme and the implementation of measures from the CEMP as detailed in **Volume 3: Environmental Management Plan**, the effects on the local receptors are not considered to be significant, including from the use of any Non-Road Mobile Machinery (NRMM).

6.45 As detailed in **Chapter 4: Development Specification** the construction stage is anticipated to exceed two years in duration, however the development traffic associated with the construction stage is anticipated to be 9 two-way HGV movements and 19 two-way LGV movements per day, which is below the IAQM screening threshold of 25 HGVs and 100 total vehicles. Therefore, the effects of emissions from construction traffic are considered to be negligible, therefore not significant, and will not be considered further in the ES.

Nuisance and disturbance as a result of dust from construction activities [existing residential receptors]

6.46 An assessment of construction activities as detailed in the **Air Quality Assessment**[2] has identified the potential for nuisance and or adverse health effects due to dust deposition arising from on-site construction activities. This may result in the soiling of surfaces, visible dust plumes and elevated PM_{10} concentrations as a result of dust generating activities on-site. It is anticipated that dust and particulate matter emissions produced during construction activities would be controlled through the implementation of a CEMP and mitigation identified by the Institute of Air Quality Management (IAQM) guidance[3] and would include prevention measures, such as screening stockpiles of materials, deployment of windbreak netting and dampening exposed soils as appropriate, and set out requirements for ongoing monitoring and liaison with the local community, and MCC.

6.47 As such, nuisance and disturbance as a result of dust from construction activities to existing residential receptors is not considered to be significant and will not be considered further in the ES.

Emissions from operational traffic

6.48 Operational stage traffic emissions have the potential to increase levels of nitrogen (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$). The **Air Quality Assessment**[2] has assessed the potential effects of additional vehicle movements generated by the operation of the Proposed Scheme on existing receptors. The assessment has concluded that there will be a negligible effect on relevant long term and short term Air Quality Objectives (AQO) for NO_2, PM_{10} and $PM_{2.5}$ as a result of the Proposed Scheme. As such, emissions from operational traffic are not considered to be significant and will not be considered further in the ES.

Nitrogen deposition from operational stage traffic emissions [ecological receptors]

6.49 Operational stage traffic emissions also have the potential to increase levels of nitrogen deposition on ecological receptors. The Conservation of Habitats and Species Regulations (2019)[4] additionally requires competent authorities to review planning applications and consents that have the potential to impact on European designated sites (e.g. Special Protection Areas).

6.50 A study was undertaken to identify any statutory designated sites of ecological or nature conservation importance within the extents of the dispersion modelling assessment. This was completed using the Multi-Agency Geographic Information for the Countryside (MAGIC) web-based interactive mapping service, which draws together information on key environmental schemes and designations. Following a search within a 2km radius of the Site, in accordance with The Conservation of Habitats and Species Regulations (2019), no ecological receptors were identified.

6.51 Therefore, nitrogen deposition as a result of emissions from operational stage traffic to ecological receptors is not considered to be significant and will not be considered further in the ES.

Emissions from the Proposed Scheme

6.52 It is not anticipated that there will be any significant sources adversely affecting air quality from the operation of the Proposed Scheme itself. As detailed in the **Low and Zero Carbon Assessment**[5], the Proposed Scheme will be fully electric, utilising Air Source Heat Pumps (ASHPs) to generate heating, cooling and hot water. A diesel generator is proposed to be located on the roof which will provide a secondary supply for life safety systems in the event of an emergency. The generator will undergo routine testing once a week for a period of 30-60 minutes. As such the impacts of the generator are expected to be negligible. This is not considered significant and will not be considered further in the ES.

Effect of air quality on the Proposed Scheme

6.53 A detailed **Air Quality Assessment** has been undertaken to assess the effect of air quality on the future users of the Proposed Scheme. The assessment has concluded that all proposed receptor locations are expected to be exposed to air quality below the AQOs for

NO_2, PM_{10} and $PM_{2.5}$. Therefore this effect is not significant and will not be considered further in the ES.

Biodiversity

Technical Baseline

6.54 A **Preliminary Ecological Appraisal** (PEA)[6] has been undertaken and submitted to support the Application and a summary of the findings are presented below.

6.55 The PEA confirms the Site is dominated by buildings and hardstanding with only self-seeded-common ruderal vegetation present having colonised fissures within the building.

6.56 The only sensitive ecological receptor within a 500m zone of influence is the River Medlock which runs adjacent to southern and western Site boundaries.

6.57 The Hotspur Press building has been subject to previous ecological survey effort in 2012 and 2018 which recorded negative for the presence of protected and notable species. A **Bat Activity Survey Report**[7] (also submitted to support the Application) has recorded bat roosts within the existing building. The roosts will be required to be closed in advance of the onset of demolition and an A13 Mitigation Licence will be required to be obtained from Natural England.

6.58 Previous surveys for Black Redstart (*Phoenicurus ochruros*) presence / absence on Site, undertaken in 2018, recorded negative for the species. The Site lies within a priority area for Black redstart (a Schedule 1 species under the Wildlife and Countryside Act 1981 (as amended)). The Site recorded suitability for Peregrine Falcon (*Falco peregrinus*), a species also listed on Schedule 1 of the Wildlife and Countryside Act 1981.

6.59 The adjacent River Medlock acts as a commuting corridor for bats.

6.60 No statutory designated sites are present within a 1km radius from central grid reference. Three non-statutory designated sites were recorded within a 1Km radius from central grid, all of which are Regionally Important Geology sites in Greater Manchester (GMRIGS).

Effects Unlikely / Not Significant

6.61 Based on the technical baseline and understanding of the proposed scheme, the following effects are considered unlikely to be significant and therefore will not be considered further within the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within **Volume 3: Environmental Management Plan**.

Impacts from artificial lighting and splay over the River Medlock corridor during the construction and operational stages

6.62 Redevelopment of the Site for residential housing has the potential to introduce elevated levels of artificial light splay over the River Medlock corridor, currently used as a commuting line for bats during the construction and operation of the Proposed Scheme.

6.63 As detailed in **Chapter 4: Development Specification** and in the assessment of lighting effects below, lighting will be controlled through a series of best practice measures, in line

with lighting industry standards and guidance including the CIE publication Technical Report Document 129 and BS EN 12464-2:2014 to reduce light spill and glare. Adherence to these guidance documents and standards will ensure that disturbance associated with construction lighting installations on the River Medlock will be minimised.

6.64 During operation impacts from artificial lighting on the aquatic corridor will be mitigated for via the implementation of a bat friendly lighting scheme following guidance outlined in The Institution of Lighting Professionals (ILP) Guidance Note 08/23[8]. The lighting strategy will focus on minimising splay over the river corridor from the Proposed Scheme onto adjacent ecological receptors via lighting design measures, such as sensitive site configuration, light spectrum and lumen specification.

6.65 Therefore, disturbance and impacts from artificial lighting as a result of the proposals on bats using the adjacent aquatic receptors during the construction and operational stages of the scheme are not considered to be significant and will not be considered further in the ES.

Destruction of bat roost as a result of demolition

6.66 The Site contains a low level of use by common pipistrelle bat for roosting. Unsupervised redevelopment of the building has the potential to kill and/or injure up to ten common pipistrelle bats using three roosts within the building during the demolition stage. The roosts will be closed under a A13 licence from Natural England (which will form part of the CEMP) supported by a robust mitigation strategy focussing on timings of the licensable works to minimise disturbance, providing mid-term roosting provision for bats within the immediate landscape and long term in-situ roost provision within the final structure.

6.67 The mitigation strategy will be informed via consultation with Natural England and follow best practice measures outlined within the UK Bat Mitigation Guidelines[9]. These tertiary mitigation measures would be considered an integral part of the Proposed Scheme and considered as part of the design stage. Therefore, provided these mitigation measures are implemented the impacts on the presence of bat roosts as a result of the Proposed Scheme are not considered to be significant and will not be considered further in the ES.

Pollution as a result of dust and surface run-off from construction activities [River Medlock]

6.68 Demolition and construction activities have the potential to result in adverse impacts on the River Medlock corridor via dust deposition, fuel contamination and siltation arising from on-site construction activities, resulting in potential negative impacts on aquatic receptors. However, the **PEA** confirms that the banks of the River Medlock adjacent to the Site comprise of high brick walls with no real riparian zone present and therefore provides suboptimal suitability for riparian mammals or suitable nest sites for Kingfisher, although there is potential for the River Medlock to provide a suitable feeding source for the Kingfisher.

6.69 It is anticipated that dust and particulate matter emissions produced during demolition and construction activities would be controlled through the recommended IAQM mitigation measures (as detailed above) and implemented through the CEMP. This CEMP will also be informed by the Chartered Institute of Ecology and Environmental Management[10] guidance and would include preventative measures such as screening

stockpiles of materials, deployment of windbreak netting and banksmen and dampening exposed soils/ aggregates as appropriate and set out requirements for ongoing monitoring and liaison with MCC. Potential for pollution from surface water runoff will be prevented through the implementation of a temporary drainage strategy as detailed in **Chapter 14: Flood Risk and Drainage**.

6.70 These tertiary mitigation measures would be considered an integral part of the Proposed Scheme and considered as part of the EMP.

6.71 Therefore, pollution as a result of dust and surface water run-off from construction activities are not considered to be significant and will not be considered further in the ES.

Disturbance to Black redstart and Peregrine Falcon breeding habitat

6.72 The Site is located within a priority area for black redstart and also provides suitable habitat to support Peregrine falcon. Non-mitigated impacts include disturbance and destruction of breeding sites for the species. Mitigation measures include presence/ likely absence surveys to inform a proportionate mitigation strategy along with undertaking the works outside the breeding bird season (March to September inclusive) in line with the Wildlife and Countryside Act 1981 (as amended). If construction works cannot take place outside of the bird breeding season the CEMP will include for a pre-works inspection survey. Mid-works impacts are considered negligible given the proposed demolition of habitats capable of supporting both Black redstart and Peregrine Falcon. A post works enhancement strategy to include a green roof will be incorporated within the scheme design (**Figure 4.19**). Additional enhancements will be provided via the installation of integrated bird boxes to ensure long term breeding habitat within the Proposed Scheme.

6.73 Therefore, disturbance to Black redstart and Peregrine Falcon breeding habitat is not considered to be significant and will not be considered further in the ES.

Loss of habitat during construction

6.74 The Site contains no functional habitats (with the exception of habitat for bats and black redstart which are discussed above), with vegetation on Site comprising self-seeded common species capable of colonising nutrient poor substrates. Therefore clearance of vegetation and loss of habitat is not considered to be significant, and will not be considered further in the ES.

Archaeology

Technical Baseline

6.75 An **Archaeological Desk-Based Assessment**[11] has been prepared for and submitted with the Application. This involved the synthesis of existing data (such as data extracted from the Greater Manchester Historic Environment Record for a 300m search area from the site and the National Heritage List for England), archival resources and previous studies undertaken within the search area, including previous archaeological assessments, a summary of which is provided below.

6.76 The projected line of the Roman road from Manchester to Buxton potentially runs across the north-eastern corner of the Site.

6.77 The Site lay beyond the medieval core of Manchester and likely remained entirely undeveloped until at least the 18th century.

6.78 A grid of streets had been laid through fields within the west of the Site by the late 18th century, in anticipation of development. In addition, a small structure had been erected by the River Medlock. This may have represented a dwelling house or a precursor to Medlock Mills.

6.79 The earliest reference to Medlock Mills comes from a datestone, which implies that the spinning block at Medlock Mills was erected in 1801, though cartographic sources suggest that it was erected between 1804 and 1809.

6.80 The mill complex was expanded and improved throughout the first part of the 19th century, including the installation of a two-storey engine house. The engine house was attached to the south-west corner of the spinning block, as shown on a plan of *c* 1822. The engine house was demolished in the late 19th century as part of the remodelling of the mill complex. In addition, a range of three buildings that are annotated as being three-storeys high on a plan of *c* 1822 were also erected and functioned as batting rooms.

6.81 An L-shaped extension was added to the southern part of the Medlock Mills by 1831, replacing the former batting rooms. The extension appears to have been demolished by 1851, and the footprint occupied subsequently by the extant, curved range on the north bank of the River Medlock and the associated single-storey workshops, built in 1880.

6.82 A detached building occupying the north-eastern part of the mill had been erected by 1844. The buildings were short-lived, as a large component was demolished in 1849 to enable the construction of the Manchester South Junction & Altrincham Railway viaduct. However, part may have been adapted for use as a gatehouse or watch house, and is shown on the Ordnance Survey map of 1851 adjacent to the main entrance to the mill. In addition, a pump is also captured on mid-19th-century mapping. The footprint of the southern part of this building lies beneath the floor of the single-storey workshops.

6.83 A weir across the River Medlock and associated water-management system on the south bank was first shown on late 19th-century mapping, but referred to in a Deed of Covenant dated 18th March 1867. The weir appears to have been associated with an expansion of Macintosh's India Rubber Works on the south side of the river. There is little evidence to demonstrate conclusively that this replaced an existing weir across the river, although this possibility cannot be discounted.

6.84 The potential for the Site to contain buried archaeological remains is considered to be high. The most likely archaeological remains of interest to be encountered within the Site include the footprint of the mill's early steam-power plant, and a second engine that was installed in the northern part of the spinning block in the later 19th century. There is also some potential for Roman remains to exist in the north-eastern corner of the Site, beneath

the concrete floor of the single-storey workshops. Any such remains that do exist are likely to be of medium and low significance[c].

Effects Unlikely / Not Significant

Damage / loss of archaeological remains during construction ground works

6.85 The construction of the Proposed Scheme will involve ground-breaking works that has the potential to affect any surviving archaeological remains within the Site (**Table 6.4**). The potential archaeological receptors that could be affected by the Proposed Scheme and their significance are listed below.

Table 6.4: Potential Archaeological Receptors and Significance

Archaeological receptors	Potential Significance
Roman road	The projected line of the Roman road from Manchester to Buxton potentially runs across the north-eastern corner of the Site and has potential to survive beneath the concrete floor of the single-storey workshops. Any such remains that do exist within the Site could be of medium significance, depending on the condition and survival of the potential remains.
Possible dwelling house	A small structure had been erected by the River Medlock (in the south), which may have represented a dwelling house or a precursor to Medlock Mills. The building has some potential to survive within the Site and could be affected by the Proposed Scheme, although it is likely that all physical remains were removed during the construction of Medlock Mills. Any such remains that do exist within the Site are likely to be of low significance.
Medlock Mill engine houses	The footprint of the original engine house lies in the southern part of the Site, whilst a second late 19th-century engine house lies in the north of the spinning block. Structural remains of the engine foundation beds and the steam-raising plant may survive in-situ and could be affected by the Proposed Scheme. Any such remains that do exist within the Site could be of medium significance.
Medlock Mill batting rooms	The footprint of the buildings lies within the boundary of the Site, however, it is likely that any buried remains will have been largely destroyed during the remodelling of the mill complex in the 19th century. Any such remains that do exist within the Site could be of low significance.

[c] ICOMOS, 2011. *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties,* Online resource: International Council on Monuments and Sites.

Archaeological receptors	Potential Significance
Medlock Mill extension	An L-shaped extension was added to the southern part of the Medlock Mills by 1831, replacing the former batting rooms. The footprint of the buildings lies within the boundary of the Site, however, it is likely that any buried remains will have been largely destroyed during the remodelling of the mill complex in the 19th century. Any such remains that do exist within the Site could be of low significance.
Pump	A mid-19th-century pump lies within the boundary of the Site and has the potential to survive within the Site and could be affected by the Proposed Scheme. Any such remains that do exist within the Site could be of low significance.
Weir	The remains of the weir and associated water-management features survive on the south bank of the River Medlock, but will not be affected by the Proposed Scheme, and is, therefore, considered negligible.
Medlock Mill	The footprint of the building lies in the north-eastern part of the Site. The foundations of the building may survive in-situ beneath the floor of the later workshop building and could be affected by the Proposed Scheme. Any such remains that do exist within the Site could be of low significance.

6.86 Following the identification of potential below-ground remains a **Written Scheme of Investigations (WSI) for an Historic Building Survey and Evaluation**[12] has been prepared for and submitted with the Application. The WSI sets out the proposals for a Strip map and Record (SMR) evaluation to determine the presence of the potential below ground archaeological receptors as detailed in **Table 6.4**. If below ground remains are present their level of preservation and significance will be determined and reported in an archive to professional standards, in accordance with current Historic England guidelines, and current CIfA guidance[13]. Pending the extent and significance of any surviving buried remains, further archaeological excavation may be required to mitigate the loss of archaeology remains during the proposed construction programme.

6.87 As detailed above there is potential for below-ground remains of potentially medium to low significance to survive *in-situ*. The Proposed Scheme has potential to cause Moderate harm to non-designated buried archaeological remains[d]. However, provided the recommendations contained within the WSI (and any subsequent works) are implemented the overall, damage / loss of archaeological remains is not considered to be significant (i.e. less than substantial harm) and therefore will not be considered further in the ES.

[d] ICOMOS, 2011. *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties,* Online resource: International Council on Monuments and Sites.

Ground Conditions and Contamination

Technical Baseline

6.88 A **Phase 1 Preliminary Risk Assessment**[14] (PRA) has been undertaken by LKC for the Site. The report is submitted as a stand alone planning application report.

6.89 British Geological Survey (BGS) maps indicate the underlying bedrock to comprise Chester Formation (Sandstone). The superficial deposits on Site comprise Devensian Till. Ground stability on Site is classified as very low risk to collapsible ground, compressible ground, running sand, shrinking or swelling clay or landslide. The Site is not within a Coal Authority Development High Risk Area.

6.90 The River Medlock runs adjacent to the south of the Site, the superficial deposits and bedrock are classified as Secondary A and Principal Aquifers, respectively. The nearest groundwater abstraction license is 465m south east of Site.

6.91 There are no known landfills within 250m of Site. There are no known designated sites (e.g. Sites of Special Scientific Interest) within 1km of Site.

6.92 Historically, the Site was occupied by the original Medlock Mill building from pre-1800s until this building was destroyed by fire in 1801. A second, larger mill building was constructed on the site by 1809 mapping and this forms part of the existing building. The Site was used as a printing works from the early 1900s.

6.93 The PRA identified potential contamination sources affecting the Site as heavy metals, PAHs, sulphate, asbestos, hydrocarbons, other organic/inorganic contaminants and gas (carbon dioxide and methane).

6.94 A low risk from UXO was identified by regional mapping.

Effects Unlikely / Not Significant

6.95 Based on the technical baseline and understanding of the Proposed Scheme, the following effects are considered unlikely to be significant and therefore will not be considered further within the ES. A factual evidence base has been provided below to support this. Where mitigation has been used to inform this judgement, the identified mitigation has been captured within **Volume 3: Environmental Management Plan**.

Ground conditions providing instability risk

6.96 Even though regional BGS data is available, site specific ground conditions are unknown and may comprise variable and poor ground, including potential for voiding, poor ground, relic foundations, etc may provide a geotechnical risk to foundations which could cause instability.

6.97 The final foundation design and structural elements of the Proposed Scheme will be informed by the detailed ground investigation works. All earthworks and foundation design will be in accordance with relevant industry guidance and detailed within the CEMP, including but not limited to CIRIA Report C572[15]: Treated ground engineering properties and performance, British Research Establishment document FB75: Building on Fill - Geotechnical Aspects[16] and British Standard 6031:2009: Code of Practice for Earthworks[17],

thereby negating the probability and likelihood of any significant effect. The Proposed Scheme therefore seeks to reduce the risk of instability and will enhance the current situation in the long term. Therefore, risks associated with ground instability is not considered to be significant and will not be considered further in the ES.

Risk to human health and groundwater from existing contamination and hazardous ground gases during construction and operation

6.98 Existing ground contamination associated with historical contaminating land uses has the potential to impact the health of construction works and future Site users via exposure to soils through direct contact / ingestion / inhalation of contamination soils and adjacent site users from contaminated dust emissions. Similarly, impacts to groundwater (and surface water quality) may be associated with historical site uses and environmental setting.

6.99 During the construction stage, there is a potential for contamination to be mobilised during the formation of foundations and migrate vertically into the underlying groundwater and then into nearby surface water bodies, the closest of which is the River Medlock adjacent to the Site. There is also the possibility that proposed foundations (particularly piled foundations) may create a preferential pathway to the groundwater.

6.100 Contaminated land site investigation and assessment to develop the remediation strategy are required to remove the source-pathway-receptor pollutant linkage for each contaminant of concern. Mitigation measures will be detailed in the remediation strategy upon completion of the site investigation works. The general remediation approach will comprise typical 'urban renewal' type remediation measures which have been implemented successfully on countless sites with similar contamination histories (such as gas protection membranes, clean cover soils, removal off-site, etc). Site investigation will identify the main risks and the remediation strategy will highlight the required mitigation measures for the Proposed Scheme.

6.101 All works would be undertaken following current UK regulations, guidance and industry best practice *inter alia* National Planning Policy Framework (NPPF)[18], BS10175[19], Land Contamination Risk Management (LCRM)[20], etc. A detailed Remediation Strategy will be submitted prior to commencement of works on site and secured by way of a suitably worded planning condition based on results of the survey and assessment works to be submitted. It will include appropriate protocols for the identification and management of unforeseen contamination. On the completion of any remediation, a validation report would be produced to ensure that the remedial concentrations set out in the remediation strategy have been achieved. Given the above, there is a potential for short-term exposure to contamination only.

6.102 Asbestos will be identified, removed, handled and disposed of in line with appropriate guidance and Regulations, including The Hazardous Waste (England and Wales) Regulations 2005[21], Control of Asbestos Regulations 2012[22] and CIRIA C733[23]. Programmed removal of the identified asbestos materials will be undertaken at the outset of the enabling works under an Asbestos Management Plan (as part of the CEMP).

6.103 For piled foundations, the method of construction will be carefully selected to ensure that the migration of contamination into sensitive resources is kept to a minimum. Such

activities will be undertaken in line with guidance, such as the Environment Agency's Piling and penetrative ground improvement methods on land affected by contamination: guidance on pollution prevention. This will be led by the contractor(s). Where required a piling risk assessment will be completed to understand the risk of piling activities associated with impacted soils and receptors.

6.104 All contractors appointed will be appropriately licensed and experienced, working within the requirements of the Construction (Design and Management) Regulations 2015 and CIRIA C741[24], Pollution Prevention Guidance, CIRIA C532[25], CIRIA C750[26] and the Confined Space Regulations[27].

6.105 It is anticipated that any potential acute risk during construction will be detailed and assessed as part of a CEMP which will be informed by the site investigation and remediation strategy.

6.106 The CEMP will also include measures, such as:

- Use of suitable Personal Protective Equipment (PPE);
- Provision of on-site washing facilities;
- Good house-keeping practices.
- Provision of emergency spill kits;
- Use of wheel wash facilities;
- Earth movements will be controlled to reduce the risk of silt combining with run-off and implementation of protection measures to minimise silts and construction arisings;
- Regular cleaning to remove loose sediments and prevent build-up of dust and mud;
- Use of sediment traps and bunded storage;
- Use of impermeable materials to prevent ingress into the ground;
- Washing down / equipment cleaning associated with concrete or cementing processes and provision of facilities to remove sediment prior to disposal; and
- Cut-off ditches and / or geotextile silt-fences will be installed around excavations and exposed ground, stockpiles to prevent the uncontrolled release of sediments.

6.107 As noted above, relevant dust mitigation measures will be included with the CEMP informed by IAQM construction dust guidance.

6.108 As noted above, further ground investigation works and remediation strategy will identify and remove contamination sources (where appropriate). Therefore, contaminants encountered during the construction stage will be remediated to achieve the requirements for the proposed end use. Clean cover layers will also be validated for chemical quality

prior to re-use / use on-site and these will prevent direct contact from landscaped areas within the Proposed Scheme.

6.109 Therefore, exposure of construction workers, residents / workers of neighbouring properties and groundwater during construction or operation is unlikely to be significant and will not be considered further within the EIA or reported in the ES.

Accidental release of new contamination during construction and operation (to human health and groundwater)

6.110 There is also a potential for the accidental release of new contamination due to on-site activities (i.e. fuel, oil, cement or chemical spillage) or the generation of contaminants / suspended soils (through excavation, slab removal and plant / wheel washing), which could affect on-site workers during the construction stage, residents / workers of neighbouring properties. Furthermore, the storage of fuel, oil and materials during periods of heavy rainfall could cause the release / vertical migration of contaminants the underlying groundwater.

6.111 The appointed contractor(s) will provide grading certificates for all backfill material and confirm the source of all backfill materials proposed prior to commencing backfilling operations. All material brought on-site and re-used will also be tested in accordance with relevant guidance / standards, such as Waste Classification: Guidance on the classification and assessment of waste. The appointed contractor(s) will take responsibility for inspecting and classifying all waste materials generated by the works and obtaining any necessary permits, licenses or notices. This will negate the potential for contaminants to be introduced via material brought on-site / re-used.

6.112 All contractors appointed will be appropriately licensed and experienced, working within the requirements of the Construction (Design and Management) Regulations 2015 CL: AIRE Development Industry Code of Practice[e] as well as Guidelines for Pollution Prevention and best practices measures as detailed above. Any potential risk during construction will be detailed and assessed as part of a CEMP which will be informed by risk assessments and method statements and construction phase plan.

6.113 During the operational stage of the Proposed Scheme, is there a potential for localised spillages of fuel. Contaminants from fuel spillages are likely to occur on areas of hardstanding (e.g. servicing yards and car parking areas). These areas will be subject to a controlled drainage scheme as part of the **Drainage Strategy**, which will include necessary pollution prevention measures in line with standards and guidance, such as fuel and oil interceptors[f].

6.114 Therefore, the potential effects on human health and groundwater due to accidental release of contamination during construction and operation is not considered to be significant and will not be considered further in the ES.

[e] CL: AIRE (2011) Development Industry Code of Practice.

[f] For example, Environment and Heritage Service EA and SEPA (2006) Pollution Prevention Guidelines 3: Use and design of oil separators in surface water drainage systems (now withdrawn).

Lighting

Technical Baseline

6.115 There are not currently any lighting installations on Site, as the existing Hotspur Press is not in use. In the surrounding area, there is street lighting on Cambridge Street / Gloucester Street, where there will also be lighting associated with vehicles using these roads. The surrounding developments will also produce some lighting from external lighting and rooms being lit.

6.116 Given the city centre location of the Site, it is likely the periphery of the Site along Cambridge Street would be classified as an E4 Environmental Zones (high ambient brightness) lighting environmental zone[g]. However, given the absence of lighting on the Site, the presence of building on the Site blocking light from adjacent roads and darker corridors of the River Medlock adjacent to the Site, there are likely to be darker areas of the Site that are more comparable to an E3 Environmental Zone (medium district brightness) or E2 Environmental Zone (low district brightness) along the River Medlock.

Effects Unlikely to be Significant

6.117 The following effects considered relate to potential effects on humans. Potential effects on ecological habitats and species are considered in the biodiversity section of this Chapter.

Disturbance due to obtrusive light during construction [nearby residents]

6.118 Light pollution (or obtrusive light) comprises any adverse effects of artificial lighting including glare[h], light trespass[i]/spill[j] and sky glow[k], occurring as a result of temporary construction activities associated with the Proposed Scheme. The nature of the effect and its significance is relative to the existing baseline conditions (i.e. lighting environment experienced by existing receptor) and general proximity to potential light sources, where the greatest effect is felt by receptors adjacent to, or in close proximity to a light source (i.e. within 50m).

6.119 Lighting will be required during construction activities in order to provide a safe working environment, however this will be within the context of a high brightness city centre area. Nonetheless, potential adverse effects arising from temporary construction lighting will be controlled through a series of best practice measures, in line with lighting industry standards and guidance including the CIE publication 'Technical Report Document 129[l] and BS EN 12464-2:2014[m], incorporated as part of a CEMP. The following measures are

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[g] NLIPI (2007). What are lighting environmental zones? Available at: https://www.lrc.rpi.edu/programs/NLPIP/lightingAnswers/lightPollution/environmentalZones.asp

[h] The uncomfortable brightness of the light source against a dark background which results in dazzling the observer, which may cause nuisance to a specific receptor.

[i] The spilling of light beyond the boundary of a property, which may cause nuisance to others.

[j] The unwanted spillage of light onto adjacent areas which may affect sensitive receptors (particularly residential properties and ecological sites).

[k] The direct upward spill of light into the sky, which can cause a glowing effect and is often seen above cities when viewed from a dark area.

[l] CIE - Technical Report Document 129 (1998) Guide for Lighting Exterior Work Areas.

[m] British Standards (2014) BS EN 12464-2 – Lighting of Work Places – Part 2: Outdoor Work Places.

proposed in order to control Light Spill, Glare and Sky Glow effects and thus manage light pollution:

- Where practicable, construction lighting in the Site would be designed to comply with Environmental Zone E4 in accordance with the ILP Guidance Note GN01[n];
- Illuminance levels arising from temporary lighting to be designed in accordance with BS EN 12464-2: 2014 and CIE 129;
- Placement of temporary lighting required to ensure safe working conditions and to maintain security, to have due regard of sensitive receptors (i.e. occupied residential premises);
- Lighting to be directed so as avoid unnecessary Light Spill outside of construction areas and to ensure that the light distribution is toward the task area;
- Lighting to be switched off when not required for safe working conditions and Site security;
- Use of light shields/baffles to control upward light to within the maximum 15% set out in the ILP Guidance Note GN01, where possible;
- Lighting to be kept at 0° tilt to avoid Sky Glow, where practicable; and
- Light dimming and automatic switch off would be used (where appropriate).

6.120 Therefore, disturbance to nearby residents due to obtrusive light during construction is considered unlikely to be significant and will not be considered further in the ES.

Disturbance due to obtrusive light during operation [nearby residents]

6.121 Operational lighting will be required for the Proposed Scheme to ensure a safe environment.

6.122 Lighting within the public realm will comprise amenity/ architectural lighting, designed to accentuate the architectural value of the structure, including the retained Hotspur Press, and the elements of the public realm (detailed can be found in the **Design and Access Statement**, submitted with the Application). This will be achieved through various lighting elements, including ambient lighting, task lighting, accent lighting and decorative lighting elements. In addition, illuminated advertisements/signage associated with non-residual uses are likely.

6.123 Where lighting is proposed it will be designed and installed in line with relevant industry best practice and guidance, including:

- CIE 150: 2017 – Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations, 2nd Edition[28];

[n] Institute of Lighting Professionals (ILP) (2021) Guidance Notes for the Reduction of Obtrusive Light (GN01).

- ILP GN01 - Guidance Notes for the Reduction of Obtrusive Light 2021[29];
- ILP PLG05: The Brightness of Illuminated Advertisements[30];
- ILP PLG08: Guidance on the Application of Adaptive Lighting within the Public Realm[31];
- ILP Lighting Landscapes[32];
- BS 5489-1 : 2020 – Code of Practice for the Design of Road Lighting[33];
- BS EN 13201-2:2015 – Road Lighting – Part 2: Performance Requirements[34];
- BS EN 12464 – 2 2014 – Outdoor Work Spaces; SLL Guide to Limiting Obtrusive Light 2012[35];
- SLL Lighting Handbook 2009[36];
- LG 6 (CIBSE) – The Exterior Environment 2016[37]; and
- ILP Guidance Note 08/18 Bats and Artificial Lighting in the UK[38].

6.124 Overall, when considering the city centre location and baseline lighting, disturbance to residents due to obtrusive light during operation are considered unlikely to be significant and will not be considered further in the ES.

Waste

Technical Baseline

6.125 The Site currently comprises the existing Hotspur Press, however this is not in use and therefore it is assumed there are no existing waste generating uses on Site.

Waste generation during demolition and construction [waste facilities]

6.126 Sources of waste during the construction stage are assumed to relate to demolition materials from the demolition of the existing Hotspur Press (excluding part of the façade); construction materials (including packaging); and surplus cut to create finished floor levels. The remedial solution will include the removal of hazardous substances[o],(including asbestos[p], heavy metals, PAHs, sulphate, hydrocarbons, other organic/inorganic contaminants and gas -carbon dioxide and methane) which will require specialist removal. All such works will be undertaken by an appointed contractor and disposed of by the contractor in line with relevant regulations and legislation requirements.

6.127 Any waste considered to be hazardous, arising from demolition or remedial activities, will be handled, processed and removed from Site by suitability qualified contractors, all being undertaken in line with The Hazardous Waste (England and Wales) Regulations 2005.

[o] The Hazardous Waste (England and Wales) Regulations 2005, No. 894.
[p] The Control of Asbestos Regulations 2012, No. 632.

6.128 Approximately 4,500m^2 of existing floorspace will require demolition. Based on a standard working calculation which takes the assumed building/structure area and multiples this by 0.3 to estimate the likely demolition waste, the demolition of Hotspur Press is expected to give rise to approximately 1,350m^3 of waste arisings. This value does not account for any form of recycling or reuse of waste and therefore represent and reasonable worst case.

6.129 Using the anticipated total floorspace (21,093m^2 GIA) multiplied by industry benchmarks[q] for construction waste arisings (10 tonnes per 100m^2 gross area[r]), it is anticipated that 2,109.3 tonnes of waste will be generated from construction activities.

6.130 It is anticipated that generic waste produced during demolition and construction would be controlled through the implementation of a CEMP, secured by planning condition. The CEMP will be informed by the waste provisions of the Environmental Protection Act 1990[s] and the Environmental Protection (Duty of Care) Regulations 1991[t] and will set out the principles and legal requirements relating to waste, including any hazardous waste that is encountered and required to be exported off-site for disposal.

6.131 The CEMP will also describe how materials will be managed efficiently and disposed of legally during construction. It will also outline the aims, objectives and on-going management responsibilities, including management practices, to be implemented during the construction stage, and will set targets for the reduction, diversion from landfill and reuse of waste.

6.132 Therefore, waste generated during demolition and construction is considered unlikely to be significant and will not be considered further in the ES.

Waste generated during operation [waste facilities]

6.133 Waste generated during the operational stage is anticipated to include generic waste streams arising from the residents.

6.134 British Standard (BS) 5906:2005 Waste Management in Building – Code of Practice suggests that the weekly waste arisings from an 'domestic' use is equal to the number of dwellings x [(70 litres x average number of bedrooms) +30]. On this basis the Proposed Scheme would be considered to generate approximately 40,490 litres (l) (circa 40.49m^3) a week, approximately 2,105,480 l (circa 2105.48m^3) per annum (assuming 52 weeks per year). It should be noted that this does not take account of any waste arising reused, recycled or diverted from landfill by another means. British Standard (BS) 5906:2005 Waste Management in Building – Code of Practice suggests that the weekly waste arisings from a 'shopping centre' (used to represent the commercial / amenity aspect of the Proposed

[q] BRE (2018). Home Quality Mark ONE, Technical Manual England. Available at: Home Quality Mark ONE

[r] This has been established using professional judgement and is based on good practice principles developed within the Home Quality Mark.

[s] Environmental Protection Act 1990 No. 43 Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents

[t] Environmental Protection (Duty of Care) Regulations 1991 No. 2839. Available at: https://www.legislation.gov.uk/uksi/1991/2839/made#:~:text=The%20duty%20requires%20such%20persons,person%20or%20to%20a%20person

Scheme) is equal to volume per m^2 of floor area [10L] x floor area, which gives a prospective weekly waste of 14,830 l (14.83 m^3) or 771,160 l per annum (771.16 m^3). Overall this gives the Proposed Scheme a weekly waste arising of 55,320 l (55.32 m^3), and an annual waste arising of 2,876,640 l (2876.64 m^3).

6.135 The Proposed Scheme will be designed in order to take account of appropriate provision for waste storage and handling facilities/areas, inclusive of areas for segregation of waste and recycling. In addition, it is assumed that all waste storage/handling facilities will be designed in accordance with British Standard (BS) 5906:2005 Waste Management in Building – Code of Practice. The Application will include a Waste Management Strategy which will set out the principles, strategy and targets for the management and storage of waste and maximise recycling, in accordance with MCC established policy.

6.136 Therefore, effects related to operational waste are considered unlikely to be significant and will not be considered further in the ES.

Major Accidents and/or Disasters

Technical Baseline

6.137 The Site does not fall within any consultation distances for which the Health and Safety Executive needs to be consulted for. There are no Control of Major Accident Hazard sites in the vicinity of the Site.

Effects Unlikely to be Significant

6.138 As detailed within Schedule 4, Paragraphs 5 and 8 of the EIA Regulations, there is the requirement to consider the risk of major accidents and/or disasters relevant to the Proposed Scheme.

6.139 Although there is the potential for a wide range of major accidents and disasters that could occur, the probability, likelihood and frequency is very low, often due to the management of a risk under established legislative requirements.

6.140 The EIA Regulations do not specify the need for the consideration of natural disasters. However, for completeness, this has been considered.

6.141 The probability, frequency and likelihood of natural disasters arising from climatic occurrences (i.e. hurricanes) are considered to be very low due to the natural climatic condition of the UK within the global climate system. Specific geological events (i.e. earthquakes, tsunami, volcanic incidents etc.) are also considered to be very low due to the general absence of required geological conditions (i.e. area of tectonic plate interaction) within or in proximity to the UK. Although earthquakes have occurred within the UK, the magnitude of such events has generally been low.

6.142 Following a qualitative appraisal of major accidents and/or disasters that were relevant to the Proposed Scheme, the following have been considered further and are presented in **Table 6.5**. Based on the evidence provided within **Table 6.5**, the likelihood of events with a significant consequence is considered to be low/unlikely and will not be considered further in the ES.

Table 6.5: Appraisal of the Risk of Major Accidents and/or Disasters

Effect	Appraisal
A major accident caused by ground subsidence and associated structural/building collapse	All earthworks and foundation design will be in accordance with relevant industry guidance, including but not limited to CIRIA Report C572: Treated ground engineering properties and performance[u], British Research Establishment document FB75: Building on Fill - Geotechnical Aspects[v] and British Standard 6031:2009: Code of Practice for Earthworks[w], thereby negating the probability and likelihood of any significant effect.
Major flood event caused by an extreme weather event	As described in **Chapter 14: Flood Risk and Drainage**, the risk of flooding is not considered to be significant due existing and proposed site levels and the surface water drainage strategy.
Major accidents on the local road network	The management of the road network and the enforcement of stringent safety standards reduce the risk, both in terms of the frequency and likelihood to a low level. The risk of accidents has also been scoped out under 'Transport and Access' above. This is not considered to be significant due to the limited traffic flows from the Proposed Scheme.
Accidents arising from vandalism, arson or terrorism	The risks associated with technological failures and accidents will be reduced through appropriate design of the Proposed Scheme, including the use of fire alarms. Target acts of vandalism, arson or terrorism cannot be fully mitigated, but the adoption of appropriate security measures at the construction and operational stages, such as security lighting, will help to minimise the likelihood of such events occurring. The final building management company will have in place the required emergency producers/practices (i.e. Fire Emergency Evacuation Plan (FEEP)) or apparatus/instruments (i.e. smoke detectors/sprinklers) required by law for these uses. In addition, the buildings will be designed, in line with Building Regulations Approved Document D: Fire Safety, with appropriate fire preventative measures (i.e. fire doors, extinguishers etc.) and all external

[u] CIRIA (2002). Report C572: Treated ground engineering properties and performance.
[v] British Research Establishment (2015). FB75: Building on Fill - Geotechnical Aspects. 3rd Edition.
[w] British Standard (2009). 6031:2009: Code of Practice for Earthworks.

Effect	Appraisal
	façades and materials will meet the necessary fire resistance standards set out within Building Regulations and by law. The design of the Proposed Scheme will be informed by 'Secure by Design' principles and appropriate design and site management measures (including appropriate lighting and digital entry systems at each building). The Proposed Scheme will have on-Site security staff, with staff present 24 hours a day. Whilst the majority of the Site has been purposely developed to be publicly accessible, there will be areas where controlled access is required (i.e. entry to the accommodation blocks), and this will be controlled through means of managed control such as intercom, fob, bollards, or a keypad locking system (to be agreed). Given this, the potential risks will be very low.

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7. Townscape and Visual

Introduction

7.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to Townscape and Visual.

7.2 The Chapter describes the technical consultation that has been undertaken during the EIA, the scope of the assessment and assessment methodology, and a summary of the baseline information that has informed the assessment.

7.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details).

7.4 This Chapter, and its associated **Appendix 7.1** and **7.2**), is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**), as well as **Chapter 8: Built Heritage**.

7.5 In addition, this Chapter should be read in conjunction with **Chapter 15: Assessment of Cumulative Effects**.

Summary of Consultation

7.6 The viewpoints used within this assessment are the same as those identified in the previous application which were agreed with Manchester City Council at the time. An additional viewpoint was added due to a request from MCC. This is viewpoint 13 from Chepstow Street (Appendix 7.2, Figures 28-30).

Scope of the Assessment

Effects Not Considered to be Significant

7.7 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this.

Visual effects

Visual effect to all receptors outside of Zone of Theoretical Visibility

7.8 The Proposed Scheme is anticipated to have a visual effect to various receptors within the study area. The urban nature of the study area means that likely receptors will include residents, visitors, members of the travelling public and workers. A zone of theoretical visibility (ZTV) has been prepared through a combination of desk study and field work. It is considered that receptors outside of the ZTV will not be affected by the Proposed Scheme, due to any views being screened by landform or built form, or due to the large distance between the Site and the receptor.

7.9 Therefore, visual effects to receptors outside of the ZTV are not considered to be significant and will not be considered further in the EIA or reported in the ES.

7.10 The visual assessment considers the potential impacts on views for specified receptor groups during the day only as impacts during the night, in a well-lit urban environment, are expected to be broadly analogous with day time impacts and are therefore not considered further.

Townscape effects

Long Distance Footpaths

7.11 There are 4 Long Distance Footpaths that run through the 1.5km study area; Medlock Valley Way, South Pennine Ring, Cheshire Ring Canal Walk and Irwell Sculpture Trail

7.12 Desktop and site studies have shown the long-distance footpaths are separated from the Site by a dense fabric of intervening built settlement, and as such have no view of the Site from any location. Therefore, townscape effects to Long Distance Footpaths are not considered to be significant and will not be considered further in the EIA or reported in the ES.

Scheduled Ancient Monuments

7.13 The remains of the Roman fort of Mamucium are located within the study area and is 680m away from Site at its closest distance.

7.14 Desktop study, including the ZTV and site visits have shown that there is likely to be little or no visibility of the Site from the setting of the Roman fort of Mamucium. Therefore, townscape effects to this Scheduled Ancient Monument are not considered to be significant and will not be considered further in the EIA or reported in the ES.

National Landscape Character

7.15 The Site lies within The Natural England National Character Area (NCA) Profile 55: Manchester Conurbation (NE463).

7.16 The scale of the Site and its urban setting means that there is not predicted to be any effect on landscape character at a national level as a result of the Proposed Scheme. Therefore, townscape effects to Landscape Character at a national level are not considered to be significant and will not be considered further in the EIA or reported in the ES.

Effects Considered Likely to be Significant

7.17 **Table 7.1** outlines the effects that were considered likely to be significant and are reported within this Chapter.

Table 7.1: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Stage
Visual effects within the Zone of Theoretical Visibility	Residents, City Centre visitors, members of travelling public and workers	Construction / Operation
Townscape effects	Users of National Cycle Route 6, Conservation Areas, Listed	Construction / Operation

Likely Significant Effect	Receptors	Applicable Stage
	Buildings and Local Townscape Character within the ZTV	

Assessment Methodology

Legislative Framework, Policy and Guidance

7.18 The following guidance has informed the assessment of effects within this Chapter:

- Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA) (2013)Landscape Institute) (LI) and Institute of Environmental Management & Assessment (IEMA)[1];
- Landscape Character Assessment (2016) Technical Information Note 08/2015, Landscape Institute[2];
- Townscape Character Assessment (2018) Technical Information Note 05/2017, Landscape Institute[3]; and
- An Approach to Landscape Character Assessment (2014) Natural England[4].

7.19 Photographs from representative viewpoints have been produced in compliance with the following:

- Technical Guidance Note 06/19: Visual Representation of Development Proposals (Landscape Institute, 2019)[5].

Defining the Study Area

7.20 Desktop research and modelling have been used to test the theoretical visibility of the Proposed Scheme, which were used to inform both the architectural design and the visual assessment and field surveys. The extent of the area within which the Proposed Scheme will be likely to result in visual effects or effects on townscape character, is limited by the urban location and existing built environment. The study area has been set at a distance of 1.5km around the Site, beyond which it is not considered that effects on landscape character or visual amenity will be impacted as a result of the Proposed Scheme. This is in line with GLVIA (paragraphs 5.2 and 6.2).

Background Studies to Inform the ES / Establish the Baseline

7.21 The Zone of Theoretical Visibility (ZTV) has been modelled through a desktop study (**Appendix 7.1**) which has drawn on digital terrain data to identify and illustrate the areas from where the Proposed Scheme could potentially be visible. Buildings in the study area have been modelled using a Z-mapping 3D model and 3D modelling software. As a result of other intervening features, in particular trees and other tall vegetation, there are areas within the ZTV where the Proposed Scheme will not be visible.

7.22 Field surveys were undertaken to confirm the desk-based study and refine the ZTV and, in this way, a series of viewpoints were identified to represent views for visual receptors within the actual zone of theoretical visibility (ZTV).

7.23 **Table 7.2** summarises all studies/surveys/analysis/evaluations undertaken to inform the assessment presented within this Chapter.

Table 7.2: Background Studies / Surveys / Evaluations /Analysis

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Zone of Theoretical Visibility (Appendix 7.1)	Desk Study to determine the likely area in which the proposed scheme will be visible from publicly accessible locations.	September 2023
Site visits	Visits to the Site and selected viewpoints to assess the visibility of the Proposed Scheme	October 2023

Assessment Process

Townscape

7.24 Townscape impacts can arise from the addition of, or changes to, physical features in the townscape, which affect its character. The townscape assessment addresses the impacts of the Proposed Scheme on townscape character and resources. The contribution of conservation areas to the townscape and the way they could be affected by the Proposed Scheme are discussed in this chapter. National Cycle Routes, Conservation Areas and Listed Buildings are all considered as townscape receptors within this report and are assessed based on this.

7.25 During the construction stage, individual receptors and viewpoints are not assessed. Receptors in the immediate vicinity of the site are grouped by typology and assessed depending on the sensitivity. General mitigation measures are proposed for all visual receptors during the construction stage.

7.26 The assessment of townscape impacts is structured around the identification of distinct blocks of townscape defined through homogeneity of scale, materials, land use, heritage, street pattern, open space etc. These Townscape Character Areas (TCA's) (Figure 07, **Appendix 7.1**) allow for a better understanding of impact potentially resulting from direct physical change and the influence this has on the wider character, setting or views. Effects are evaluated for each TCA based on the sensitivity of the townscape and magnitude or impact resulting from the Proposed Scheme. The Townscape Character Assessment (2018) Technical Information Note 05/2017, Landscape Institute is used as guidance to inform the assessment of townscape impacts.

Visual Amenity

7.27 Desktop study has been undertaken to create a ZTV for the Site, as described above. The ZTV was then used to establish potential visibility in association with the identification of a selection of representative viewpoints. The representative viewpoints cover a range of receptor groups, directions and distances. To determine the visual effects of the Proposed

Scheme, 13 representative views (see **Appendix 7.2**) have been identified by means of a desk study and field work. The viewpoints have been selected based on receptor type and sensitivity, and distance and direction from the Site and as such they are intended to provide a suitable representation of the Site and the Proposed Scheme for assessment purposes.

7.28 Visual receptors are assigned a category of sensitivity based on a combination of the activity and expectations of the predominant receptor type (e.g. residents, people at work, recreational visitor areas and so on) and the location, context and importance of the existing view, with reference to the viewpoints.

Reporting of the Environmental Effect and Significance Criteria

7.29 The assessment of likely significant environmental effects as a result of the Proposed Scheme has taken into account the construction and operational stage. The following sections define the approach adopted within the assessment for the determination of sensitivity (or value/importance), magnitude of change (or impact), the level of effect and significance.

Determining Sensitivity of Receptor

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

Townscape

7.31 Each TCA is assigned a sensitivity based on the character and quality of the existing townscape and its ability to accommodate change of the type proposed.

7.32 High sensitivity townscape character is defined as townscape of highly valued or relatively distinctive components and characteristics, sensitive to small changes.

7.33 Medium sensitivity townscape character is defined as townscape of relatively common components and characteristics, reasonably tolerant of changes.

7.34 Low sensitivity townscape character is defined as townscape of relatively inconsequential components and characteristics, the nature of which is potentially tolerant of substantial change.

7.35 A negligible sensitivity townscape character is defined as townscape with very few or no components or characteristics of consequence which is able to accommodate substantial change.

Visual Amenity

7.36 High sensitivity visual receptors are defined as receptors with proprietary interest and/or prolonged viewing opportunities, or engaged in activity resulting in a high interest or appreciation of the view (e.g. residents or people engaged in outdoor recreation whose attention is focused on the townscape) and/or a high value of existing view.

7.37 Medium sensitivity visual receptors are defined as having a medium interest or appreciation of the view (e.g. people engaged in outdoor activity that does not focus on an appreciation of the townscape, such as walking or cycling within an urban area) and/or a medium value of existing view (e.g. urban area with no particular historic or aesthetic value).

7.38 Low sensitivity visual receptors are defined as having a low interest or appreciation of the view, or passing or momentary interest in everyday surroundings (e.g. people at work or

people in vehicles travelling through the area) and/or low value of existing view (e.g. mundane urban area).

7.39 A negligible classification for sensitivity of visual receptor is not considered to be applicable.

Determining the Magnitude of Change

7.40 The magnitude of change has been considered as the change experienced from the current baseline conditions at the sensitive receptor and has been considered on a scale of **large**, **medium**, **small** or **negligible**.

Townscape

7.41 Magnitude of townscape change is determined through considerations of the scale of the Proposed Scheme and its fit within the existing townscape.

7.42 A large magnitude of change to the townscape is defined as ranging from a limited change in townscape characteristics over an extensive area, to an intensive change over a more limited area.

7.43 A medium magnitude of change is defined as some changes to character or components within the townscape in a localised area.

7.44 A small magnitude of change is defined as small changes to townscape characteristics in a localised area.

7.45 A negligible magnitude of change is defined as no discernible change to any components or characteristics of the townscape.

Visual amenity

7.46 Magnitude of visual impact is determined from a combination of the degree of change to the view due to the Proposed Scheme, including the extent of the area over which the changes will be visible, the period of exposure to the view and reversibility.

7.47 A large magnitude of visual change is defined as a high degree of change to the existing view (e.g. loss of characteristic features) and/or high degree of exposure to view (e.g. close or open views).

7.48 A medium magnitude of visual change is defined as a medium degree of change to existing view (e.g. partial loss of characteristic features) and/or medium degree of exposure to view (e.g. middle-distance or partial views).

7.49 A small magnitude of visual change is defined as a low degree of change to existing view (e.g. limited loss of characteristic features) and/or low degree of exposure to view (e.g. long distance, interrupted or glimpsed views).

7.50 A negligible magnitude of visual change is defined as no discernible change to any part of the view as a result of the Proposed Scheme.

Determining the Level of Effect

7.51 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. The level of effect has

been determined using professional judgement and **Table 7.3** has been a tool which has assisted with this process.

7.52 Whilst **Table 7.3** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' 'neutral' or '*adverse*'.

Table 7.3: Matrix to Support Determining the Level of Effect

		Sensitivity (or value / importance)			
		High	Medium	Low	Negligible
Magnitude of Change	Large	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

7.53 The following terms have been used to define the level of the effects identified and these can be 'beneficial', 'neutral' or 'adverse':

- **Major effect**: where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
- **Moderate effect**: where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;
- **Minor effect**: where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Proposed Scheme is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change; and
- **Negligible**: where the Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

7.54 The duration of the effect has been assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

Determining Significance

7.55 For each effect, a statement has been made as to whether the level of effect is '**Significant**' or '**Not Significant**'. This is broadly guided by the interaction of the sensitivity of the receptor and magnitude of impact, however it is predominately informed by professional judgement for each viewpoint or townscape receptor.

7.56 Significance has only been concluded for residual effects (i.e. following the identification of secondary mitigation).

Baseline Conditions

7.57 The baseline conditions are defined as the conditions of the site and surroundings as they are at the point that the assessment takes place. The Proposed Scheme will be located on land comprising of an existing red brick mill building and single storey periphery. The northern boundary immediately abuts the elevated railway viaduct, whilst to the South and West the building forms a hard edge to the River Medlock prior to it entering a culvert beneath First Street. To the East, Cambridge Street provides the only existing point of access to the Site.

7.58 In general, the wider study area is made up of a collection of inner-city development and built form, consisting of residential apartments, office blocks and commercial properties, criss-crossed by a network of roads providing the main vehicular and pedestrian routes through the area.

7.59 The townscape receptors that have been considered for the site are National Cycle Route 6, Conservation Areas and character areas as identified within the Manchester Urban Historic Landscape Characterisation Assessment. There are several conservation areas located within the study area, with the closest being Whitworth Street Conservation Area.

7.60 The existing visual baseline has been determined across the identified 13 Viewpoints (see *'Assessment Process'*). As noted earlier, the viewpoints are spread across a 1km study area, within the Zone of Theoretical Visibility and are representative of a range of receptor groups, directions and distances. **Appendix 7.2** shows the baseline views of the Site from the identified receptor viewpoints. The baseline conditions associated with each viewpoint are also outlined below.

Viewpoint 1 – Whitworth Street West at Oxford Road

7.61 This view is representative of visitors, travelling public and workers from the junction of Oxford Road and Whitworth Street West, which in turn is the main entrance point to Oxford Road Railway Station. The viewpoint is located approximately 240m to the north east of the development Site.

7.62 From this viewing location, the eye-level views are channelled down Whitworth Street West by the encompassing built form, this channelled view places the railway bridge over Cambridge Street visibly central to the view.

Viewpoint 2 – Jack Rosenthal Street

7.63 This view is representative of visitors, travelling public and workers from the public realm avenue of First Street. The viewpoint is located approximately 21m to the west of the Site.

7.64 From this viewing location, the single storey Starbucks building, seating area and associated landscaping can be seen in the foreground. Beyond a boundary hedge and some incidental

vegetation, the existing Hotspur Press building is visible. A structure associated with the raised rail line can be seen in the left hand portion of the view. In the background, the modern Onpoint Apartment block can be seen above the Hotspur building.

Viewpoint 3 – Gloucester Street at Whitworth Street West

7.65 Viewpoint 3 is located at the junction of Gloucester Street and Whitworth Street West underneath the railway viaduct. This view is representative of travelling public and workers. The viewpoint is located approximately 30m to the east of the Site.

7.66 From this viewing location, views are funnelled through the portal of the railway bridge overhead. The majority of the view from this location is of the Hotspur Press mill buildings and its associated single storey element interacting with the curve of Gloucester Street/Cambridge Street.

Viewpoint 4 – London Road

7.67 This view is representative of visitors, travelling public and workers on London Road, adjacent Piccadilly Railway Station. The viewpoint is located approximately 935m to the east of the Site.

7.68 This view affords a long distance channelled view along the length of Whitworth Street, over the crest of Oxford Road, to the junction with Gloucester Street and looks through the main arterial route of the Whitworth Street conservation area.

Viewpoint 5 – Manchester Central

7.69 This view is representative of visitors, travelling public and workers in and around the plaza space in front of Manchester Central and Bridgewater Hall. The viewpoint is located approximately 327m to the north of the Site.

7.70 From this viewing location, immediate views are contained by the built form surrounding the canal basin in front of The Bridgewater Hall. Beyond this, only the tower of the Cambridge Street Development is visible.

Viewpoint 6 – Cambridge Street at Mancunian Way

7.71 This view is representative of travelling public from the roundabout junction of Cambridge Street and the Mancunian Way. The viewpoint is located approximately 295m to the south of the Site.

7.72 From this viewing location, the view is channelled by the residential (student and private) built form on either side of Cambridge Street directing views towards the Hotspur Press Mill building. Mature trees to the boundary edge of the surface level car park partially screen views of the Dunlop Mill building.

Viewpoint 7 – Blantyre Street

7.73 This view is representative of residents, and the travelling public at the edge of Castlefield on Blantyre Street. The viewpoint is located approximately 750m to the west of the Site.

7.74 From this viewing location, the foreground view is made up of a surface level car park. In the middle distance, the towering Owen Street development dominates the skyline and impedes all of the long-distance sight lines.

Viewpoint 8 – Hacienda, Whitworth Street West

7.75 This view is representative of residents, and travelling public on Whitworth Street West near to the junction with Albion Street. The viewpoint is located approximately 178m to the north west of the Site.

7.76 From this viewpoint, the views are shaped by the elevated railway viaduct cutting across the view and running parallel with Whitworth Street West, behind this the more recent buildings of First Street MSCP, HOME, the residential (student and private) developments of Cambridge Street tower and Liberty Heights protrude into the skyline.

Viewpoint 9 – Cambridge Street at River Street

7.77 This view is representative of residents and travelling public at the junction of Cambridge Street and River Street. The viewpoint is located approximately 48m to the west of the Site.

7.78 From this location, the view is directed along Cambridge Street towards the Hotspur Press building where the street bends following the line of the single storey element before passing underneath the railway viaduct road bridge. The Cambridge Street tower is just visible in the far right hand portion of the view.

Viewpoint 10 – Duke Place at Roman Fort

7.79 This view is representative of visitors and travelling public at Duke Place adjacent to the scheduled monument of the Roman fort of Mamucium. The viewpoint is located approximately 682m to the north west of the Site.

7.80 The view from this location is focused on the Roman Fort replica and Its backdrop of the former elevated railway viaducts and bridges cutting across this area. Beyond this the skyline is partially punctuated by a residential tower. An apartment block on the opposite side of Duke Place is visible in the left of the view.

Viewpoint 11 – St Wilfrids Street at St Nicholas Road

7.81 This view is representative of residents, travelling public at the junction of St Wilfrids Street at St Nicholas Road. This viewpoint is located approximately 753m south west of the Site.

7.82 From this location, foreground views are across the playing fields and recreational space of Hulme Park. This open aspect is in strong contrast to the middle and long-distance views characterized by the skyline punctuation of dense built-form clusters and tall buildings within the city centre core.

Viewpoint 12 – Bonsall Street at Birchall Way

7.83 This view is representative of the travelling public from the junction of Bonsall Street at Birchall Way. The viewpoint is located approximately 631m south of the Site.

7.84 Student accommodation apartments are visible in the right hand side of the view, with the sunken Princess Road and bridges over it, visible to the right. St Phillip's C of E Primary School stands in the middle-distance with mature trees surrounding the playing fields and boundary. In the distance, completed and under construction tall towers are visible.

Viewpoint 13 – Chepstow Street

7.85 This view is representative of the travelling public on Chepstow Street. It is located approximately 155m to the north of the site. There is a surface level car park in the foreground of the view, with the historic Peveril of the Peak pub at the edge. The buildings

lining the south of Great Bridgewater Street are visible in the middle distance, with some taller towers visible above these.

Future Baseline

7.86 The existing buildings on Site are in a derelict state, and it is anticipated that without intervention they would continue to deteriorate resulting in a gradual reduction in townscape quality.

Primary and Tertiary Mitigation

Construction Stage

7.87 The following tertiary mitigation which has been evaluated as part of the construction stage assessment is outlined below.

7.88 Due to the proximity of the River Medlock residential receptors and heritage assets, site care should be taken during the construction period to minimise the impact of the Proposed Scheme. It will be particularly important to manage the use of potentially polluting materials to ensure that they do not affect the nearby river or heritage assets. Best practice measures will be implemented through a Construction Environmental Management Plan (CEMP) which will be prepared for the Site and secured by a planning condition. The CEMP will ensure all potentially polluting materials are handled according to all appropriate legislation.

Operational Stage

7.89 The following primary mitigation which has been evaluated as part of the operational stage assessment is outlined below.

7.90 High quality architectural design with a coherent language that considers the existing site context and wider urban form, creating a well-considered and legible addition to the skyline. The preservation of the original facade creates an aesthetic which is of its place and maintains a unique identity.

7.91 Restricted heights to proposed buildings which are set at a maximum of 36 storeys. This will help to restrict long distance views of the Proposed Scheme.

7.92 Public realm improvements including the creation of a new public square and pedestrian link to First Street and will subsequently provide new and enhanced opportunities for faunal species. Tree planting is proposed to soften close-range views of the Proposed Scheme.

Assessment of Effects, Secondary Mitigation and Residual Effects

Construction Stage

Visual effects

7.93 During construction, visual effects are predicted to affect receptor groups in close proximity to the Site. These have been identified as residents, City Centre visitors, travelling members of the public and workers.

7.94 Predicted impacts on visual amenity during demolition and construction include: presence of construction traffic, plant and equipment; Introduction/removal of built fabric; and Site

safety/security lighting, which could change the character and amenity of views within the ZTV.

7.95 The sensitivity of residents is considered to be high, City Centre visitors and travelling members of public medium and workers low. The magnitude of change to the visual amenity of these receptor groups during construction, is considered to be medium because the visual impacts of the construction will be considerable, however the Proposed Scheme is set within a built-up urban area. Therefore, there is likely to be a direct, temporary, medium-term adverse effect which is considered to be **moderate** for residents, visitors and members of travelling public and **minor** for workers.

Secondary Mitigation or Enhancement

7.96 No secondary mitigation or enhancement has been identified.

Residual Effect

7.97 In the absence of secondary mitigation the residual effect for the residents, City Centre visitors, travelling members of the public and workers is that same as that reported in the pre-mitigation scenario.

Significance

7.98 The effects for all visual receptors are considered to be **Not Significant**.

Townscape effects

7.99 Partial demolition of the existing buildings and construction of the new buildings is likely to result in a number of impacts on townscape character and local designations, due to changes to the existing townscape resources, including impacts of temporary features such as construction plant and construction activity.

7.100 Demolition and construction will result in temporary impacts on the local townscape through loss of existing townscape features; reduction in townscape quality due to the presence of construction traffic, plant and equipment; and the presence of temporary site cabins, fencing and illumination.

7.101 The sensitivity of all local townscape receptors is considered to be medium. The magnitude of change is considered to be medium due to the urban nature of the townscape setting. Therefore, there is likely to be a direct, temporary, medium-term, adverse effect which is considered to be **moderate**.

Secondary Mitigation or Enhancement

7.102 No secondary mitigation or enhancement is required/ has been identified.

Residual Effect

7.103 In the absence of secondary mitigation the residual effect for the townscape receptors is that same as that reported in the pre-mitigation scenario.

Significance

7.104 This effects for all townscape receptors are considered to be **Not Significant**.

Operational Stage

Visual effects

Viewpoint 1 – Whitworth Street West at Oxford Road

7.105 This view is representative of City Centre visitors, travelling public and workers from the junction of Oxford Road and Whitworth Street West, which in turn is the main entrance point to Oxford Road Railway Station. The viewpoint is located approximately 240m to the north east of the Site. The Proposed Scheme will be a striking central focal point from this viewing position, with the tower of the Proposed Scheme standing proud of the railway viaduct. It lines parallel against the Deansgate Square towers. The introduction of the Hotspur development is in keeping with the urban character of the view. Refer to **Appendix 7.2, Figures 1-6** for baseline and verified view photography, during daylight hours and dusk.

7.106 The sensitivity of City Centre visitors and travelling members of public on Whitworth Street at Oxford Road, represented by viewpoint 1 is considered to be medium. The magnitude of change from this viewpoint location, is considered to be medium. Therefore, there is likely to be a direct, permanent, neutral effect which is considered to be **moderate**.

7.107 The sensitivity of workers on Whitworth Street at Oxford Road, represented by viewpoint 1 is considered to be low. The magnitude of change from this viewpoint location, is considered to be medium. Therefore, there is likely to be a direct, permanent, neutral effect which is considered to be **minor**.

Viewpoint 2 – Jack Rosenthal Street

7.108 This view is representative of City Centre visitors and workers within the First Street development. The viewpoint is located approximately 21m to the west of the Site. Due to the close proximity to the Site and the intended interaction between the proposed public realm space and that of First Street, the view will take in an improved and connected public realm with increased visibility across the River Medlock. The closeness of the viewpoint means that street level elements are likely to be visually prominent, however the proposed building will be a focal point due to its height. Refer to **Appendix 7.2, Figures 1 and 2** for baseline and verified view photography. Refer to **Appendix 7.2, Figures 7 - 9** for baseline and verified view photography.

7.109 The sensitivity of City Centre visitors on Jack Rosenthal Street, represented by viewpoint 2 is considered to be medium. The magnitude of change from this viewpoint location, is considered to be large. Therefore, there is likely to be a direct, permanent, beneficial effect which is considered to be **major**.

7.110 The sensitivity of workers on Jack Rosenthal Street, represented by viewpoint 2 is considered to be low. The magnitude of change from this viewpoint location, is considered to be large. Therefore, there is likely to be a direct, permanent, beneficial effect which is considered to be **moderate**.

Viewpoint 3 – Gloucester Street at Whitworth Street West

7.111 Viewpoint 3 is located at the junction of Gloucester Street and Whitworth Street West underneath the railway viaduct. This view is representative of members of the travelling public. The viewpoint is located approximately 30m to the east of the Site. Due to the close proximity of the Proposed Scheme and intended interaction between the proposed public

square and Cambridge Street, this will be a highly visible threshold point to the Site, with improved entrance points. The height of the proposed building will also make this a focal element within this setting, however the full extent of this will be cut short by the railway bridge overhead. Tree planting within the proposed public square and streetscape will help soften the hard-built form and will help bring the scale of the immediate periphery down to a more human scale. Refer to **Appendix 7.2, Figures 10-12** for baseline and verified view photography.

7.112 The sensitivity of travelling members of public on Gloucester Street at Whitworth Street West, represented by viewpoint 2 is considered to be medium. The magnitude of change from this viewpoint location, is considered to be medium. Therefore, there is likely to be a direct, permanent, beneficial effect which is considered to be **moderate**.

Viewpoint 4 – London Road

7.113 This view is representative of city centre visitors, travelling public and workers on London Road, adjacent to Piccadilly Station. The viewpoint is located approximately 935m to the east of the Site. It is anticipated that the existing built form bounding this sightline along with the mature tree cluster near the Kampus development will screen the majority of the Proposed Scheme, with glimpsed views of the upper part of the building likely to partially visible through glimpsed views. The scale of the proposed scheme will appear in proportion with other developments from this viewpoint location. Refer to **Appendix 7.2, Figure 13** for baseline photography.

7.114 The sensitivity of City Centre visitors and travelling members of public on London Road, represented by viewpoint 4, is considered to be medium whilst the sensitivity of workers is considered to be low. The magnitude of change from this viewpoint location, is considered to be small. Therefore, there is likely to be a direct, permanent, neutral effect which is considered to be **minor** for all receptors.

Viewpoint 5 – Manchester Central

7.115 This view is representative of visitors, travelling public and workers in and around the plaza space in front of Manchester Central and Bridgewater Hall. The viewpoint is located approximately 327m to the north of the Site. Due to the height of the Proposed Scheme, the building will be visible standing to the right of the Cambridge Street Tower. Refer to **Appendix 7.2, Figure 14** for baseline photography.

7.116 The sensitivity of City Centre visitors and travelling members of public at Manchester Central, represented by viewpoint 5, is considered to be medium. The magnitude of change from this viewpoint location, is considered to be medium. Therefore, there is likely to be a direct, permanent, neutral effect which is considered to be **moderate**.

7.117 The sensitivity of workers public at Manchester Central, represented by viewpoint 5, is considered to be low. The magnitude of change from this viewpoint location, is considered to be medium. Therefore, there is likely to be a direct, permanent, neutral effect which is considered to be **minor**.

Viewpoint 6 – Cambridge Street at Mancunian Way

7.118 This view is representative of residents on Cambridge Street and travelling members of public from the roundabout junction of Cambridge Street and the Mancunian Way. The viewpoint is located approximately 295m to the south of the Site. It is anticipated that the

Proposed Scheme will be a visible focal point at the end of Cambridge Street, sitting as a pair of towers with the existing Cambridge Street Tower on the opposite side of the road. At street level, the retention and remodelling of the existing fenestration will mean that the streetscene appears consistent to the Site's existing character. Refer to **Appendix 7.2, Figures 15-17** for baseline and verified view photography.

7.119 The sensitivity of residents on Cambridge Street at viewpoint 6 is considered to be high, whilst the sensitivity of travelling members of public is considered to be medium. The magnitude of change from this viewpoint location, is considered to be medium. Therefore, there is likely to be a direct, permanent, neutral effect which is considered to be **moderate** for both receptor groups.

Viewpoint 7 – Blantyre Street

7.120 This view is representative of residents, and the travelling public at the edge of Castlefield on Blantyre Street. The viewpoint is located approximately 750m to the west of the Site. A dense cluster of intervening buildings of varying heights, in particular the large Owen Street development, will restrict views of the Proposed Scheme to glimpses of the tower beyond the tall buildings in the foreground. Refer to **Appendix 7.2, Figure 18** for baseline photography.

7.121 The sensitivity of residents on Blantyre Street at viewpoint 7 is considered to be high, whilst the sensitivity of travelling members of public is considered to be medium. The magnitude of change from this viewpoint location, is considered to be negligible. Therefore, there is likely to be a **negligible** effect for both receptor groups.

Viewpoint 8 – Hacienda, Whitworth Street West

7.122 This view is representative of residents and travelling public on Whitworth Street West near to the junction with Albion Street. The viewpoint is located approximately 178m to the north west of the Site. The height and scale of the Proposed Scheme and the close proximity of the viewpoint location to the Site will lead to the residential tower element being a highly visible component in the urban fabric of this locality. However the existing surrounding developments will form continuity of type, and as such the proposal will not feel like an alien introduction to the street scene. Refer to **Appendix 7.2, Figures 19-21** for baseline and verified view photography.

7.123 The sensitivity of residents on Whitworth Street West at viewpoint 8 is considered to be high. The magnitude of change from this viewpoint location, is considered to be large. Therefore, there is likely to be a direct, permanent, neutral effect which is considered to be **major**.

7.124 The sensitivity of travelling members of public on Whitworth Street West at viewpoint 8 is considered to be medium. The magnitude of change from this viewpoint location, is considered to be large. Therefore, there is likely to be a direct, permanent, neutral effect which is considered to be **moderate**.

Viewpoint 9 – Cambridge Street at River Street

7.125 This view is representative of residents and travelling public at the junction of Cambridge Street and River Street. The viewpoint is located approximately 48m to the west of the Site. Due to the close proximity of the Proposed Scheme and intended interaction between the proposed public square and Cambridge Street, this will be a highly visible threshold point to

the Site, with improved entrance points. The height of the proposed building will also make this a very focal element within this setting, mirroring to some extent the mass of the adjacent Cambridge Street tower. Tree planting within the proposed public square and streetscape will help soften the hard-built form and will help bring the scale of the immediate periphery down to a more human scale. Refer to **Appendix 7.2, Figures 22-24** for baseline and verified view photography.

7.126 The sensitivity of residents on Cambridge Street at viewpoint 9 is considered to be high. The magnitude of change from this viewpoint location, is considered to be large. Therefore, there is likely to be a direct, permanent, beneficial effect which is considered to be **major**.

7.127 The sensitivity of travelling public receptors on Cambridge Street at viewpoint 9 is considered to be medium. The magnitude of change from this viewpoint location, is considered to be large. Therefore, there is likely to be a direct, permanent, beneficial effect which is considered to be **major**.

Viewpoint 10 – Duke Place at Roman Fort

7.128 This view is representative of visitors and travelling public at Duke Place adjacent to the scheduled monument of the Roman fort of Mamucium. The viewpoint is located approximately 682m to the north-west of the Site. It is anticipated that the existing railway viaduct, and intervening built-form will obscure any views of the tower, limiting this to only a partially glimpsed view protruding just above the railway viaduct, and seen in the context of intervening tall buildings. Refer to **Appendix 7.2, Figure 25** for baseline photography.

7.129 The sensitivity of visitors at the Roman fort of Mamucium is considered to be high, whilst the sensitivity of travelling members of public is considered to be medium. The magnitude of change from this viewpoint location, is considered to be negligible. Therefore, there is likely to be a **negligible** effect for both receptor groups.

Viewpoint 11 – St Wilfrids Street at St Nicholas Road

7.130 This view is representative of residents and travelling public at the junction of St Wilfrids Street at St Nicholas Road. This viewpoint is located approximately 753m south west of the Site. Due to the height of the Proposed Scheme it is likely that the upper portion of the tower will be visible standing above the mature tree line of Hulme Park. Due to the consistency of the existing urban fabric of the city centre, this new build element is likely to blend into the existing skyline of this area. It is also worth noting that due to their scale and closer proximity, both the Owen Street and River Street developments are dominant elements on the skyline from this location. Refer to **Appendix 7.2, Figure 26** for baseline photography.

7.131 The sensitivity of residents on St Wilfrids Street, at viewpoint 11, is considered to be high, whilst the sensitivity of travelling members of public is considered to be medium. The magnitude of change from this viewpoint location, is considered to be negligible. Therefore, there is likely to be a **negligible** effect for both receptor groups.

Viewpoint 12 – Bonsall Street at Birchall Way

7.132 This view is representative of the travelling public from the junction of Bonsall Street at Birchall Way. The viewpoint is located approximately 631m south of the Site. It is anticipated that the existing intervening built form and mature vegetation will obscure the majority of the views of the Proposed Scheme with only the upper part of the tower being visible from this location. Refer to **Appendix 7.2, Figure 27** for baseline photography.

7.133 The sensitivity of travelling members of public on Bonsall Street at viewpoint 12, is considered to be medium. The magnitude of change from this viewpoint location, is considered to be negligible. Therefore, there is likely to be a **negligible** effect for travelling members of public.

Viewpoint 13 – Chepstow Street

7.134 This view is representative of the travelling public on Chepstow Street. The viewpoint is located approximately 155m to the north of the Site. Due to the height of the built form, the majority of the tower can be seen above the existing roof lines or the intervening buildings in the view. Although the Proposed Scheme forms a large focal point in the centre of the view, it is not incongruous with the urban nature of the view. Refer to **Appendix 7.2, Figures 28-30** for baseline and verified view photography.

7.135 The sensitivity of travelling members of the public on Chepstow Street at viewpoint 13 is considered to be medium. The magnitude of change from this location is considered to be medium. Therefore there is likely to be a direct, permanent, neutral effect which is considered to be **moderate**.

Secondary Mitigation or Enhancement

No secondary mitigation or enhancement has been identified.

Residual Effect

In the absence of secondary mitigation the residual effects for all visual receptors are the same as that reported in the pre-mitigation scenario.

Significance

Viewpoint 1 – Whitworth Street West at Oxford Road

7.136 This effects on all receptors at Viewpoint 1 are considered to be **Not Significant**.

Viewpoint 2 – Jack Rosenthal Street

7.137 This effect on City Centre visitors on Jack Rosenthal Street is considered to be **Significant**.

7.138 This effect on workers on Jack Rosenthal Street is considered to be **Not Significant**.

Viewpoint 3 – Gloucester Street at Whitworth Street West

7.139 This effect is considered to be **Not Significant**.

Viewpoint 4 – London Road

7.140 This effect is considered to be **Not Significant**.

Viewpoint 5 – Manchester Central

7.141 This effects on all receptors at Viewpoint 5 are considered to be **Not Significant**.

Viewpoint 6 – Cambridge Street at Mancunian Way

7.142 This effect is considered to be **Not Significant**.

Viewpoint 7 – Blantyre Street

7.143 This effect is considered to be **Not Significant**.

Viewpoint 8 – Hacienda, Whitworth Street West

7.144 The effect on residents on Whitworth Street West is considered to be **Significant**.

7.145 This effect on travelling members of the public on Whitworth Street West is considered to be **Not Significant**.

Viewpoint 9 – Cambridge Street at River Street

7.146 The effect on residents and travelling public receptors on Cambridge Street are considered to be **Significant**.

Viewpoint 10 – Duke Place at Roman Fort

7.147 This effect is considered to be **Not Significant**.

Viewpoint 11 – St Wilfrids Street at St Nicholas Road

7.148 This effect is considered to be **Not Significant**.

Viewpoint 12 – Bonsall Street at Birchall Way

7.149 This effect is considered to be **Not Significant**.

Viewpoint 13 – Chepstow Street

7.150 The effect is considered to be **Not Significant**

Townscape effects

National Cycle Route 6

7.151 National Cycle Route 6 utilises Cambridge Street and Whitworth Street West as part of the route, and is 3m from the Site at is closest. The route is 655km long and stretches from London to the Lake District. Effects have been assessed to the section of the route that passes through the study area.

7.152 The sensitivity of users of National Cycle Route 6 is considered to be high. The magnitude of change is considered to be medium because there will be additional built form within the area due to the Proposed Scheme, however it is set within the context of urban townscape and so is not incongruous with the character. The improvements to the public realm and the redevelopment of a derelict building will be beneficial to the setting of the NCR. Therefore, there is likely to be a direct, permanent, beneficial effect which is considered to be **moderate**.

Conservation Areas

7.153 There are a number of conservation areas wholly or partially within the study area, the closest of which (240m) is the Whitworth Street conservation area. St Peters Square conservation area is located 327m to the North of the Site. The Site does not sit within a conservation area and is separated from those in the city centre by the viaduct that bounds the Site to the north. Due to the height of the Proposed Scheme it is likely to be visible from certain locations within the city centre conservation areas, seen within the context of other tall buildings on the skyline.

7.154 The sensitivity of users of Conservation Areas within the city centre is considered to be high. The magnitude of change is considered to be small. Therefore, there is likely to be a direct, permanent, neutral effect which is considered to be **moderate**.

Manchester Urban Historic Landscape Characterisation

7.155 The developed Historic Character map identifies the Site as sitting within an area of Industrial Character, with a surrounding mixture of Residential, Commercial, and Communications character types.

7.156 The sensitivity of the industrial urban landscape character of the Site centre is considered to be low. The magnitude of change is considered to be large. Therefore, there is likely to be a direct, permanent, beneficial effect which is considered to be **moderate**.

Secondary Mitigation or Enhancement

7.157 No secondary mitigation or enhancement has been identified.

Residual Effect

7.158 In the absence of secondary mitigation the residual effects for all visual receptors are the same as that reported in the pre-mitigation scenario.

Significance

National Cycle Route 6

7.159 This effect is considered to be **Not Significant**.

Conservation Areas

7.160 This effect is considered to be **Not Significant**.

Manchester Urban Historic Landscape Characterisation

7.161 This effect is considered to be **Not Significant**.

Limitations and Assumptions

7.162 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

7.163 The assessment has been undertaken in accordance with recognised industry guidelines. These include categorising individual visual receptors into receptor groups – for example, it is not practical to assess every point along a street, rather, all pedestrians using a particular street, for whatever purpose, are classified as a single receptor group.

7.164 Guidelines also require visual assessment to be undertaken from publicly accessible vantage points. However, it is also important to assess the likely effects on views from private properties for people living and working in an area. For the purpose of this assessment, assumptions have been made about views from nearby buildings in the wider area, where it is either not possible or not practical to gain access.

7.165 Also, in line with recognised guidelines, visual assessments rely upon photographs from a series of representative viewpoints, in this case 13 no. locations. These are not intended to illustrate every possible location from where there might be a view of the Proposed Scheme, but rather to present a selection of views from a variety of angles and distances, sufficient to inform decisions about the Proposed Scheme.

Summary

7.166 **Table 7.4** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

7.167 The table only provides a summary of the residual effects identified within the assessment and details of all primary, secondary and tertiary mitigation that has been taken into account is set out in detail within the Chapter and summarised within Environmental Management Plan included within **Volume 3: Environmental Management Plan**.

Table 7.4: Summary of Residual and Significant Effects

Effect	Receptor	Residual Effect	Is the Effect Significant?
Construction Stage			
Effects to visual amenity during construction	City Centre visitors, travelling members of the public and workers.	moderate adverse for residents minor adverse for travelling members of public and worders	NO
Effects to townscape receptors	Local townscape features, townscape character	moderate adverse	NO
Operational Stage Visual effects			
Viewpoint 1 – Whitworth Street West at Oxford Road	City Centre visitors and travelling members of public	moderate neutral	NO
Viewpoint 1 – Whitworth Street West at Oxford Road	workers	minor neutral	NO
Viewpoint 2 – Jack Rosenthal Street	City Centre visitors	Major Beneficial	YES
Viewpoint 2 – Jack Rosenthal Street	workers	Moderate Beneficial	NO
Viewpoint 3 – Gloucester Street at Whitworth Street West	travelling members of public	Moderate Beneficial	NO
Viewpoint 4 – London Road	City Centre visitors and travelling members of public	Minor neutral	NO

Effect	Receptor	Residual Effect	Is the Effect Significant?
Viewpoint 5 – Manchester Central	City Centre visitors and travelling members of public	Moderate neutral	NO
	workers	Minor neutral	NO
Viewpoint 6 – Cambridge Street at Mancunian Way	Residents and travelling members of public	Moderate neutral	NO
Viewpoint 7 – Blantyre Street	Residents and travelling members of public	Negligible	NO
Viewpoint 8 – Hacienda, Whitworth Street West	Residents	Major Neutral	YES
Viewpoint 8 – Hacienda, Whitworth Street West	Travelling members of public	Moderate neutral	NO
Viewpoint 9 – Cambridge Street at River Street	Residents and travelling members of public	Major Beneficial	YES
Viewpoint 10 – Duke Place at Roman Fort	Visitors at the Roman fort of Mamucium and travelling members of public	Negligible	NO
Viewpoint 11 – St Wilfrids Street at St Nicholas Road	Residents and travelling members of public	Negligible	NO
Viewpoint 12 – Bonsall Street at Birchall Way	Travelling members of public	Negligible	NO
Viewpoint 13 – Chepstow Street	Travelling members of public	Moderate	NO
Townscape effects			
Townscape effect on National Cycle Route 6	National Cycle Route 6	Moderate Beneficial	NO

Effect	Receptor	Residual Effect	Is the Effect Significant?
Townscape effect on City Centre Conservation Areas	Conservation Areas	Moderate Neutral	NO
Townscape effect on the setting of listed buildings	Listed Buildings	Negligible	NO
Townscape effects on the Historic Urban Character Assessment of Manchester	Manchester Urban Historic Landscape Characterisation	Moderate Beneficial	NO

References

[1] Landscape Institute and Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment (Third Edition).
[2] Landscape Institute (2016) Landscape Character Assessment Technical Information Note.
[3] Landscape Institute (2018) Townscape Character Assessment Technical Information Note.
[4] Natural England (2014) An Approach to Landscape Character Assessment.
[5] Landscape Institute (2019) Visual Representation of Development Proposals.

Chapter 8: Built Heritage

Version: B

Introduction

This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to Built Heritage.

The Chapter describes the technical consultation that has been undertaken during the EIA, the scope of the assessment and assessment methodology, and a summary of the baseline information that has informed the assessment.

In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details).

This Chapter, and its associated **Figure 8.1** and **Appendix 8.2 – Heritage Statement**), focuses entirely on above-ground built heritage, and is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**).

In addition, this Chapter should be read in conjunction with **Chapter 15: Assessment of Cumulative Effects**.

Summary of Consultation

The viewpoints used within this assessment are the same as those identified in the previous application which were agreed with Manchester City Council at the time. Therefore no additional consultation on viewpoints was undertaken for this updated assessment.

Scope of the Assessment

Effects Not Considered to be Significant

The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided as part of the Heritage Statement (**Appendix 8.2**) to support this and a summary reason is provided in relation to each receptor in the table below.

Table 8.1: Effects Not Considered to be Significant

Receptors	Likely Effect	Reason for Likely Effect
Former Cotton Mill On West Side Of Junction With Cambridge Street (Mackintosh Mill) Grade II	Negligible	Distance from the Site

Mill Chimney Stack On West Side Of Junction With Cambridge Street Grade II	Minor adverse	Distance from the Site
Chorlton New Mill and Attached Chimney Grade II	Negligible	Distance from the Site
Chorlton Old Mill Grade II	Negligible	Distance from the Site
Mill On North East Corner Of Junction With Chester Street (Cambridge Mill) Grade II	Negligible	Distance from the Site
Manchester Oxford Road Station (Including Platform Structures) Grade II	Negligible	Orientation from the Site
The Ritz Dance Hall Grade II	Negligible	Orientation from the Site
Manchester South Junction And Altrincham Railway Viaduct Grade II	Minor beneficial	Viaduct forms a robust, low-level, linier feature, the significance of which is not materially affected by neighbouring development
Peveril Of The Peak Public House Grade II	Negligible	Orientation from the Site and distance
Chepstow House Grade II	Negligible	Orientation from the Site and distance
Canada House Grade II	Negligible	Orientation from the Site
Lee House Grade II	Negligible	Orientation from the Site and distance
Whitworth Street Conservation Area	Negligible adverse	Distance from Site.

Effects Considered Likely to be Significant

Table 8.2 outlines the effects that are considered likely to be significant and are reported within this Chapter.

Table 8.2: Effects Considered Likely to be Significant

Receptors	Likely Significant Effect	Applicable Stage
Hotspur Press (Non-Designated Heritage Asset, 'NDHA')	Change to the setting and significance of a NDHA	Construction / Operation

Assessment Methodology

Legislative Framework, Policy and Guidance

The following legislation and policy has informed the assessment of effects within this Chapter, and is detailed further in the **Heritage Statement (Appendix 8.2).**

The full Heritage Statement, from which this chapter is derived, has been undertaken in general accordance with or with reference to the following legislation and policy:

- Planning (Listed Buildings & Conservation Areas) Act 1990;
- National Planning Policy Framework (NPPF) Conserving and Enhancing the Historic Environment (2023[1]); and
- Planning Practice Guidance (PPG), Historic Environment (most recent version July 2019).

The following guidance has informed the assessment of effects within this Chapter and the **Heritage Statement (Appendix 8.2)**:

- Manchester City Council Unitary Development Plan (1995) and Core Strategy (2012);
- Places for Everyone (March 2024);
- Guidance on Heritage Impact Assessments for Cultural World Properties, published by the International Council on Monuments and Sites (ICOMOS) (Jan 2011);
- Conservation Principles, Policies, and Guidance (Consultation draft 2008);
- Historic England's Good Practice Advice Note 2: Managing Significance in Decision-Taking in the Historic Environment (2015);
- Historic England's Good Practice Advice Note 3 (second edition): The Setting of Heritage Assets (2017);
- Historic England's Advice Note 1: Conservation Areas (second edition) (2019);
- Historic England's Advice Note 12: Statements of Heritage Significance (2019); and
- Historic England's Good Practice Advice Note 4: Tall Buildings (2022).

Defining the Study Area

It is considered that for the purposes of assessing the potential impact of the Proposed Scheme upon heritage receptors within the Site and its setting, a 250m study area from the boundary of the Site is appropriate and proportionate given the nature of the scheme, and the level of interposing development in the surrounding townscape. The study area provides a focus for assessment but is not intended to be prescriptive; buildings outside the boundary of the study area have been considered where relevant and are discussed within the Visual Impact Assessment within the **Heritage Statement (Appendix 8.2).**

The study area and identified heritage assets (receptors) within it are shown on the Heritage Asset (receptor) Plan at **Figure 8.1.**

In total, there are 15 listed buildings (heritage receptors) within the study area. Due to the Site being located close to the boundary of the Whitworth Street Conservation Area (WSCA), views of the Proposed Scheme will be visible from within the WSCA and this has been scoped in to the assessment.

Although not formally identified, the historic building within the Site has been established as a non-designated heritage asset (NDHA) by MCC during the pre-application stage of the previous

[1] Most recent 2023 version of the NPPF referred to.

application and, as detailed in Section 2.2.2 of the **Heritage Statement (Appendix 8.2**), is addressed as such within this chapter.

For the purposes of this chapter, the designated and non-designated heritage receptors within the study area are addressed as 'heritage receptors'.

The heritage receptors within the study area are summarised as follows (**Table 8.3 and Figure 8.1**):

Table 8.3: Heritage Receptors Scoped in to This Assessment

Heritage Receptors (refer to Figure 8.1)	
A	Former Cotton Mill On West Side Of Junction With Cambridge Street (Mackintosh Mill)
B	Mill Chimney Stack On West Side Of Junction With Cambridge Street (Mackintosh Mill)
C	Chorlton New Mill And Attached Chimney
D	Chorlton Old Mill
E	Mill On North East Corner Of Junction With Chester Street
F	Manchester Oxford Road Station (Including Platform Structures)
G	The Ritz Dance Hall
H	Manchester South Junction And Altrincham Railway Viaduct
I	Rochdale Canal Lock Number 89 (Tib Lock), On South Side Of Havelock Mills
J	13-17, Albion Street
K	The Britons Protection Public House
L	Peveril of the Peak Public House
M	Chepstow House
N	Canada House
O	Lee House
-	Hotspur House (the Site) – NDHA
-	Whitworth Street Conservation Area

Background Studies to Inform the ES / Establish the Baseline

Table 8.4 summarises all studies/surveys/analysis/evaluations undertaken to inform the assessment presented within this Chapter.

Table 8.4: Background Studies / Surveys / Evaluations /Analysis

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
In person Site survey	In person visit to the Site and surrounding area to assess the significance of the non-designated heritage asset (Hotspur House) and identify appropriate locations from which to assess the visual impact of the Proposed Scheme.	September 2023

Desk-Based Heritage Appraisal	Identification of designated assets (heritage receptors) with potential to be affected confirmed through a 250m radius search of the National Heritage List for England (NHLE).	September 2023
Heritage Statement (**Appendix 8.2**)	The Heritage Statement has been prepared to accompany the Application and has been prepared in the context of relevant national and local heritage planning policy and Historic England's 2019 advice on the structure of Heritage Statements. The purpose of the Heritage Statement is to primarily assess the potential impact of the proposed PBSA development on the fabric and character of the Hotspur House as a NDHA, in addition to the settings of nearby heritage receptors. The Heritage Statement has identified heritage receptors with the potential to be affected, described their significance and setting, and assessed the impact of the Proposed Scheme upon that significance.	April 2024
Impact Assessment (heritage)	Direct impacts on the fabric of the Site, as a NDHA, has been assessed utilising the drawings by Hodder Associates and details within Civic's Construction Methodology and Façade Retention report. Identification of key heritage views originally identified in consultation with MCC as part of the previous, consented scheme in 2018, with the addition of one further view arising from a recent consultation with MCC (refer	April 2024

	to Summary of Consultation above). The purpose of the Visual Impact Assessment within the Heritage Statement (Appendix 8.2) is to assess the visual impact of the Proposed Scheme on the significance and settings of the surrounding identified heritage receptors. For the purposes of this assessment, consideration has been given to heritage receptors within a defined study area of 250m. The study area provides a focus for assessment but is not intended to be prescriptive. The focus was on designated heritage receptors within the defined study area.	

Assessment Process

This Chapter assesses the potential for significant effects to heritage receptors resulting from the Proposed Scheme following primary and tertiary mitigation. The baseline assessment is undertaken using a combination of desk-based study, research, and fieldwork to identify and assess the heritage significance of the identified heritage receptors. It also establishes the way in which the settings and the Site contribute to the heritage significance of these assets (heritage receptors).

The aim of the baseline appraisal and Heritage Impact Assessment (informed by a Visual Impact Assessment) contained within the **Heritage Statement (Appendix 8.2**) and summarised in this Chapter has been:

- To establish the baseline environment and identify heritage sensitivities within the Site and the defined study area;
- To assess the significance of the receptor;
- To evaluate the magnitude of change to identified receptors; and
- To identify mitigation in the form of further surveys, investigation and recording to be undertaken in light of the identified impacts.

Identification and description of the baseline environment has involved a combination of desk-based review of plans, maps, records and other documents, and visual survey.

Consideration has also been given to the historical development of the Site and surrounding area, building types and materials, key views to the notable historic buildings which contribute to the identification of the built form, and understanding of the special interest of the area.

For the purposes of this assessment, consideration has been given to heritage receptors within a 250m radius of the Site boundary. The study area provides a focus for assessment but is not intended to be prescriptive; buildings outside the boundary of the study area are considered where relevant within this chapter and the Heritage Statement.

The characterisation appraisal of the study area which informed the selection of key views for the visual impact assessment, took into account the following factors regarding character and distinctiveness of the area surrounding the Site: open spaces, public realm, materials, views into and from the Site, current and historic uses and the urban grain. The key views were agreed with MCC during the previous application.

Information was collated from a number of online and primary sources including:

- The National Heritage List (Historic England);
- Manchester City Council Website; and
- John Rylands University Library website.

The identified receptors are valued and the impact on them assessed, giving an overall significance of effect. Where the identified heritage receptors are visible in the selected viewpoints, the Visual Impact Assessment has been used to inform the assessment of potential impact on their setting.

In order to assess the magnitude and significance of heritage impacts through the views, the following elements were considered:

- The sensitivity and proximity of receptors to the Site;
- The nature of the existing views;
- The degree of change to existing views and visibility of the Proposed Scheme; and
- The availability and amenity of alternative views.

Reporting of the Environmental Effect and Significance Criteria

The assessment of likely significant environmental effects as a result of the Proposed Scheme has taken into account the construction and operational stages. The following sections define the approach adopted within the assessment for the determination of significance (or value/importance), magnitude of change (or impact), the level of effect, and finally the significance of this effect.

<u>Determining Significance of Receptor</u>

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

Criteria have been established to appraise a heritage receptor's significance. Statutory criteria, as set out in the '*Principles of Selection for Listing Buildings*', DCMS, 2010 (revised 2018), provides a list of

principles of assessing heritage significance based on architectural and historic interest, age and rarity, aesthetic merits, selectivity, and national interest. Historic England's (formerly English Heritage) criteria outlined in 'Conservation Principles, Policies and Guidance,' are also considered in this assessment.

Evaluation of significance has been informed primarily by the designation of the heritage receptors at an international, national, regional, or local level, as well as their ability to contribute to an understanding of the past. This value rating had also been applied when considering sensitivity of views containing heritage receptors. Indicative definitions for each of these ratings are outlined in **Table 8.5:**

Table 8.5 –Criteria for Determining the Value of Heritage Receptors (Significance)

Significance	Definition
High	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	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	Locally listed buildings. Historic buildings of modest quality in their fabric or historical association.
Negligible	Buildings and sites that yield little to no heritage interest.

<u>Determining the Magnitude of Change</u>

The magnitude of change has been defined through an analysis of the scale of change experienced from the current baseline conditions with a consideration for the significance of the receptor, its susceptibility to the Proposed Development (which formulates its sensitivity in conjunction with the receptor's significance) and has been defined as being **large**, **medium**, **small**, or **negligible**.

Table 8.6 summarises the factors to be taken into account when assessing the magnitude of change.

In considering the potential magnitude of change, the criteria is not intended to be prescriptive and the weighting to be accorded to each is informed by professional judgement.

Table 8.6: Criteria for Assessing Magnitude of Change

Magnitude of Change	Criteria for Assessing Magnitude of Change
Large	Total loss, or gain, of resource and / or quality and integrity of resource; substantial damage/loss, or substantial restoration of key characteristics, historic features or historic building elements, substantially or completely loosing or improving the overall integrity. Large scale or major change of resource quality; substantial restoration.
Medium	Loss or partial loss / damage to key characteristics, historic features or historic building elements, but not completely adversely affecting the overall integrity. Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Small	Measurable change in attributes or quality; minor change of, or alteration to key characteristics, historic features or historic building elements. Minor gain/loss of key characteristics, features or elements.
Negligible	Changes which would have an imperceptible impact on the significance of the heritage receptors. It does not mean that there will be no physical or visual change, rather that the result has no demonstrable negative impact on either the identified heritage receptor's significant physical fabric, their settings or significance to any appreciable degree.

Determining the Level of Effect

The level of effect has been informed by the magnitude of change caused by the Proposed Scheme and of the identified significance and associated sensitivity of the affected receptor. **Table 8.7** provides a matrix which has guided the determination of the level of effect for each receptor.

Whilst **Table 8.7** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*', '*adverse*' or 'Negligible'.

Table 8.7: Matrix to Support Determining the Level of Effect

		Sensitivity			
		High	Medium	Low	Negligible
Magnitude of Change	Large	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

The following terms have been used to define the level of the effects identified and these can be 'beneficial' or 'adverse':

- **Major effect**: where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
- **Moderate effect**: where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;
- **Minor effect**: where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Proposed Scheme is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change; and
- **Negligible**: where the Proposed Scheme is unlikely to cause a noticeable change on a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

The duration of the effect has been assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

<u>Determining Significance</u>

For each effect, a statement has been made as to whether the level of effect is '**Significant**' or '**Not Significant**'. This determination has been based on professional judgement and/or relevant guidance/legislation where applicable.

Significance has only been concluded for residual effects (i.e. following the identification of secondary and tertiary mitigation).

Baseline Conditions

Hotspur House (former Medlock Mills) is not located within a conservation area, nor does it contain any listed buildings. Consequently, the Site does not contain any designated heritage receptors, however, its northern boundary is formed of the Grade II listed Manchester and Altrincham Junction Railway viaduct (outside of the site boundary). MCC does not operate a 'local list' of important historic buildings and does not have a planning policy which seeks to secure the protection of non-listed buildings.

However, Medlock Mills is included as a reference on the Greater Manchester Historic Environment Record (reference no.: GMHER 16940.1.0) and the 1985 and 2017 Greater Manchester Textile Mill Surveys. The inclusion on these record databases does not provide any statutory status or protection under the Planning Acts but it does inform MCC that the Site is of some 'heritage interest'.

The surviving mill complex dates from 1801 following the reconstruction of an earlier cotton mill which was destroyed by fire. The mill remained in a variety of textile-manufacturing related uses until the start of the 20th century when it was acquired and converted to become a printing press. The printing use required some extensive alterations to the building fabric, which included a central section of flooring and strengthening of the structure.

The surviving components of Hotspur House broadly retain the character and expression of an early, industrial textile mill complex. The internal authenticity of the building has been partially obscured by later partitions, as well as some fittings such as heavy timber floors, cast iron columns and parts of the original roof structure. The C20th alterations to the mill, have not fundamentally impacted on the appreciation of the building's main fabric, which remains partially intact and easily appreciated as a former textile mill.

The most heritage significant part of the building is the 1801 mill building. The significance assessment is tailored to the specific heritage values of Medlock Mill as a non-designated heritage asset. The appraisal of the Site's components highlight that the surviving parts of the original 1801 mill are of relatively higher significance in the context of the mill group (by virtue of its age) with the later extensions being more intact but deemed to be lower heritage significance (as additions) when tested against established heritage criteria.

There are no world heritage sites, scheduled monuments, registered parks and gardens, registered battlefields, or protected wreck sites within the Study Area.

The assessment has identified 15 no. designated heritage receptors within the 250m study area, and one conservation area immediately outside of the 250m radius. The baseline conditions and visual impact upon these identified heritage receptors are assessed in detail within the Heritage Statement (**Appendix 8.2**).

Statement of significance

In comparison to the hierarchy of significance and the national guidance on heritage designation the Hotspur House is a building which is of relatively *low* heritage value. However, the building is of some local heritage interest and yields some modest aesthetic, historical, evidential and communal values sufficient for it to be considered as a *'non-designated heritage asset'*, as defined by the NPPF and as implicitly recognised in Manchester's Core Strategy policy EN3.

The former Hotspur Press Medlock Mill is recorded as being the second-oldest surviving, non-fireproof mill in Manchester and Salford (after Murray's Mills of 1798-1806) in the publication report of the 1985 Greater Manchester Textile Mills Survey.

Hotspur House also forms a surviving part of the historic range of (now listed) mills on Cambridge Street and Hulme Street. This listed group is recorded as being a *"hugely important cluster"* in the Manchester section of the 2017 Greater Manchester Textile Mills Survey (page 21), with the Site, recorded as Medlock Mill, noted as being, *"in poor condition and requiring significant investment to avoid further deterioration"*.

Consequently, the Site is a much altered and compromised former mill building which, relative to its comparators, is of modest historical and architectural interest. The original (c1801) mill building is thus considered to be appropriately categorised as being of *local heritage significance*.

Future Baseline

In the absence of the Proposed Scheme, there are no anticipated changes to the Built Heritage future baseline apart from the continuing physical deterioration of the Site through lack of active use, repair and risk of vandalism.

Primary and Tertiary Mitigation

Construction and Operational Stage

The following primary mitigation which has been identified as part of the construction and operational stage assessment is outlined below.

- Heritage considerations have been integral to the design of the proposals. Enlisting appropriate specialists and consultation with the local authority has informed the design development and assessment process to ensure potential adverse visual impacts on the identified heritage receptors are minimised.
- Consideration to mitigating the impacts on the identified heritage receptors has been made throughout the development of the Proposed Scheme.
- The identification of key heritage viewpoints has been one of the principal factors in identifying where indirect heritage impact may occur, therefore allowing for an understanding of how best to minimise and mitigate harm. The identification of views has been informed by Zone of Theoretical Visibility studies which provide an objective evidence base on which informed conclusions can be made.

Assessment of Effects, Secondary Mitigation and Residual Effects

Construction Stage

The assessment methodology and approach to the relative impact on heritage receptors during the construction phase is based on evidence-based assumptions in relation to common issues such as demolition, dust, noise, site hoarding and scaffolding.

Due to the proximity of a number of listed buildings surrounding the Site, the potential effects of the demolition and construction phase will result in temporary, localised minor adverse impacts on the ability to understand and appreciate the settings of these buildings through effects such as dust, noise, vibrations, increase of construction traffic in their setting, and visual intrusion from construction activities and equipment.

The sensitivity of Hotspur House is considered to be low. The magnitude of change is considered to be large. Therefore, due to the almost complete demolition of historic buildings across the site, and the construction of a new tall tower element, there is likely to be a direct and indirect (in terms of demolition of physical, historic fabric and character of the Site buildings), temporary and permanent (in terms of construction/demolition phase and completion of Proposed Scheme), medium, adverse effect which is considered to be moderate.

Secondary Mitigation or Enhancement

The redevelopment of the former Hotspur Press complex will be framed by a 'Conservation Implementation Strategy' to frame the specifications, future conservation, and ongoing maintenance of the retained historic components of the building. It includes the following: Brickwork repairs, windows repairs and replacement, the façade repair, support and ongoing maintenance, and its internal fabric conservation and repair.

The approach taken in the 'Conservation Implementation Strategy' is one of minimum intervention in repair and this accords with best conservation practice, as set out by the Society for the Protection of Ancient Buildings, Historic England and others. The intention is not to restore the building to an 'as new' condition, rather it is to retain the patina of age of the retained fabric whilst cleaning, removing damaging interventions, and repairing damaged components of the structure. Where such components have been damaged beyond repair, replacement is proposed on a like for like basis using the closest available match to the original materials.

The 'Conservation Implementation Strategy' will frame the more detailed, construction-specific 'Construction Environmental Methodology and Programme'. This will include the protective air quality and noise and vibration measures that will be put in place to ensure any potential adverse impacts of the demolition and construction stage will be minimised. The latter will include recommended measures specific to the riverside location and will include the following:

- Use of high quality hoardings;
- Dust management;
- Vibration monitoring;
- 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.

Residual Effect

Despite the identified secondary mitigation, it is considered that the residual effect would be the same as that reported in the pre-mitigation scenario.

Significance

This effect on Hotspur House as a NDHA is considered to be **Significant.**

Operational Stage

The Proposed Scheme will deliver the conservation-led restoration of the: 1801 mill façade, the facade of the 1880s curved wing, and boundary wall, while adapting key sections of the 1860s shed. The Proposed Scheme will thus, help to bring into viable use the identified heritage asset (receptor) without compromising any valued streetscape views.

The alterations to the former-mill building, including the erection of the tower behind the façade will erode to a discernible extent, the appreciation of the fabric and historic character of the Site buildings and will result in changes which will make an appreciable difference to the character and appearance of the identified non-designated heritage receptor.

The sensitivity of Hotspur House is considered to be low. The magnitude of change is considered to be large. Therefore, due to both physical fabric changes and change to experience of building in its setting there is likely to be a direct and indirect, permanent, long-term, adverse effect which is considered to be moderate.

Regarding the Grade II listed Manchester South Junction & Altrincham Railway viaduct, due to the viaduct's robust and extreme length/linearity, the viaduct appears in several streetscape views in which the structure remains the principal focus within the view, and with the proposed removal of lower significant buildings to its southern side, the structure will become further exposed and better appreciated.

Regarding the Grade II listed mill chimney stack on west side of junction with Cambridge Street, the dominance and citing of the proposed tower element of the scheme can be seen to lessen the 19th century industrial prominence of the chimney stack but not to a significant extent.

Regarding all other identified listed buildings within the views assessed, due to the separating distance between View 06 and the Site, the settings of listed mills and chimneys along Cambridge Street are considered to be unaffected by Proposed Scheme, and it is judged that one will continue to understand this group as a collection of low-scale former industrial buildings of varying heights.

Regarding the Whitworth Street Conservation Area, although the Site is not located within its boundary, it is evident that the tower element of the scheme will be seen along the length of the principal thoroughfare through the Conservation Area; Whitworth Street. However, due to the existing and ongoing high-rise residential developments around the location of the Site, it is considered that the addition of a further high-rise element in the distance, although highly visible, will be understood as forming a feature in the distance, and one which reinforces the existing townscape character, and the Proposal will encourage further exploration through the Conservation Area to the west.

The potential effects of the Proposed Scheme are considered in full within the Visual Impact Assessment (heritage) **in Section 7 of the appended Heritage Statement in Appendix 8.3.**

<u>Secondary Mitigation or Enhancement</u>

No secondary mitigation has been identified.

<u>Residual Effect</u>

In the absence of secondary mitigation the residual effect is that same as that reported in the pre-mitigation scenario.

Significance

This effect on Hotspur House as a NDHA is considered to be **Significant**

Limitations and Assumptions

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

- This chapter and the Heritage Statement is limited to above-ground heritage receptors only. The assessment of below-ground archaeology does not form part of this assessment and is covered by Salford Archaeology in a separate report.
- Survey of the listed building was undertaken in October 2023 by visual inspection and did not involve any intrusive investigation.
- Survey of the identified heritage assets (receptors) within the study area was from publicly accessible areas. As such the study is limited to assessment from ground level.

Summary

Table 8.8 provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

The table only provides a summary of the residual effects identified within the assessment and details of all primary, secondary, and tertiary mitigation that has been taken into account is set out in detail within the Chapter and summarised within Environmental Management Plan included within **Volume 3: Environmental Management Plan**.

Table 8.8: Summary of Residual and Significant Effects

Effect	**Receptor**	**Residual Effect**	**Is the Effect Significant?**
Construction Stage			
Change to the form, character and setting and significance of a NDHA	Hotspur House (NDHA)	Moderate adverse	YES
Operational Stage			
Change to the form, character and setting and significance of a NDHA	Hotspur House (NDHA)	Moderate adverse	YES

References

- Planning (Listed Buildings & Conservation Areas) Act 1990;
- National Planning Policy Framework (NPPF) Conserving and Enhancing the Historic Environment (most recent version 2023);
- Planning Practice Guidance (PPG), Historic Environment, July 2019;
- Manchester City Council Unitary Development Plan (1995) and Core Strategy (2012);
- *"Guidance on Heritage Impact Assessments for Cultural World Properties"*, published by the International Council on Monuments and Sites (ICOMOS) (Jan 2011);
- Conservation Principles, Policies, and Guidance (Consultation draft 2017);
- Historic England's Good Practice Advice Note 2: Managing Significance in Decision-Taking in the Historic Environment (2015);
- Historic England's Good Practice Advice Note 3 (second edition): The Setting of Heritage Assets (2017), and
- Stephen Levrant Heritage Architecture Heritage Statement November 2023

  (Appendix 8.2).

Input into Assessment of Cumulative Effects

There are two types of cumulative effects that will be considered within the ES; Effect interactions (or intra-project effects) and In-combination effects (or inter-project effects). The EIA Lead will undertake the assessment of effect interactions using the summary tables from your Chapter. Therefore the focus of your input to the cumulative effects assessment is in relation to the in-combination effects.

*In-combination effects are defined as: the combination of environmental effects of the Proposed Scheme with existing or approved projects affecting the same receptor. The list of Approved Projects to be considered is provided in the **Table 1** below.*

*The below methodology should be adopted when preparing your input to the assessment of cumulative effects. Please provide your analysis text for each relevant Approved Project (in line with the methodology) and all Approved Projects together within **Table 2**.*

9. Climate Change

Introduction

9.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to Climate Change.

9.2 The Chapter describes the technical consultation that has been undertaken during the EIA, the scope of the assessment and assessment methodology, and a summary of the baseline information that has informed the assessment.

9.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details).

9.4 This Chapter, and its associated **Appendices 9.1** and **9.2**, is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**).

9.5 In addition, this Chapter should be read in conjunction with **Chapter 15: Assessment of Cumulative Effects**.

Summary of Consultation

9.6 No formal EIA Scoping exercise was undertaken with Manchester City Council (MCC).

Scope of the Assessment

Effects Not Considered to be Significant

9.7 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this.

Increased summer temperatures as a result of climate change during construction [Construction Workers]

9.8 Increasing summer temperatures (mean and daily) may lead to health and safety risks for construction workers. It is anticipated that potential effects of high summer temperatures will be controlled through the implementation of a CEMP which will include measures to reduce overheating risks such as the provision of shaded areas, potable water supplies and suitable PPE. These tertiary measures are an integral part of the Proposed Scheme, and their implementation, will be delivered through the CEMP, as set out in **Volume 3: Environmental Management Plan**.

9.9 Therefore, increased summer temperatures as a result of climate change during construction to construction workers is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Increased summer temperatures as a result of climate change and risk of overheating during operation [Occupants]

9.10 Anticipated rising temperatures and more frequent heatwaves increase the risk of overheating experienced in enclosed spaces. Hotter weather and stronger sunlight intensity could affect the quality of the indoor living environment affecting occupants. To effectively manage the risk of overheating, suitable glazing ratios, shading, and solar control glazing will be specified for the Proposed Scheme alongside appropriate ventilation levels and minimisation of internal heat gains. As part of the planning requirements, an overheating analysis has been undertaken as part of the **Low and Zero Carbon Assessment**[1] on the Proposed Scheme, aligning with the most recent industry standards from the new building regulations.

9.11 Therefore, increased summer temperatures as a result of climate change and risk of overheating during operation to occupants is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Changes to seasonal temperatures and rainfall (as a result of climate change) [Ground Conditions]

9.12 Changing temperatures and rainfall may change the ground conditions at the Site, which in turn may impact proposed building foundations and structures, causing future risks to building users. However, the current Building Regulations require new development to consider the impact of ground conditions on foundation design and therefore there is a high level of certainty through the compliance with current Building Regulations that such risks will be designed out. These tertiary mitigation measures will be considered an integral part of the Proposed Scheme and considered as part of **Volume 3: Environmental Management Plan**.

9.13 Therefore, changes to seasonal temperatures and rainfall (as a result of climate change) to ground conditions is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Changes to seasonal temperatures and rainfall (as a result of climate change) [Existing Biodiversity]

9.14 Changing temperatures and rainfall may change the habitats within the Site. As part of the Proposed Scheme, any compensatory habitat, delivered through public realm areas will enhance the biodiversity of the Site, mitigating the anticipated impacts of climate change in accordance with the England Biodiversity Strategy and Natural England's Climate Change Adaptation Manual. This will include the selection of climate change tolerant species as part of the projects' biodiversity strategy. These primary measures are an integral part of the Proposed Scheme, and their implementation, will controlled through condition, as set out in **Volume 3: Environmental Management Plan**.

9.15 Therefore, changes to seasonal temperatures and rainfall (as a result of climate change) to existing biodiversity is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Increased carbon emissions from traffic during construction and operation [Atmosphere]

9.16 The construction and operational traffic will generate carbon emissions which could affect the atmosphere. The construction traffic for the Proposed Scheme, including heavy goods vehicles (GVs), is expected to be limited to 52 two-way movements per day during the

construction stage. Mitigation measures will be implemented during construction as set out within the construction environmental management plan (CEMP). Operational traffic is also anticipated to be limited as the Proposed Scheme does not include for any parking provision (with the exception of one disabled and one loading bay) and due to the Site being accessible by sustainable public modes of transport and the good levels of pedestrian and cycling infrastructure in the surrounding area.

9.17 Therefore, increased carbon emissions from traffic during construction and operation to the atmosphere is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Construction and operational waste [The Atmosphere]

9.18 The construction and operation of the Proposed Scheme will generate a range of municipal type waste. Waste, if not properly managed, can end up in landfills, decompose and release methane and other GHGs. Waste from construction and operational activities may also lead to water pollution and reduced air quality. Best practice principles in design and construction will be used with the overarching aims of reducing material usage and minimising waste. In the construction stage, opportunities for reuse of materials will be considered before resorting to downcycling of the existing materials on Site.

9.19 Key materials extracted as part of the demolition process to be re-used and/or recycled in accordance with the waste hierarchy giving priority to on-site uses where practical.

9.20 A Waste Management Strategy was developed to describe how waste would be stored and the arrangements for collection. The waste management infrastructure will allow for the necessary segregations of materials to achieve a high rate of recycling. The design will also allow for waste to be transported and collected in a safe and efficient manner. All waste storage/handling facilities have been designed in accordance with British Standard (BS) 5906:2005 Waste Management in Building – Code of Practice.

9.21 Therefore, construction and operational waste to the atmosphere is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Effects Considered Likely to be Significant

9.22 **Table 9.1** outlines the effects that were considered likely to be significant and are reported within this Chapter.

Table 9.1: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Stage
Upfront carbon emissions of buildings	The Atmosphere	Construction
Regulated and unregulated carbon emissions generated by the Proposed Scheme	The Atmosphere	Operation
Embodied carbon emissions of buildings	The Atmosphere	Operation

Assessment Methodology

Legislative Framework, Policy and Guidance

9.23 The following legislation and policy have informed the assessment of effects within this Chapter:

- Legislation:
  - Climate Change Act 2008[2].
  - The Climate Change Act 2008 (2050 Target Amendment) Order 2019[3].
- National Planning Policy:
  - NPPF Chapter 14: Meeting the Challenge of Climate Change, Flooding and Costal Change[4].
- Local Planning Policy:
  - Manchester Local Plan, Core Strategy[5].
  - Greater Manchester Combined Authority Joint Development Plan, Places for Everyone[6]

9.24 The following guidance has informed the assessment of effects within this Chapter:

- IEMA Assessing Greenhouse Gas Emissions and Evaluating their Significance (2nd Edition)[7];
- IEMA EIA Guide to: Climate Change Resilience & Adaptation (2020)[8];
- Department for Energy Security and Net Zero (DESNZ) (2023) Powering Up Britain: Net Zero Growth Plan[9];
- RICS Methodology to calculate embodied carbon (1st Edition)[10];
- RICS Whole life carbon assessment for the built environment (1st Edition)[11];
- Committee on Climate Change The Sixth Carbon Budget. The UK's path to Net Zero[12];
- Department for Levelling Up, Housing and Communities PPG – Climate change[13];
- Department for Levelling Up, Housing and Communities Conservation of fuel and power: Approved Document L. Statutory guidance[14]; and
- CIBSE Guide F – Energy Efficiency in Buildings[15].

Defining the Study Area

9.25 The Site boundary marks the study area however, due to the nature of the assessment, emissions from outside this boundary have also been captured. This includes emissions associated with the extraction of raw materials, the manufacturing of building materials and transportation of supplies and personnel to the Site.

9.26 As outlined in **Table 9.1**, the receptor affected by this assessment is 'the atmosphere' which does not have a set geographical boundary.

Background Studies to Inform the ES / Establish the Baseline

9.27 **Table 9.2** summarises all studies/surveys/analysis/evaluations undertaken to inform the assessment presented within this Chapter.

Table 9.2: Background Studies / Surveys / Evaluations /Analysis

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
National scale CO_2 emissions data research	Department for Energy Security and Net Zero national (UK), regional (North West) and local (Manchester) data relating to year 2021	September 2023

Assessment Process

9.28 This assessment has followed the recommendations and best practice contained within the IEMA EIA Guide to: Climate Change Resilience & Adaptation[6] and IEMA Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating Their Significance[5]. It has also reviewed a list of key legislative instruments and national and local planning policy and related guidance to inform the approach.

Construction stage: Upfront carbon emissions of buildings

9.29 Embodied carbon is the total carbon emissions generated to produce a built asset. It is defined by the London Energy Transformation Initiative (LETI) as the 'carbon emissions associated with energy consumption (embodied energy) and chemical processes during the extraction, manufacture, transportation, assembly, replacement and deconstruction of construction materials or products'.

9.30 Embodied carbon assessment is an area which has undergone significant development in recent years. Traditionally the greatest impact on an asset's whole life carbon has been associated with its operational stage. With the ongoing decarbonisation of the UK electricity grid, this trend is expected to shift and embodied carbon is expected to assume an ever-increasing proportion of the overall carbon footprint of developments (made up of embodied and operational carbon emissions).

9.31 An analysis of the anticipated CO_2e emissions associated with the raw material extraction and manufacturing of the building materials used on-site has been carried out. CO_2e emissions refers to carbon dioxide equivalent emissions, which is a measure used to compare the emission from various greenhouse gases based upon their global warming potential, in order to standardise the climate effects of greenhouse gases.

9.32 To assess the embodied carbon for the project, a Life Cycle Assessment (LCA) tool – One Click LCA – has been used to make allocations for the anticipated materials quantities in an inventory analysis. The materials are represented within the model by using materials entries that have Environmental Product Declarations (EPDs) associated with them. EPDs are produced by manufacturers and identify the carbon emission for a product. By scheduling

the materials being proposed for the design, the overall carbon emissions can be approximated.

9.33 In line with standard UK practice, the LCA process and results described by this report have been assessed in line with BS 15978:2011. All EPDs used have been produced in line with the requirements of BS 15804:2012+A2:2019[16].

9.34 Standard ratios are used to convert the various greenhouse gases into equivalent amounts of CO_2. These ratios are based on the so-called global warming potential (GWP) of each gas. GWP is a relative measure of how much a given mass of greenhouse gas is estimated to contribute to global warming over a given time interval - usually 100 years. It is expressed relative to carbon dioxide which is set as the baseline which other emitters are compared against, and which therefore has a GWP of 1. This assessment thus reports on the embodied carbon of the development as 'global warming potential' with the annotation 'CO_2 equivalent (CO_2e)'.

9.35 The assessment of upfront carbon at construction stage includes modules associated with Product Stage (A1-A3) and Construction Process Stage (A4-A5). The assessment includes an allowance for the demolition of the existing building within module A5.

9.36 A 15% margin has been added to the calculation to account for a 'worst case' scenario – this recognises that as the design evolves, more detailed information may increase the calculated embodied carbon.

9.37 The results of the embodied carbon appraisal, inclusive of upfront carbon, are detailed further in Appendix 9.1.

Operational stage: Regulated and unregulated carbon emissions from buildings during operation

9.38 To assess the total operational energy of the Proposed Scheme both regulated components - including heating, cooling, hot water, fans, pumps and lighting - and unregulated ones, such as IT equipment, domestic appliances, plug-in devices and catering facilities have been considered.

9.39 Regulated energy uses are inherent in the design of a building; they relate to the 'quality' of the building itself. Estimated carbon emissions from regulated operational energy uses of Proposed Scheme have been calculated from benchmarks based on modelling undertaken in line with Approved Document L (Part L) 2021 of the Building Regulations12.

9.40 Unregulated carbon emissions for the Proposed Scheme have likewise been calculated based on Part L of the Building Regulations. Although unregulated carbon emissions are not included within Part L targets, an estimate of unregulated energy consumption is still an output produced as part of this methodology.

9.41 The results of the operational carbon calculation are detailed further in Appendix 9.2.

Operational Stage: Embodied carbon emissions of buildings

9.42 The embodied carbon assessment at operational stage follows the same methodology as the upfront carbon assessment at construction stage, but calculates emissions from life-cycle modules associated with the building's Use Stage (B1-B7) and End-of-Life Stage (C1-C4).

9.43 A 15% margin has been added to the calculation to account for a 'worst case' scenario – this recognises that as the design evolves, more detailed information may increase the calculated embodied carbon.

9.44 The results of the embodied carbon appraisal are detailed further in Appendix 9.1.

Reporting of the Environmental Effect and Significance Criteria

9.45 The assessment of likely significant environmental effects as a result of the Proposed Scheme has taken into account the construction and operational stage. The following sections define the approach adopted within the assessment for the determination of sensitivity (or value/importance), magnitude of change (or impact), the level of effect and significance.

Determining Sensitivity of Receptor

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

9.47 In this Chapter, the receptor identified for effects likely to be considered significant is 'the atmosphere' (global climate)', which is highlighted in the IEMA GHG assessment guideline[5]. In light of the extreme importance of limiting global warming to below 1.5°C and in the absence of published standard definition of receptor sensitivity of carbon emissions, this assessment asserts that the sensitivity of the atmosphere (global climate) to increases in CO_2 emissions is always considered to be 'high'.

Determining the Magnitude of Change

9.48 The magnitude of change has been considered as the change experienced from the current baseline conditions at the sensitive receptor and has been considered on a scale of **large**, **medium**, **small** or **negligible**.

9.49 The determination of magnitude of change for the pre-secondary mitigation and enhancement assessment is carried out, taking account of any tertiary or primary mitigation that forms part of the Proposed Scheme.

9.50 In the absence of clearly defined criteria for assessing magnitude in the context of GHG emissions, a blended quantitative / qualitative assessment utilising professional judgement relying on standard GHG accounting and reporting principles has been conducted.

9.51 To provide context and to assist with determining the magnitude of change, the CO_2 emissions generated by the Proposed Scheme have been assessed in the context of past emissions at a local scale (Manchester), a regional scale (North West), and national scale (the UK as a whole) reflecting the various levels where emissions may occur.

9.52 CO_2 emissions observed at local and regional level have been sourced from UK national statistics collated by DESNZ[17]. Newly published carbon budgets for Manchester and the North West have been produced for DESNZ by the University of Manchester Tyndall Centre as part of the City Area Targets and Trajectories for Emissions Reduction (SCATTER) project, to set carbon emissions targets that are consistent with the United Nations Paris Climate Agreement. These carbon budgets are outlined in **Table 9.3** and **9.4** and have been used in assessing the magnitude of the Local / Regional impact of emissions.

9.53 The Proposed Scheme will be constructed in a single phase, with works anticipated to commence in 2024. Consequently, the 2nd Manchester and North West carbon budgets is

deemed applicable to the construction stage of the Proposed Scheme, while the 3rd, 4th, 5th, 6th and 7th carbon budgets are deemed to be applicable to the operational stage across the project's anticipated 60-year life.

Table 9.3: Manchester carbon budget levels

Budget	Carbon budget level	Reduction beyond 2015 levels
1st carbon budget (2018 - 2022)	8.6 $MtCO_2$	26.5% by 2020
2nd carbon budget (2023 - 2027)	4.6 $MtCO_2$	62.2% by 2025
3rd carbon budget (2028 - 2032)	2.4 $MtCO_2$	80.5% by 2030
4th carbon budget (2033 - 2037)	1.2 $MtCO_2$	90.0% by 2035
5th carbon budget (2038 - 2042)	0.6 $MtCO_2$	94.8% by 2040
6th carbon budget (2043 - 2047)	0.3 $MtCO_2$	97.3% by 2045
7th carbon budget (2048-2100)	0.3 $MtCO_2$	98.6% by 2050

Table 9.4: North West carbon budget levels

Budget	Carbon budget level	Reduction beyond 2015 levels
1st carbon budget (2018 - 2022)	160.6 $MtCO_2$	23.1% by 2020
2nd carbon budget (2023 - 2027)	81.7 $MtCO_2$	62.0% by 2025
3rd carbon budget (2028 - 2032)	40.3 $MtCO_2$	81.2% by 2030
4th carbon budget (2033 - 2037)	19.9 $MtCO_2$	90.7% by 2035
5th carbon budget (2038 - 2042)	9.8 $MtCO_2$	95.4% by 2040
6th carbon budget (2043 - 2047)	4.9 $MtCO_2$	97.7% by 2045
7th carbon budget (2048-2100)	4.7 $MtCO_2$	98.9% by 2050

9.54 The national-scale data is based on the five-year National Carbon Budgets produced by the Committee on Climate Change (CCC), which reflect the requirement to remain within agreed global emission limits. These are outlined in **Table 9.5**. The National Carbon Budgets have been apportioned to reflect the contribution of the built environment towards the UK total carbon footprint (estimated to be nearly 40%). This approach is in alignment with Section 6.4 of the IEMA Guidance for assessing GHG emissions and evaluating their significance, which provides a steer on contextualising a project's carbon impacts.

9.55 Given the phasing of the Proposed Scheme noted above, the 4th national carbon budget is deemed applicable to the construction stage, and the 4th, 5th and 6th national carbon budgets (as detailed in **Table 9.5**) are deemed to be applicable to the operational stage. No data is currently available post-2037 so it is not possible to assess the anticipated operational emissions against UK carbon emissions beyond this date. However, in light of the ambitious sustainability target set by the UK government for the country, i.e. the legally binding 'net-zero' carbon target for 2050, it can be expected that the magnitude of operational emissions will only increase as a proportion of the total national carbon budget.

9.56 The proposed all-electric energy strategy for the Proposed Scheme will benefit from the reductions in grid electricity carbon intensity between now and commencement of the operational development and subsequently throughout its operational life. Therefore, current estimates of operational emissions are likely to represent a worst-case scenario, and the Proposed Scheme will benefit from an energy strategy which makes most pragmatic use of national drivers towards a zero-carbon economy.

Table 9.5: UK National carbon budget levels

Budget	Carbon budget level	Reduction below 1990 levels
4th carbon budget (2023 - 2027)	1,950 $MtCO_2e$	51% by 2025
5th carbon budget (2028 - 2032)	1,725 $MtCO_2e$	57% by 2030
6th carbon budget (2033 – 2037)	965 $MtCO_2e$	78% by 2035

9.57 In GHG accounting, it is a widely accepted practice to exclude emission sources that do not have a material contribution to the overall carbon footprint on the basis of the 'De Minimis' rule. ISO guidance on GHG reporting (ISO 14064-1)[18] states that '*the organisation may exclude from quantification direct or indirect GHG sources or sinks whose contribution to GHG emissions or removals is not material or whose quantification would not be technically feasible or cost effective'*. In this context, multiple sources have introduced a 'materiality threshold'. PAS 2050[19] for example, stipulates that in order to be considered 'material', the contribution from any one source of GHG emissions should be more than 1% of the anticipated total GHG emissions associated with the product being assessed.

9.58 The UK Emissions Trading System (UK ETS)[20] replaced the EU Emissions Trading System (EU ETS) from 1st January 2021. It retains the provision for small installations, which states that small installations whose emissions do not exceed a threshold of 25,000 tCO_2e per annum

and, where they carry out combustion activities, have a rated thermal input below 35 MW, excluding emissions from biomass, can opt out from the scheme. Additionally, as part of its public reporting under the Task Force on Climate-related Financial Disclosures framework (IFC Performance Standard 3: Resource Efficiency and Pollution Prevention) the International Finance Corporation (IFC) discloses emissions of projects with estimated annual emissions over 25,000 tCO_2e through the Environmental and Social Review Summary for each project.

9.59 In line with the above, a 1% materiality threshold has been implemented in this assessment when determining magnitude of the relevant change in carbon emissions. To ensure a robust approach, a second reference point has been included, i.e. 25,000 tCO_2e annual emission maximum level. It is, therefore, assumed that any annual carbon emissions quantum <1% of the (proportional value) of the relevant carbon budget(s) and < 25,000 tCO_2e would not be considered to have a 'material' contribution to the relevant UK GHG inventory (i.e. at the national scale). More details are provided in **Tables 9.6** and **9.7**.

Table 9.6: Criteria for determining magnitude of change – national scale

Magnitude of change	Criteria
Large	Annual carbon emissions represent a contribution equal to or higher than 1% of the national baseline emissions and / or annual proportion of the relevant UK National Carbon Budget's share attributable to the built environment sector; AND Annual carbon emissions are higher than 25,000 tCO_2e in any year.
Medium	Annual carbon emissions represent a contribution lower than 1% of the national baseline emissions and / or annual proportion of the relevant UK National Carbon Budget's share attributable to the built environment sector; AND Annual carbon emissions are higher than 25,000 tCO_2e in any year.
Small	Annual carbon emissions represent a contribution lower than 1% of the national baseline emissions and / or annual proportion of the relevant UK National Carbon Budget's share attributable to the built environment sector; AND Annual carbon emissions are lower than 25,000 tCO_2e in any year.
Negligible	Annual carbon emissions represent a contribution lower than 0.1% of the national baseline emissions and / or annual proportion of the relevant UK National Carbon Budget's share attributable to the built environment sector; AND Annual carbon emissions are lower than 25,000 tCO_2e in any year.

Table 9.7: Criteria for determining magnitude of change – local / regional scale

Magnitude of change	Criteria
Large	Annual difference in carbon emissions represents a contribution higher than 1% of the local / regional baseline emissions share attributable to the built environment sector; AND Annual difference in carbon emissions represents a contribution higher than 1% of the relevant local / regional carbon budget's share attributable to the built environment sector.
Medium	Annual difference in carbon emissions represents a contribution lower than 1% of the local / regional baseline emissions share attributable to the built environment sector; AND Annual difference in carbon emissions represents a contribution higher than 1% of the relevant local / regional carbon Budget's share attributable to the built environment sector.
Small	Additional annual carbon emissions represent a contribution lower than 1% of the local / regional baseline emissions share attributable to the built environment sector; AND Additional annual carbon emissions represent a contribution lower than 1% of the relevant local / regional carbon Budget's share attributable to the built environment sector.
Negligible	Additional annual carbon emissions represent a contribution lower than 0.1% of the local / regional baseline emissions share attributable to the built environment sector; AND Additional annual carbon emissions represent a contribution lower than 0.1% of the relevant local / regional carbon Budget's share attributable to the built environment sector.

9.60 While the emission thresholds outlined above have been used to provide context, it is important to recognise that the application of professional judgement is a critical additional component in the determination of the magnitude of change, as recognised by the IEMA guidance, which may result in a different overall conclusion than the one suggested by quantitative criteria alone provided in **Tables 9.6** and **9.7**. Where applied, this is set out in the assessment.

Determining the Level of Effect

9.61 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. The level of effect has been determined using professional judgement and **Table 9.8** has been a tool which has assisted with this process.

9.62 Whilst **Table 9.8** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

Table 9.8: Matrix to Support Determining the Level of Effect

		Sensitivity (or value / importance)			
		High	Medium	Low	Negligible
Magnitude of Change	Large	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

9.63 The following terms have been used to define the level of the effects identified and these can be 'beneficial' or 'adverse':

- **Major effect**: where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
- **Moderate effect**: where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;
- **Minor effect**: where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Proposed Scheme is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change; and
- **Negligible**: where the Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

9.64 The duration of the effect has been assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

Determining Significance

9.65 For each effect, a statement has been made as to whether the level of effect is '**Significant**' or '**Not Significant**'. This determination has been based on professional judgement and/or relevant guidance/legislation where applicable.

9.66 Significance has only been concluded for residual effects (i.e. following the identification of secondary mitigation).

Baseline Conditions

Site

9.67 The existing Hotspur Press building has a floor area of approximately 4,723m² (Gross Internal Area (GIA)). It formerly housed cotton mills and printing presses but is currently not in use.

9.68 For the purpose of the GHG emissions assessment, the current emissions from the Site has been assumed to be zero. This includes both operational carbon emissions and emissions from traffic on and off the Site. By assuming zero emissions at this stage, it ensures a worst-case scenario approach to the assessment of climate change effects from the Proposed Scheme.

Local scale (Manchester)

9.69 The latest CO_2 emissions for the Manchester administrative area show that in 2021, 1,874.3 $ktCO_2$ were emitted. The data shows emissions allocated on an 'end-user' basis where emissions are distributed according to the point of energy consumption (or point of emission if not energy related).

Regional scale (North West)

9.70 The latest available DESNZ annual CO_2 emissions data for the North West of England from 2021 were 36,471.2 tCO_2.

9.71 In order to help understand the trends in carbon emissions at a regional level, a breakdown of total carbon emissions from three main sources (industry & commercial, domestic and transport) has been provided for the North West. The DESNZ regional statistics data from the UK government, shown by **Table 9.9**, are available for the period 2005 – 2021.

Table 9.9: Carbon emissions with the North West of England 2005-2021

Year	Industry & Commercial $ktCO_2$	Public Sector $ktCO_2$	Domestic $ktCO_2$	Transport $ktCO_2$	Land use, land-use change & forestry (LULUCF) $ktCO_2$	Agricultural $ktCO_2$	Waste Management $ktCO_2$	Grand Total $ktCO_2$	Population '000s, mid-yr estimate	Per Capita Emissions (t)
2005	23,969.1	2,731.8	17,491.4	15,011.5	193	755.5	190.3	60,342.6	6,870	8.8
2006	23,380.6	2,636.4	17,432.9	14,818.8	162.4	755.1	126.2	59,312.3	6,901.6	8.6
2007	22,752.9	2,486.2	16,862.1	14,832.5	118.1	747.8	165	57,964.6	6,929.3	8.4
2008	22,051.8	2,411.1	16,805.4	14,361.2	67.3	817.5	140.9	56,655.2	6,958.5	8.1
2009	19,033.9	2,079.8	15,228.7	14,005.8	45.3	738.1	134.5	51,266.0	6,986.2	7.3

2010	20,255.1	2,269.7	16,241.4	13,919.3	34.4	725	135.9	53,580.8	7,019.9	7.6
2011	18,095.4	1,977.6	14,161.7	13,728.1	-4.1	639	127.1	48,724.8	7,056.0	6.9
2012	19,467.6	2,185.4	15,139.6	13,464.3	31	744.9	117.2	51,150.0	7,076.6	7.2
2013	18,175.8	2,101.8	14,729.1	13,366.7	-8.1	653.1	104.5	49,122.9	7,091.9	6.9
2014	15,977.8	1,847.3	12,391.5	13,530.2	-29.6	632.5	109.4	44,459.1	7,124.3	6.2
2015	14,799.9	1,700.3	12,134.9	13,795.6	-55.1	655.9	102.1	43,133.6	7,175.5	6.0
2016	13,666.0	1,412.7	11,427.0	13,977.9	-26.1	600.1	103.7	41,161.3	7,262.9	5.7
2017	12,919.3	1,587.0	10,938.3	13,810.0	-65.7	630.4	93.8	39,913.2	7,308.2	5.5
2018	12,372.3	1,766.1	10,773.7	13,694.3	-71	685.2	84.1	39,304.5	7,343.1	5.4
2019	11,864.9	1,682.6	10,442.0	13,702.0	-82.9	623.4	87.9	38,320.0	7,402.5	5.2
2020	10,696.6	1,531.6	10,091.4	11,367.0	-50	599	91.9	34,327.4	7,425.5	4.6
2021	11,593.3	1,748.9	10,530.5	11,906.5	-88.5	675.1	105.5	36,471.2	7,422.3	4.9

9.72 In line with the trend shown in **Table 9.9**, the statistics for the North West of England demonstrate a continuing downward trend over the overlapping 2005 – 2021 period, whereby the per capita CO_2 emissions have decreased by approximately 44%. Total emissions have also been reduced by 40% over the studied period despite the observed population growth.

9.73 The main reductions are observed in industry and commercial emissions followed by domestic emissions in line with an overall downward trend for the whole of the UK. In comparison, the reduction observed in the transport sector for the region is considerably smaller amounting to approximately 21%.

National scale (United Kingdom)

9.74 The latest DESNZ data available for the UK was published in 2023 and relates to the year 2021. The total CO_2 emissions generated in the UK in 2021 amount to 339,540 kt CO_2. The UK demonstrates one of the largest declines in CO_2 emissions, with a 40% reduction in the period 2000 – 2023. This is one of the biggest percentage reductions in CO_2 emissions of all large economies.

9.75 A study conducted by analysts Carbon Brief[21] reveals that the decline in industry, commercial and domestic emissions is driven by a combination of the introduction of a low- and zero-carbon electricity mix based on gas and renewables instead of coal and reduced non-electric energy consumption in the industrial and residential sectors. The latter is explained mainly by improvements in energy efficiency and switching to lower-carbon fuels. A structural movement towards a less carbon-intensive mix of industrial output, with some energy-intensive industry moving to other countries and UK industry increasingly focusing on higher-value manufacturing with lower energy intensity is also considered to have been a significant factor in the case of industry-related emissions.

Future Baseline

Site

9.76 Future changes to the baseline without the implementation of the Proposed Scheme or other planned development are anticipated to be minor. As the baseline focuses on an estimate of the operational energy of the existing land uses on-site, this is unlikely to change much without a significant change of use.

National scale (United Kingdom)

9.77 Known trends and policy initiatives for curbing carbon emissions under the auspices of the UK flagship commitment to reduce the country's emissions by at least 80% by the year 2050, relative to 1990 levels indicate that the electricity grid is likely to undergo a low-carbon transformation – indeed trends in the industry indicate this has already commenced. What is more, the UK government implemented the recommendations of the CCC through the passing of the Climate Change Act 2008 (2050 Target Amendment) Order 2019 committing the UK to a new legally binding "net-zero" carbon target for 2050, thus exceeding the previous legally binding target introduced by the Climate Change Act.

Primary and Tertiary Mitigation

Construction Stage

9.78 No primary or tertiary mitigation has been evaluated as part of the construction stage assessment.

Operational Stage

9.79 The following primary and tertiary mitigation which has been evaluated as part of the operational stage assessment is outlined below.

- The Proposed Scheme is all-electric and combustion-free (with the exception of emergency generators). It is therefore in a position to decarbonise as the electricity grid decarbonises in the future.

Assessment of Effects, Secondary Mitigation and Residual Effects

Construction Stage

Upfront carbon emissions of buildings [The Atmosphere]

9.80 The Upfront Carbon Assessment has been completed in line with the guidance provided by the Royal Institution of Chartered Surveyors (RICS) covering the GHG emissions included within the lifecycle modules A1-A5. The assessment is aligned to the latest IEMA guidance.

9.81 The upfront carbon includes the GHG emissions that arise from the materials and construction processes up until practical completion, including demolition of the existing building.

9.82 To assess the upfront carbon for the project, a Life Cycle Assessment (LCA) tool (One Click LCA) has been used to make allocations for the anticipated material quantities in an inventory analysis. The materials are represented within the model by using materials with associated Environmental Product Declarations (EPDs). EPDs are produced by manufacturers

and identify the carbon emissions of a product. By scheduling the materials proposed for the development, the overall carbon emissions can be approximated.

9.83 It should be noted here that the LCA tool has a limited database of materials. In the scenario where a specified material isn't included in the database, the most similar material in terms of material composition is selected instead. An allowance for demolition of the existing building was made within module A5.

9.84 Upfront carbon emissions are shown in **Table 9.10**.

Table 9.10: Upfront carbon breakdown A1-A5 lifecycle stages

Life cycle module	Total carbon per life cycle module	Upfront Carbon	
	$kgCO_2e$	tCO_2e	$kgCO_2e/m^2$
A1-A3: Construction materials	6,724,860		
A4: Transportation to site	860,724	**8,918**	**424**
A5: Construction/installation process	1,332,006		

9.85 The Proposed Scheme includes a partial demolition and the retention and refurbishment of elements of the existing building, as well as the construction of the new tower extending from the centre of the existing building.

9.86 Assuming a 38-month construction period, the annual carbon emissions resulting from the combined product and construction lifecycle stages A1 – A5 is currently estimated to be approximately 2,816 tCO_2e per construction year, less than 25,000 t CO_2e. The annual carbon emissions account proportionally for:

- 0.15% of local (Manchester) baseline emissions;
- 0.77% of the appropriate local (Manchester) carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment);
- 0.0077% of regional (North West England) baseline emissions;
- 0.0219% of the appropriate regional (North West England) carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment); and
- 0.0018% annual proportion of the 4th national carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment).

9.87 The sensitivity of the atmosphere is considered to be high. The magnitude of change is considered to be small at the local and regional scale and negligible at the national scale. Therefore, at a local and regional scale, there is likely to be a direct, permanent, long-term,

adverse effect which is considered to be minor, while at a national scale the Proposed Scheme is unlikely to cause a noticeable change at the atmosphere (negligible effect).

Secondary Mitigation or Enhancement

9.88 The following mitigation measures will be implemented to further reduce the significance of carbon emissions during construction:

- Fit-out measures: specification of low-impact floor covering and carpets, low VOC paint/ adhesives/sealants/coatings, low-impact furnishings, preference for fittings with high recycled content, consideration given to sourcing materials from a 'manufacturer with a take-back scheme' and procuring products/fittings as a service (e.g. lighting);

- Specification of materials with Environmental Product Declarations (EPDs) with a view to further reducing embodied carbon emissions;

- A pre-demolition audit to be undertaken by the demolition contractor prior to commencement of any demolition to cover all existing structures and hard surfaces being considered for demolition to identify and maximise the recovery of material for subsequent high grade or value applications;

- Use of energy-efficient construction plant and machinery;

- Preference for local suppliers (within the MCC administrative area) to shorten the supply chain and reduce its associated environmental footprint coupled with prioritisation of responsibly sourced goods and services where feasible whilst maximising the proportion of recycled content within materials used in construction; and

- Main contractor to monitor energy, water and waste data during the construction stage to encourage transparency and accountability.

Residual Effect

9.89 The sensitivity of the global climate is always considered to be high. The magnitude of change, following secondary mitigation, is still considered to be small at the local and regional scale and negligible at the national scale. Therefore, at a local and regional scale, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor, while at a national scale the Proposed Scheme is unlikely to cause a noticeable change at the atmosphere (negligible effect).

Significance

9.90 This effect is considered to be **Not Significant**.

Operational Stage

Regulated and unregulated carbon emissions generated by buildings [The Atmosphere]

9.91 An evaluation of the anticipated CO_2 emissions associated with the operation of the building has been carried out based on modelling undertaken in line with Part L 2021 of the Building Regulations (Conservation of fuel and power).

9.92 The regulated operational emissions are attributable to energy consumption associated with regulated components including heating, cooling, hot water, fans, pumps and lighting. It is

anticipated that the Proposed Scheme will achieve this target through the combination of passive design and energy efficiency, and low and zero carbon technologies, notably heat pumps.

9.93 The unregulated operational emissions are typically mainly attributable to energy consumption associated with IT equipment, domestic appliances, plug-in devices and catering facilities.

9.94 The most recent (2023) DESNZ GHG conversion factors were used. Results are summarised in **Table 9.11**.

Table 9.11: Operational carbon emissions (regulated and unregulated)

Building and primary use	GIA area (m^2)	Energy Consumption by End Use		Operational carbon (tCO_2e)
		($kWh/m^2/yr$)	(kWh/yr)	
Heating	21,048	5.48	115,341	23.88
Cooling		0.21	4,420	0.92
Auxiliary		6.31	132,811	27.50
Lighting		7.22	151,964	31.47
Hot water		4.89	102,923	21.31
Equipment		47.62	1,002,291	207.55
Total	**21,048**	71.73	1,509,752	312.63

9.95 The total anticipated emissions associated with the operational stage of the Proposed Scheme, relating to the operation of the buildings, have been calculated to be 313.30 tCO_2e. Therefore, the estimated emissions do not exceed 25,000 tCO_2e per year.

9.96 Compared to local, regional and national GHG inventories the annual emissions from the Proposed Scheme account proportionally for:

- 0.0167% of local (Manchester) baseline emissions;
- 0.085% of the appropriate local (Manchester) carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment);
- 0.0009% of regional (North West England) baseline emissions;
- 0.0024% of the appropriate regional (North West England) carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment); and
- 0.0002% annual proportion of the 4th national carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment).

9.97 The sensitivity of the atmosphere is considered to be high. The magnitude of change is considered to be small at the local scale and negligible at the regional and national scale. Therefore, at a local scale, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor, while at a regional and national scale the Proposed Scheme is unlikely to cause a noticeable change at the atmosphere (negligible effect).

Secondary Mitigation or Enhancement

9.98 The unregulated operational emissions are typically mainly attributable to energy consumption associated with IT equipment, domestic appliances, plug-in devices and catering facilities.

- Installation of smart meters and/or sub-meters to monitor operational consumption more accurately;
- Energy efficient equipment to be procured for the Proposed Scheme and supplied throughout its lifecycle including Energy Star rated products for all small power, plug-in equipment (e.g. supplementary electric heating);
- Selection of 100% renewable electricity contracts, where possible; and
- 'Smart' technology to be incorporated in the Proposed Scheme as appropriate including intelligent street lights to optimise the management and performance of the site infrastructure thereby further reducing emissions.

Residual Effect

9.99 The sensitivity of the global climate is always considered to be high. The magnitude of change, following secondary mitigation, is still considered to be small at the local and regional scale and negligible at the national scale. Therefore, at a local scale, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor, while at a regional and national scale the Proposed Scheme is unlikely to cause a noticeable change at the atmosphere (negligible effect).

Significance

9.100 This effect is considered to be **Not Significant**.

Embodied carbon emissions of buildings [The Atmosphere]

9.101 As discussed earlier in the chapter, the Embodied Carbon Assessment, covering the GHG emissions included within the lifecycle modules A1-A5, B1-B5 and C1-C4, have been calculated using a Life Cycle Assessment (LCA) tool (One Click LCA).

9.102 The operational stage embodied carbon includes the GHG emissions that are likely to arise from maintenance & replacement over the entire life of the Proposed Scheme. End of life (C1-C4) carbon emissions were included.

9.103 Embodied carbon emissions are shown in **Table 9.12**.

Table 9.12: Embodied carbon breakdown A1-A5, B1-B5 and C1-C4 lifecycle stages

Life cycle module	Total carbon per life cycle module	Embodied Carbon		Embodied Carbon excluding Upfront Carbon	
	$kgCO_2e$	tCO_2e	$kgCO_2e/m^2$	tCO_2e	$kgCO_2e/m^2$
A1-A3: Construction materials	6,724,860				
A4: Transportation to site	860,724			-	-
A5: Construction/installation process	1,332,006	14,423	685		
B1-B5: Maintenance & replacement	4,901,138			**5,505**	**261**
C1-C4: End of life	603,822				

9.104 The total anticipated embodied emissions associated with the operational stage and end of life stage of the Proposed Scheme have been calculated to be 5,505 tCO_2e. The annual emissions spread over a 60-year design life is 92 tCO_2e. Therefore, the estimated emissions do not exceed 25,000 tCO_2e per year.

9.105 Compared to local, regional and national GHG inventories the annual emissions from the Proposed Development account proportionally for:

- 0.0049% of local (Manchester) baseline emissions;
- 0.0249% of the appropriate local (Manchester) carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment);
- 0.0003% of regional (North West England) baseline emissions;
- 0.0007% of the appropriate regional (North West England) carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment); and
- 0.0001% annual proportion of the 4th national carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment).

9.106 The sensitivity of the atmosphere is considered to be high. The magnitude of change is considered to be small at the local scale and negligible at the regional and national scale. Therefore, at a local scale, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor, while at a regional and national scale the Proposed Scheme is unlikely to cause a noticeable change at the atmosphere (negligible effect).

Secondary Mitigation or Enhancement

9.107 No secondary mitigation or enhancement has been identified.

Residual Effect

9.108 In the absence of secondary mitigation the residual effects for the atmosphere is that same as that reported in the pre-mitigation scenario.

Significance

9.109 This effect is considered to be **Not Significant**.

Limitations and Assumptions

9.110 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

- As stated in IEMA (2022) guidance, activities that do not significantly change the result of the assessment can be excluded where expected emissions are less than 1% of total emissions, and where all such exclusions total a maximum of 5% of total emissions. These thresholds have been applied in the assessment.

- The assessments have assumed a design life of 60 years, and cover BS EN 15978:2011 life-cycle carbon modules A1-A5, B1-B5, C1-C4 plus B6. An allowance for demolition of the existing building was made within module A5. However further exclusions (due to small proportions of overall GHG emissions) include:

  – Temporary construction site accommodation;

  – Refuse collection from public bins; and

  – Street lighting, traffic signals and security cameras.

- The estimated carbon emissions associated with the operational energy consumption are indicative values based on benchmark Part L data for different building types and indicative areas for different uses included in the Proposed Scheme. The Part L methodology uses standardised parameters, including operational profiles, ventilation rates, and heating and cooling setpoints, based on the building use, which may be different from how the buildings will operate in practice.

- Upfront carbon emissions associated with transportation of building products to building site, energy use during the site operations, handling of waste, and production processes of fuel, energy and water have been estimated in line with RICS standard assumptions. The estimation of end of life carbon emissions (C1-C4) was based on default values and OneClick LCA's default end of life scenarios.

- A 38-month construction period was assumed.

Summary

9.111 **Table 9.13** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

9.112 The table only provides a summary of the residual effects identified within the assessment and details of all primary, secondary and tertiary mitigation that has been taken into account is set out in detail within the Chapter and summarised within Environmental Management Plan included within **Volume 3: Environmental Management Plan**.

Table 9.13: Summary of Residual and Significant Effects

Effect	Receptor	Residual Effects	Is the Effect Significant?
Construction Stage			
Upfront carbon emissions of buildings	The Atmosphere	Minor adverse at local scale. Negligible at the regional and national scale.	NO
Operational Stage			
Regulated and unregulated carbon emissions generated by buildings	The Atmosphere	Minor Adverse at the local scale. Negligible at the regional and national scale.	NO
Embodied carbon emissions of buildings	The Atmosphere	Minor Adverse at the local scale. Negligible at the regional and national scale.	NO

References

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Assessment Methodology

Legislative Framework, Policy and Guidance

9.23 The following legislation and policy have informed the assessment of effects within this Chapter:

- Legislation:
  - Climate Change Act 2008[2].
  - The Climate Change Act 2008 (2050 Target Amendment) Order 2019[3].
- National Planning Policy:
  - NPPF Chapter 14: Meeting the Challenge of Climate Change, Flooding and Costal Change[4].
- Local Planning Policy:
  - Manchester Local Plan, Core Strategy[5].

9.24 The following guidance has informed the assessment of effects within this Chapter:

- IEMA Assessing Greenhouse Gas Emissions and Evaluating their Significance (2nd Edition)[6];
- IEMA EIA Guide to: Climate Change Resilience & Adaptation (2020)[7];
- Department for Energy Security and Net Zero (DESNZ) (2023) Powering Up Britain: Net Zero Growth Plan[8];
- RICS Methodology to calculate embodied carbon (1st Edition)[9];
- RICS Whole life carbon assessment for the built environment (1st Edition)[10];
- Committee on Climate Change The Sixth Carbon Budget. The UK's path to Net Zero[11];
- Department for Levelling Up, Housing and Communities PPG – Climate change[12];
- Department for Levelling Up, Housing and Communities Conservation of fuel and power: Approved Document L. Statutory guidance[13]; and
- CIBSE Guide F – Energy Efficiency in Buildings[14].

Defining the Study Area

9.25 The Site boundary marks the study area however, due to the nature of the assessment, emissions from outside this boundary have also been captured. This includes emissions associated with the extraction of raw materials, the manufacturing of building materials and transportation of supplies and personnel to the Site.

9.26 As outlined in **Table 9.1**, the receptor affected by this assessment is 'the atmosphere' which does not have a set geographical boundary.

Background Studies to Inform the ES / Establish the Baseline

9.27 **Table 9.2** summarises all studies/surveys/analysis/evaluations undertaken to inform the assessment presented within this Chapter.

Table 9.2: Background Studies / Surveys / Evaluations /Analysis

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
National scale CO_2 emissions data research	Department for Energy Security and Net Zero national (UK), regional (North West) and local (Manchester) data relating to year 2021	September 2023

Assessment Process

9.28 This assessment has followed the recommendations and best practice contained within the IEMA EIA Guide to: Climate Change Resilience & Adaptation[6] and IEMA Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating Their Significance[5]. It has also reviewed a list of key legislative instruments and national and local planning policy and related guidance to inform the approach.

Construction stage: Upfront carbon emissions of buildings

9.29 Embodied carbon is the total carbon emissions generated to produce a built asset. It is defined by the London Energy Transformation Initiative (LETI) as the 'carbon emissions associated with energy consumption (embodied energy) and chemical processes during the extraction, manufacture, transportation, assembly, replacement and deconstruction of construction materials or products'.

9.30 Embodied carbon assessment is an area which has undergone significant development in recent years. Traditionally the greatest impact on an asset's whole life carbon has been associated with its operational stage. With the ongoing decarbonisation of the UK electricity grid, this trend is expected to shift and embodied carbon is expected to assume an ever-increasing proportion of the overall carbon footprint of developments (made up of embodied and operational carbon emissions).

9.31 An analysis of the anticipated CO2e emissions associated with the raw material extraction and manufacturing of the building materials used on-site has been carried out. CO2e emissions refers to carbon dioxide equivalent emissions, which is a measure used to compare the emission from various greenhouse gases based upon their global warming potential, in order to standardise the climate effects of greenhouse gases.

9.32 To assess the embodied carbon for the project, a Life Cycle Assessment (LCA) tool – One Click LCA – has been used to make allocations for the anticipated materials quantities in an inventory analysis. The materials are represented within the model by using materials entries that have Environmental Product Declarations (EPDs) associated with them. EPDs are produced by manufacturers and identify the carbon emission for a product. By scheduling the materials being proposed for the design, the overall carbon emissions can be approximated.

9.33 In line with standard UK practice, the LCA process and results described by this report have been assessed in line with BS 15978:2011. All EPDs used have been produced in line with the requirements of BS 15804:2012+A2:201915.

9.34 Standard ratios are used to convert the various greenhouse gases into equivalent amounts of CO2. These ratios are based on the so-called global warming potential (GWP) of each gas. GWP is a relative measure of how much a given mass of greenhouse gas is estimated to contribute to global warming over a given time interval - usually 100 years. It is expressed relative to carbon dioxide which is set as the baseline which other emitters are compared against, and which therefore has a GWP of 1. This assessment thus reports on the embodied carbon of the development as 'global warming potential' with the annotation 'CO2 equivalent (CO2e)'.

9.35 The assessment of upfront carbon at construction stage includes modules associated with Product Stage (A1-A3) and Construction Process Stage (A4-A5). The assessment includes an allowance for the demolition of the existing building within module A5.

9.36 A 15% margin has been added to the calculation to account for a 'worst case' scenario – this recognises that as the design evolves, more detailed information may increase the calculated embodied carbon.

9.37 The results of the embodied carbon appraisal, inclusive of upfront carbon, are detailed further in **Appendix 9.1**.

Operational stage: Regulated and unregulated carbon emissions from buildings during operation

9.38 To assess the total operational energy of the Proposed Scheme both regulated components - including heating, cooling, hot water, fans, pumps and lighting - and unregulated ones, such as IT equipment, domestic appliances, plug-in devices and catering facilities have been considered.

9.39 Regulated energy uses are inherent in the design of a building; they relate to the 'quality' of the building itself. Estimated carbon emissions from regulated operational energy uses of Proposed Scheme have been calculated from benchmarks based on modelling undertaken in line with Approved Document L (Part L) 2021 of the Building Regulations12.

9.40 Unregulated carbon emissions for the Proposed Scheme have likewise been calculated based on Part L of the Building Regulations. Although unregulated carbon emissions are not included within Part L targets, an estimate of unregulated energy consumption is still an output produced as part of this methodology.

9.41 The results of the operational carbon calculation are detailed further in **Appendix 9.2**.

Operational Stage: Embodied carbon emissions of buildings

9.42 The embodied carbon assessment at operational stage follows the same methodology as the upfront carbon assessment at construction stage, but calculates emissions from life-cycle modules associated with the building's Use Stage (B1-B7) and End-of-Life Stage (C1-C4).

9.43 A 15% margin has been added to the calculation to account for a 'worst case' scenario – this recognises that as the design evolves, more detailed information may increase the calculated embodied carbon.

9.44 The results of the embodied carbon appraisal are detailed further in **Appendix 9.1**.

Reporting of the Environmental Effect and Significance Criteria

9.45 The assessment of likely significant environmental effects as a result of the Proposed Scheme has taken into account the construction and operational stage. The following sections define the approach adopted within the assessment for the determination of sensitivity (or value/importance), magnitude of change (or impact), the level of effect and significance.

Determining Sensitivity of Receptor

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

9.47 In this Chapter, the receptor identified for effects likely to be considered significant is 'the atmosphere' (global climate)', which is highlighted in the IEMA GHG assessment guideline[5]. In light of the extreme importance of limiting global warming to below 1.5°C and in the absence of published standard definition of receptor sensitivity of carbon emissions, this assessment asserts that the sensitivity of the atmosphere (global climate) to increases in CO_2 emissions is always considered to be 'high'.

Determining the Magnitude of Change

9.48 The magnitude of change has been considered as the change experienced from the current baseline conditions at the sensitive receptor and has been considered on a scale of **large**, **medium**, **small** or **negligible**.

9.49 The determination of magnitude of change for the pre-secondary mitigation and enhancement assessment is carried out, taking account of any tertiary or primary mitigation that forms part of the Proposed Scheme.

9.50 In the absence of clearly defined criteria for assessing magnitude in the context of GHG emissions, a blended quantitative / qualitative assessment utilising professional judgement relying on standard GHG accounting and reporting principles has been conducted.

9.51 To provide context and to assist with determining the magnitude of change, the CO_2 emissions generated by the Proposed Scheme have been assessed in the context of past emissions at a local scale (Manchester), a regional scale (North West), and national scale (the UK as a whole) reflecting the various levels where emissions may occur.

9.52 CO_2 emissions observed at local and regional level have been sourced from UK national statistics collated by DESNZ[16]. Newly published carbon budgets for Manchester and the North West have been produced for DESNZ by the University of Manchester Tyndall Centre as part of the City Area Targets and Trajectories for Emissions Reduction (SCATTER) project, to set carbon emissions targets that are consistent with the United Nations Paris Climate Agreement. These carbon budgets are outlined in **Table 9.3** and **9.4** and have been used in assessing the magnitude of the Local / Regional impact of emissions.

9.53 The Proposed Scheme will be constructed in a single phase, with works anticipated to commence in 2024. Consequently, the 2nd Manchester and North West carbon budgets is deemed applicable to the construction stage of the Proposed Scheme, while the 3rd, 4th,

5th, 6th and 7th carbon budgets are deemed to be applicable to the operational stage across the project's anticipated 60-year life.

Table 9.3: Manchester carbon budget levels

Budget	Carbon budget level	Reduction beyond 2015 levels
1st carbon budget (2018 - 2022)	8.6 $MtCO_2$	26.5% by 2020
2nd carbon budget (2023 - 2027)	4.6 $MtCO_2$	62.2% by 2025
3rd carbon budget (2028 - 2032)	2.4 $MtCO_2$	80.5% by 2030
4th carbon budget (2033 - 2037)	1.2 $MtCO_2$	90.0% by 2035
5th carbon budget (2038 - 2042)	0.6 $MtCO_2$	94.8% by 2040
6th carbon budget (2043 - 2047)	0.3 $MtCO_2$	97.3% by 2045
7th carbon budget (2048-2100)	0.3 $MtCO_2$	98.6% by 2050

Table 9.4: North West carbon budget levels

Budget	Carbon budget level	Reduction beyond 2015 levels
1st carbon budget (2018 - 2022)	160.6 $MtCO_2$	23.1% by 2020
2nd carbon budget (2023 - 2027)	81.7 $MtCO_2$	62.0% by 2025
3rd carbon budget (2028 - 2032)	40.3 $MtCO_2$	81.2% by 2030
4th carbon budget (2033 - 2037)	19.9 $MtCO_2$	90.7% by 2035
5th carbon budget (2038 - 2042)	9.8 $MtCO_2$	95.4% by 2040
6th carbon budget (2043 - 2047)	4.9 $MtCO_2$	97.7% by 2045
7th carbon budget (2048-2100)	4.7 $MtCO_2$	98.9% by 2050

9.54 The national-scale data is based on the five-year National Carbon Budgets produced by the Committee on Climate Change (CCC), which reflect the requirement to remain within agreed global emission limits. These are outlined in **Table 9.5**. The National Carbon Budgets have been apportioned to reflect the contribution of the built environment towards the UK total carbon footprint (estimated to be nearly 40%). This approach is in alignment with Section 6.4 of the IEMA Guidance for assessing GHG emissions and evaluating their significance, which provides a steer on contextualising a project's carbon impacts.

9.55 Given the phasing of the Proposed Scheme noted above, the 4th national carbon budget is deemed applicable to the construction stage, and the 4th, 5th and 6th national carbon budgets (as detailed in **Table 9.5**) are deemed to be applicable to the operational stage. No data is currently available post-2037 so it is not possible to assess the anticipated operational emissions against UK carbon emissions beyond this date. However, in light of the ambitious sustainability target set by the UK government for the country, i.e. the legally binding 'net-zero' carbon target for 2050, it can be expected that the magnitude of operational emissions will only increase as a proportion of the total national carbon budget.

9.56 The proposed all-electric energy strategy for the Proposed Scheme will benefit from the reductions in grid electricity carbon intensity between now and commencement of the operational development and subsequently throughout its operational life. Therefore, current estimates of operational emissions are likely to represent a worst-case scenario, and the Proposed Scheme will benefit from an energy strategy which makes most pragmatic use of national drivers towards a zero-carbon economy.

Table 9.5: UK National carbon budget levels

Budget	Carbon budget level	Reduction below 1990 levels
4th carbon budget (2023 - 2027)	1,950 $MtCO_2e$	51% by 2025
5th carbon budget (2028 - 2032)	1,725 $MtCO_2e$	57% by 2030
6th carbon budget (2033 – 2037)	965 $MtCO_2e$	78% by 2035

9.57 In GHG accounting, it is a widely accepted practice to exclude emission sources that do not have a material contribution to the overall carbon footprint on the basis of the 'De Minimis' rule. ISO guidance on GHG reporting (ISO 14064-1)[17] states that '*the organisation may exclude from quantification direct or indirect GHG sources or sinks whose contribution to GHG emissions or removals is not material or whose quantification would not be technically feasible or cost effective'*. In this context, multiple sources have introduced a 'materiality threshold'. PAS 2050[18] for example, stipulates that in order to be considered 'material', the contribution from any one source of GHG emissions should be more than 1% of the anticipated total GHG emissions associated with the product being assessed.

9.58 The UK Emissions Trading System (UK ETS)[19] replaced the EU Emissions Trading System (EU ETS) from 1st January 2021. It retains the provision for small installations, which states that small installations whose emissions do not exceed a threshold of 25,000 tCO_2e per

annum and, where they carry out combustion activities, have a rated thermal input below 35 MW, excluding emissions from biomass, can opt out from the scheme. Additionally, as part of its public reporting under the Task Force on Climate-related Financial Disclosures framework (IFC Performance Standard 3: Resource Efficiency and Pollution Prevention) the International Finance Corporation (IFC) discloses emissions of projects with estimated annual emissions over 25,000 tCO_2e through the Environmental and Social Review Summary for each project.

9.59 In line with the above, a 1% materiality threshold has been implemented in this assessment when determining magnitude of the relevant change in carbon emissions. To ensure a robust approach, a second reference point has been included, i.e. 25,000 tCO_2e annual emission maximum level. It is, therefore, assumed that any annual carbon emissions quantum <1% of the (proportional value) of the relevant carbon budget(s) and < 25,000 tCO_2e would not be considered to have a 'material' contribution to the relevant UK GHG inventory (i.e. at the national scale). More details are provided in **Tables 9.6** and **9.7**.

Table 9.6: Criteria for determining magnitude of change – national scale

Magnitude of change	Criteria
Large	Annual carbon emissions represent a contribution equal to or higher than 1% of the national baseline emissions and / or annual proportion of the relevant UK National Carbon Budget's share attributable to the built environment sector; AND Annual carbon emissions are higher than 25,000 tCO_2e in any year.
Medium	Annual carbon emissions represent a contribution lower than 1% of the national baseline emissions and / or annual proportion of the relevant UK National Carbon Budget's share attributable to the built environment sector; AND Annual carbon emissions are higher than 25,000 tCO_2e in any year.
Small	Annual carbon emissions represent a contribution lower than 1% of the national baseline emissions and / or annual proportion of the relevant UK National Carbon Budget's share attributable to the built environment sector; AND Annual carbon emissions are lower than 25,000 tCO_2e in any year.
Negligible	Annual carbon emissions represent a contribution lower than 0.1% of the national baseline emissions and / or annual proportion of the relevant UK National Carbon Budget's share attributable to the built environment sector; AND Annual carbon emissions are lower than 25,000 tCO_2e in any year.

Table 9.7: Criteria for determining magnitude of change – local / regional scale

Magnitude of change	Criteria
Large	Annual difference in carbon emissions represents a contribution higher than 1% of the local / regional baseline emissions share attributable to the built environment sector; AND Annual difference in carbon emissions represents a contribution higher than 1% of the relevant local / regional carbon budget's share attributable to the built environment sector.
Medium	Annual difference in carbon emissions represents a contribution lower than 1% of the local / regional baseline emissions share attributable to the built environment sector; AND Annual difference in carbon emissions represents a contribution higher than 1% of the relevant local / regional carbon Budget's share attributable to the built environment sector.
Small	Additional annual carbon emissions represent a contribution lower than 1% of the local / regional baseline emissions share attributable to the built environment sector; AND Additional annual carbon emissions represent a contribution lower than 1% of the relevant local / regional carbon Budget's share attributable to the built environment sector.
Negligible	Additional annual carbon emissions represent a contribution lower than 0.1% of the local / regional baseline emissions share attributable to the built environment sector; AND Additional annual carbon emissions represent a contribution lower than 0.1% of the relevant local / regional carbon Budget's share attributable to the built environment sector.

9.60 While the emission thresholds outlined above have been used to provide context, it is important to recognise that the application of professional judgement is a critical additional component in the determination of the magnitude of change, as recognised by the IEMA guidance, which may result in a different overall conclusion than the one suggested by quantitative criteria alone provided in **Tables 9.6** and **9.7**. Where applied, this is set out in the assessment.

Determining the Level of Effect

9.61 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. The level of effect has been determined using professional judgement and **Table 9.8** has been a tool which has assisted with this process.

9.62 Whilst **Table 9.8** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

Table 9.8: Matrix to Support Determining the Level of Effect

		Sensitivity (or value / importance)			
		High	Medium	Low	Negligible
Magnitude of Change	Large	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

9.63 The following terms have been used to define the level of the effects identified and these can be 'beneficial' or 'adverse':

- **Major effect**: where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
- **Moderate effect**: where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;
- **Minor effect**: where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Proposed Scheme is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change; and
- **Negligible**: where the Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

9.64 The duration of the effect has been assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

Determining Significance

9.65 For each effect, a statement has been made as to whether the level of effect is '**Significant**' or '**Not Significant**'. This determination has been based on professional judgement and/or relevant guidance/legislation where applicable.

9.66 Significance has only been concluded for residual effects (i.e. following the identification of secondary mitigation).

Baseline Conditions

Site

9.67 The existing Hotspur Press building has a floor area of approximately 4,723m² (Gross Internal Area (GIA)). It formerly housed cotton mills and printing presses but is currently not in use.

9.68 For the purpose of the GHG emissions assessment, the current emissions from the Site has been assumed to be zero. This includes both operational carbon emissions and emissions from traffic on and off the Site. By assuming zero emissions at this stage, it ensures a worst-case scenario approach to the assessment of climate change effects from the Proposed Scheme.

Local scale (Manchester)

9.69 The latest CO_2 emissions for the Manchester administrative area show that in 2021, 1,874.3 ktCO_2 were emitted. The data shows emissions allocated on an 'end-user' basis where emissions are distributed according to the point of energy consumption (or point of emission if not energy related).

Regional scale (North West)

9.70 The latest available DESNZ annual CO_2 emissions data for the North West of England from 2021 were 36,471.2 tCO_2.

9.71 In order to help understand the trends in carbon emissions at a regional level, a breakdown of total carbon emissions from three main sources (industry & commercial, domestic and transport) has been provided for the North West. The DESNZ regional statistics data from the UK government, shown by **Table 9.9**, are available for the period 2005 – 2021.

Table 9.9: Carbon emissions with the North West of England 2005-2021

Year	Industry & Commercial	Public Sector	Domestic	Transport	Land use, land-use change & forestry (LULUCF)	Agricultural	Waste Management	Grand Total	Population	Per Capita Emissions
	$ktCO_2$	$ktCO_2$	$ktCO_2$	$ktCO_2$	$ktCO_2$	$ktCO_2$	$ktCO_2$	$ktCO_2$	'000s, mid-yr estimate	(t)
2005	23,969.1	2,731.8	17,491.4	15,011.5	193	755.5	190.3	60,342.6	6,870	8.8
2006	23,380.6	2,636.4	17,432.9	14,818.8	162.4	755.1	126.2	59,312.3	6,901.6	8.6
2007	22,752.9	2,486.2	16,862.1	14,832.5	118.1	747.8	165	57,964.6	6,929.3	8.4
2008	22,051.8	2,411.1	16,805.4	14,361.2	67.3	817.5	140.9	56,655.2	6,958.5	8.1
2009	19,033.9	2,079.8	15,228.7	14,005.8	45.3	738.1	134.5	51,266.0	6,986.2	7.3
2010	20,255.1	2,269.7	16,241.4	13,919.3	34.4	725	135.9	53,580.8	7,019.9	7.6
2011	18,095.4	1,977.6	14,161.7	13,728.1	-4.1	639	127.1	48,724.8	7,056.0	6.9
2012	19,467.6	2,185.4	15,139.6	13,464.3	31	744.9	117.2	51,150.0	7,076.6	7.2
2013	18,175.8	2,101.8	14,729.1	13,366.7	-8.1	653.1	104.5	49,122.9	7,091.9	6.9
2014	15,977.8	1,847.3	12,391.5	13,530.2	-29.6	632.5	109.4	44,459.1	7,124.3	6.2
2015	14,799.9	1,700.3	12,134.9	13,795.6	-55.1	655.9	102.1	43,133.6	7,175.5	6.0
2016	13,666.0	1,412.7	11,427.0	13,977.9	-26.1	600.1	103.7	41,161.3	7,262.9	5.7
2017	12,919.3	1,587.0	10,938.3	13,810.0	-65.7	630.4	93.8	39,913.2	7,308.2	5.5
2018	12,372.3	1,766.1	10,773.7	13,694.3	-71	685.2	84.1	39,304.5	7,343.1	5.4

Year	Industry & Commercial	Public Sector	Domestic	Transport	Land use, land-use change & forestry (LULUCF)	Agricultural	Waste Management	Grand Total	Population	Per Capita Emissions
2019	11,864.9	1,682.6	10,442.0	13,702.0	-82.9	623.4	87.9	38,320.0	7,402.5	5.2
2020	10,696.6	1,531.6	10,091.4	11,367.0	-50	599	91.9	34,327.4	7,425.5	4.6
2021	11,593.3	1,748.9	10,530.5	11,906.5	-88.5	675.1	105.5	36,471.2	7,422.3	4.9

9.72 In line with the trend shown in **Table 9.9**, the statistics for the North West of England demonstrate a continuing downward trend over the overlapping 2005 – 2021 period, whereby the per capita CO_2 emissions have decreased by approximately 44%. Total emissions have also been reduced by 40% over the studied period despite the observed population growth.

9.73 The main reductions are observed in industry and commercial emissions followed by domestic emissions in line with an overall downward trend for the whole of the UK. In comparison, the reduction observed in the transport sector for the region is considerably smaller amounting to approximately 21%.

National scale (United Kingdom)

9.74 The latest DESNZ data available for the UK was published in 2023 and relates to the year 2021. The total CO_2 emissions generated in the UK in 2021 amount to 339,540 kt CO_2. The UK demonstrates one of the largest declines in CO_2 emissions, with a 40% reduction in the period 2000 – 2023. This is one of the biggest percentage reductions in CO_2 emissions of all large economies.

9.75 A study conducted by analysts Carbon Brief[20] reveals that the decline in industry, commercial and domestic emissions is driven by a combination of the introduction of a low- and zero-carbon electricity mix based on gas and renewables instead of coal and reduced non-electric energy consumption in the industrial and residential sectors. The latter is explained mainly by improvements in energy efficiency and switching to lower-carbon fuels. A structural movement towards a less carbon-intensive mix of industrial output, with some energy-intensive industry moving to other countries and UK industry increasingly focusing on higher-value manufacturing with lower energy intensity is also considered to have been a significant factor in the case of industry-related emissions.

Future Baseline

Site

9.76 Future changes to the baseline without the implementation of the Proposed Scheme or other planned development are anticipated to be minor. As the baseline focuses on an

estimate of the operational energy of the existing land uses on-site, this is unlikely to change much without a significant change of use.

National scale (United Kingdom)

9.77 Known trends and policy initiatives for curbing carbon emissions under the auspices of the UK flagship commitment to reduce the country's emissions by at least 80% by the year 2050, relative to 1990 levels indicate that the electricity grid is likely to undergo a low-carbon transformation – indeed trends in the industry indicate this has already commenced. What is more, the UK government implemented the recommendations of the CCC through the passing of the Climate Change Act 2008 (2050 Target Amendment) Order 2019 committing the UK to a new legally binding "net-zero" carbon target for 2050, thus exceeding the previous legally binding target introduced by the Climate Change Act.

Primary and Tertiary Mitigation

Construction Stage

9.78 No primary or tertiary mitigation has been evaluated as part of the construction stage assessment.

Operational Stage

9.79 The following primary and tertiary mitigation which has been evaluated as part of the operational stage assessment is outlined below.

- The Proposed Scheme is all-electric and combustion-free (with the exception of emergency generators). It is therefore in a position to decarbonise as the electricity grid decarbonises in the future.

Assessment of Effects, Secondary Mitigation and Residual Effects

Construction Stage

Upfront carbon emissions of buildings [The Atmosphere]

9.80 The Upfront Carbon Assessment has been completed in line with the guidance provided by the Royal Institution of Chartered Surveyors (RICS) covering the GHG emissions included within the lifecycle modules A1-A5. The assessment is aligned to the latest IEMA guidance.

9.81 The upfront carbon includes the GHG emissions that arise from the materials and construction processes up until practical completion, including demolition of the existing building.

9.82 To assess the upfront carbon for the project, a Life Cycle Assessment (LCA) tool (One Click LCA) has been used to make allocations for the anticipated material quantities in an inventory analysis. The materials are represented within the model by using materials with associated Environmental Product Declarations (EPDs). EPDs are produced by manufacturers and identify the carbon emissions of a product. By scheduling the materials proposed for the development, the overall carbon emissions can be approximated.

9.83 It should be noted here that the LCA tool has a limited database of materials. In the scenario where a specified material isn't included in the database, the most similar

material in terms of material composition is selected instead. An allowance for demolition of the existing building was made within module A5.

9.84 Upfront carbon emissions are shown in **Table 9.10**.

Table 9.10: Upfront carbon breakdown A1-A5 lifecycle stages

Life cycle module	Total carbon per life cycle module	Upfront Carbon	
	$kgCO_2e$	tCO_2e	$kgCO_2e/m^2$
A1-A3: Construction materials	9,038,824		
A4: Transportation to site	919,623	**10,954**	**519**
A5: Construction/installation process	995,771		

9.85 The Proposed Scheme includes a partial demolition and the retention and refurbishment of elements of the existing building, as well as the construction of the new tower extending from the centre of the existing building.

9.86 Assuming a 38-month construction period, the annual carbon emissions resulting from the combined product and construction lifecycle stages A1 – A5 is currently estimated to be approximately 3,459 tCO_2e per construction year, less than 25,000 t CO_2e, less than 25,000 t CO_2e. The annual carbon emissions account proportionally for:

- 0.18% of local (Manchester) baseline emissions;
- 0.94% of the appropriate local (Manchester) carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment);
- 0.0095% of regional (North West England) baseline emissions;
- 0.0269% of the appropriate regional (North West England) carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment); and
- 0.0022% annual proportion of the 4th national carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment).

9.87 The sensitivity of the atmosphere is considered to be high. The magnitude of change is considered to be small at the local and regional scale and negligible at the national scale. Therefore, at a local and regional scale, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor, while at a national scale the Proposed Scheme is unlikely to cause a noticeable change at the atmosphere (negligible effect).

Secondary Mitigation or Enhancement

9.88 The following mitigation measures will be implemented to further reduce the significance of carbon emissions during construction:

- Fit-out measures: specification of low-impact floor covering and carpets, low VOC paint/ adhesives/sealants/coatings, low-impact furnishings, preference for fittings with high recycled content, consideration given to sourcing materials from a 'manufacturer with a take-back scheme' and procuring products/fittings as a service (e.g. lighting);

- Specification of materials with Environmental Product Declarations (EPDs) with a view to further reducing embodied carbon emissions;

- A pre-demolition audit to be undertaken by the demolition contractor prior to commencement of any demolition to cover all existing structures and hard surfaces being considered for demolition to identify and maximise the recovery of material for subsequent high grade or value applications;

- Use of energy-efficient construction plant and machinery;

- Preference for local suppliers (within the MCC administrative area) to shorten the supply chain and reduce its associated environmental footprint coupled with prioritisation of responsibly sourced goods and services where feasible whilst maximising the proportion of recycled content within materials used in construction; and

- Main contractor to monitor energy, water and waste data during the construction stage to encourage transparency and accountability.

Residual Effect

9.89 The sensitivity of the global climate is always considered to be high. The magnitude of change, following secondary mitigation, is still considered to be small at the local and regional scale and negligible at the national scale. Therefore, at a local and regional scale, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor, while at a national scale the Proposed Scheme is unlikely to cause a noticeable change at the atmosphere (negligible effect).

Significance

9.90 This effect is considered to be **Not Significant**.

Operational Stage

Regulated and unregulated carbon emissions generated by buildings [The Atmosphere]

9.91 An evaluation of the anticipated CO_2 emissions associated with the operation of the building has been carried out based on modelling undertaken in line with Part L 2021 of the Building Regulations (Conservation of fuel and power).

9.92 The regulated operational emissions are attributable to energy consumption associated with regulated components including heating, cooling, hot water, fans, pumps and lighting. It is anticipated that the Proposed Scheme will achieve this target through the combination of passive design and energy efficiency, and low and zero carbon technologies, notably heat pumps.

9.93 The unregulated operational emissions are typically mainly attributable to energy consumption associated with IT equipment, domestic appliances, plug-in devices and catering facilities.

9.94 The most recent (2023) DESNZ GHG conversion factors were used. Results are summarised in **Table 9.11**.

Table 9.11: Operational carbon emissions (regulated and unregulated)

Building and primary use	GIA area (m^2)	Energy Consumption by End Use ($kWh/m^2/yr$)	(kWh/yr)	Operational carbon (tCO_2e)
Heating	21,093	5.48	115,590	23.94
Cooling		0.21	4,430	0.92
Auxiliary		6.31	133,097	27.56
Lighting		7.22	152,291	31.54
Hot water		4.89	103,145	21.36
Equipment		47.62	1,004,449	208.00
Total	**21,093**	71.73	1,513,001	313.30

9.95 The total anticipated emissions associated with the operational stage of the Proposed Scheme, relating to the operation of the buildings, have been calculated to be 313.30 tCO_2e. Therefore, the estimated emissions do not exceed 25,000 tCO_2e per year.

9.96 Compared to local, regional and national GHG inventories the annual emissions from the Proposed Scheme account proportionally for:

- 0.0167% of local (Manchester) baseline emissions;
- 0.085% of the appropriate local (Manchester) carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment);
- 0.0009% of regional (North West England) baseline emissions;
- 0.0024% of the appropriate regional (North West England) carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment); and
- 0.0002% annual proportion of the 4th national carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment).

9.97 The sensitivity of the atmosphere is considered to be high. The magnitude of change is considered to be small at the local scale and negligible at the regional and national scale. Therefore, at a local scale, there is likely to be a direct, permanent, long-term, adverse

effect which is considered to be minor, while at a regional and national scale the Proposed Scheme is unlikely to cause a noticeable change at the atmosphere (negligible effect).

Secondary Mitigation or Enhancement

9.98 The unregulated operational emissions are typically mainly attributable to energy consumption associated with IT equipment, domestic appliances, plug-in devices and catering facilities.

- Installation of smart meters and/or sub-meters to monitor operational consumption more accurately;
- Energy efficient equipment to be procured for the Proposed Scheme and supplied throughout its lifecycle including Energy Star rated products for all small power, plug-in equipment (e.g. supplementary electric heating);
- Selection of 100% renewable electricity contracts, where possible; and
- 'Smart' technology to be incorporated in the Proposed Scheme as appropriate including intelligent street lights to optimise the management and performance of the site infrastructure thereby further reducing emissions.

Residual Effect

9.99 The sensitivity of the global climate is always considered to be high. The magnitude of change, following secondary mitigation, is still considered to be small at the local and regional scale and negligible at the national scale. Therefore, at a local scale, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor, while at a regional and national scale the Proposed Scheme is unlikely to cause a noticeable change at the atmosphere (negligible effect).

Significance

9.100 This effect is considered to be **Not Significant**.

Embodied carbon emissions of buildings [The Atmosphere]

9.101 As discussed earlier in the chapter, the Embodied Carbon Assessment, covering the GHG emissions included within the lifecycle modules A1-A5, B1-B5 and C1-C4, have been calculated using a Life Cycle Assessment (LCA) tool (One Click LCA).

9.102 The operational stage embodied carbon includes the GHG emissions that are likely to arise from maintenance & replacement over the entire life of the Proposed Scheme. End of life (C1-C4) carbon emissions were included.

9.103 Embodied carbon emissions are shown in **Table 9.12**.

Table 9.12: Embodied carbon breakdown A1-A5, B1-B5 and C1-C4 lifecycle stages

Life cycle module	Total carbon per life cycle module	Embodied Carbon		Embodied Carbon excluding Upfront Carbon	
	$kgCO_2e$	tCO_2e	$kgCO_2e/m^2$	tCO_2e	$kgCO_2e/m^2$
A1-A3: Construction materials	9,038,824				
A4: Transportation to site	919,623			-	-
A5: Construction/installation process	995,771	18,697	886		
B1-B5: Maintenance & replacement	7,009,073			**7,743**	**367**
C1-C4: End of life	761,776				

9.104 The total anticipated embodied emissions associated with the operational stage and end of life stage of the Proposed Scheme have been calculated to be 7,743 tCO_2e. The annual emissions spread over a 60-year design life is 129 tCO_2e. Therefore, the estimated emissions do not exceed 25,000 tCO_2e per year.

9.105 Compared to local, regional and national GHG inventories the annual emissions from the Proposed Development account proportionally for:

- 0.0069% of local (Manchester) baseline emissions;
- 0.0351% of the appropriate local (Manchester) carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment);
- 0.0004% of regional (North West England) baseline emissions;
- 0.0010% of the appropriate regional (North West England) carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment); and
- 0.0001% annual proportion of the 4th national carbon budget (2023 – 2027) attributable to the built environment sector (assumed 40% attributed to built environment).

9.106 The sensitivity of the atmosphere is considered to be high. The magnitude of change is considered to be small at the local scale and negligible at the regional and national scale. Therefore, at a local scale, there is likely to be a direct, permanent, long-term, adverse effect which is considered to be minor, while at a regional and national scale the

Proposed Scheme is unlikely to cause a noticeable change at the atmosphere (negligible effect).

Secondary Mitigation or Enhancement

9.107 No secondary mitigation or enhancement has been identified.

Residual Effect

9.108 In the absence of secondary mitigation the residual effects for the atmosphere is that same as that reported in the pre-mitigation scenario.

Significance

9.109 This effect is considered to be **Not Significant**.

Limitations and Assumptions

9.110 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

- As stated in IEMA (2022) guidance, activities that do not significantly change the result of the assessment can be excluded where expected emissions are less than 1% of total emissions, and where all such exclusions total a maximum of 5% of total emissions. These thresholds have been applied in the assessment.

- The assessments have assumed a design life of 60 years, and cover BS EN 15978:2011 life-cycle carbon modules A1-A5, B1-B5, C1-C4 plus B6. An allowance for demolition of the existing building was made within module A5. However further exclusions (due to small proportions of overall GHG emissions) include:

  – Temporary construction site accommodation;

  – Refuse collection from public bins; and

  – Street lighting, traffic signals and security cameras.

- The estimated carbon emissions associated with the operational energy consumption are indicative values based on benchmark Part L data for different building types and indicative areas for different uses included in the Proposed Scheme. The Part L methodology uses standardised parameters, including operational profiles, ventilation rates, and heating and cooling setpoints, based on the building use, which may be different from how the buildings will operate in practice.

- Upfront carbon emissions associated with transportation of building products to building site, energy use during the site operations, handling of waste, and production processes of fuel, energy and water have been estimated in line with RICS standard assumptions. The estimation of end of life carbon emissions (C1-C4) was based on default values and OneClick LCA's default end of life scenarios.

- A 38-month construction period was assumed.

Summary

9.111 **Table 9.13** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

9.112 The table only provides a summary of the residual effects identified within the assessment and details of all primary, secondary and tertiary mitigation that has been taken into account is set out in detail within the Chapter and summarised within Environmental Management Plan included within **Volume 3: Environmental Management Plan**.

Table 9.13: Summary of Residual and Significant Effects

Effect	Receptor	Residual Effects	Is the Effect Significant?
Construction Stage			
Upfront carbon emissions of buildings	The Atmosphere	Minor adverse at local and regional scale. Negligible at the national scale.	NO
Operational Stage			
Regulated and unregulated carbon emissions generated by buildings	The Atmosphere	Minor Adverse at the local scale. Negligible at the regional and national scale.	NO
Embodied carbon emissions of buildings	The Atmosphere	Minor Adverse at the local scale. Negligible at the regional and national scale.	NO

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10. Socio-economics and Human Health

Introduction

10.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to Socio-economics and Human Health.

10.2 The Chapter describes the technical consultation that has been undertaken during the EIA, the scope of the assessment and assessment methodology, and a summary of the baseline information that has informed the assessment.

10.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details).

10.4 This Chapter, and its associated **Figure 10.1** and **Appendix 10.1**), is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**).

10.5 In addition, this Chapter should be read in conjunction with **Chapter 15: Assessment of Cumulative Effects**.

Summary of Consultation

10.6 No consultation has been undertaken as part of the preparation of this chapter.

Scope of the Assessment

Effects Not Considered to be Significant

10.7 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this.

Access to Primary Healthcare Facilities

10.8 Strong, vibrant, sustainable and cohesive communities require good quality, accessible public services and infrastructure. Access to primary healthcare facilities (e.g. GP services) has a direct beneficial effect on human health and is vital towards ensuring that health outcomes and priorities are achieved.

10.9 Based on single-occupancy of units, the 577 new Purpose-built Student Accommodation (PBSA) units will accommodate 577 residents. As outlined within HUDU guidance, the Royal College of GPs recommend a ratio of one GP per 1,800 registered patients; this therefore suggests that the Proposed Scheme could generate demand for approximately 0.3 GPs. There are a number of primary healthcare facilities accessible from the Site in and around Manchester city centre and it is anticipated that these will be able to meet the demand generated by the population of the Proposed Scheme.

10.10 Therefore, access to primary healthcare facilities for residents of the Proposed Scheme and patients at existing facilities is not considered to be significant and will not be considered further in the ES.

Social Cohesion and Inclusive Design

10.11 Developments should connect with existing communities (e.g. through layouts and access points which avoid physical barriers and severance) and land-uses and spaces should encourage social interaction, taking into account principles of inclusive and age-friendly design.

10.12 The Site currently comprises the vacant Hotspur Press building. The Proposed Scheme will therefore result in no displacement of any existing residential communities, business activities, community spaces or social infrastructure. The Site's location within Manchester city centre will enable coherent integration with existing residential and commercial areas and transport links (including Manchester Deansgate Rail and Metrolink stations in the immediate vicinity). The local provision of commercial, leisure and other amenity spaces (which will be added to by the Proposed Scheme) will therefore be accessible for future Site users (i.e. residents, workers and visitors).

10.13 A new public square and public realm will be provided to the north of the tower, and outdoor resident amenity space will be provided on a terrace at Level 03. Overall, these features will contribute to the amenity of residents and the public as a place to socialise.

10.14 Whilst a beneficial effect with regard to social cohesion and inclusive design for residents of the Proposed Scheme and existing local communities is anticipated, the level of effect (generated by the combined sensitivity of receptor and the magnitude of the change) is not considered to be significant and will not be considered further in the ES[a].

Crime Reduction and Community Safety

10.15 Sites should be kept secure during demolition and construction to ensure that potential for crime and anti-social behaviour is minimised. Once operational, developments should incorporate design elements and site management measures to help 'design out' crime, to help people feel secure, again minimising the potential for crime and anti-social behaviour.

10.16 Site security arrangements during the construction stage will be in line with the requirements set out in the Construction (Design and Management) Regulations 2015[1]. The design of the Proposed Scheme will be informed by 'Secure by Design' principles and appropriate design and site management measures (including appropriate lighting and digital entry systems at each building) will be implemented to ensure that the potential for crime and anti-social behaviour is minimised. Once operational, the Proposed Scheme will have on-site security staff, with staff present 24 hours a day.

10.17 Therefore, crime reduction and community safety for future residents is not considered to be significant and will not be considered further in the ES.

[a] It should be noted that, whilst impacts related social cohesion and inclusive design were scoped out of the assessment as not considered to be significant as a standalone effect (as set out above), this is, however, a relevant factor in the consideration of 'provision of PBSA' as an overarching effect which *is* considered likely to be significant. This reflects the wide-ranging socio-economic and health impacts of the delivery of new residential accommodation, and the interaction of these effects is described in further detail at the relevant point of the chapter.

Access to Healthy Food

10.18 Access to healthy and nutritious food can improve diet and prevent chronic diseases related to obesity. Healthy food options should be available and easily accessible to those using and working at new developments to enable and promote healthy lifestyles.

10.19 Numerous existing healthy food options will also be accessible from the Site; a wide range of options in terms of supermarkets and foodstores are located in Manchester city centre and surrounds, including a Sainsbury's Local at First Street (under 5 minutes' walk from the Site).

10.20 Therefore, access to healthy food for residents of the Proposed Scheme is not considered to be significant and will not be considered further in the ES.

Access to Active and Sustainable Travel Options

10.21 Active travel and sustainable travel options should be accessible to those living and working at and otherwise using new developments to enable and promote healthy and sustainable lifestyles, through facilitating physical activity and zero / low emissions transport, such as walking, cycling and public transport options.

10.22 The Site occupies a commanding position along the Oxford Road corridor, and is readily accessible by bicycle, public transport (train or bus) or on foot to the University of Manchester, Manchester Metropolitan University and the University of Salford. The Proposed Scheme is also within very short walking distance to Manchester Deansgate Rail and Metrolink stations (and onward links to Manchester Piccadilly Rail Station) enabling travel to a wide range of local and national destinations. Numerous local bus routes are also accessible from the station. The Site will be accessed by pedestrians and cyclists from Cambridge Street / Gloucester Street and will not be accessible by car (and there will be no vehicular parking provided on site with the exception of one disabled bay and one loading bay). Cycling will also be encouraged through the provision of 142 secure cycle spaces.

10.23 The Site's accessible location and additional measures to maximise the residential population's access to active travel and sustainable travel options will be beneficial and enhance the health and wellbeing of future Site users (residents, workers and visitors).

10.24 Whilst a beneficial effect with regard to access to active and sustainable travel options for residents of the Proposed Scheme is anticipated, the level of effect (generated by the combined sensitivity of the receptor and the magnitude of the change) is not considered to be significant and will not be considered further in the ES.

Access to Open Space and Sports & Recreation Facilities

10.25 Providing secure, convenient and attractive open / green space, public amenity space and facilities for sports and leisure activities can lead to increased levels of physical activity and reduce levels of heart disease, strokes and other ill-health problems that are associated with both sedentary occupations and stressful lifestyles. There is also a growing body of evidence that access to open spaces and facilities for exercise is important in helping to maintain and/or improve mental health.

10.26 There are no existing open spaces which will be lost due to the Proposed Scheme. The Proposed Scheme will deliver a mixture of new high quality public realm, including a new public square provided to the north of the tower and an outdoor amenity space on a terrace

at ground floor and at Level 03. Additionally, gym facilities will be provided for residents, providing further opportunities for recreation and physical activity..

10.27 A range of existing sports and recreation facilities and open spaces are located in the locality of the Site – including gyms (e.g. PureGym First Street), and public green space (such as Hulme Park, which provides a skate-park, a football pitch, basketball court and general park and gardens space) – which will be available for fitness, leisure and relaxation purposes by those residing and working at the Site.

10.28 Therefore, access to open space and sports & recreation facilities for future residents is not considered to be significant and will not be considered further in the ES.

Access to Training Opportunities

10.29 Employment and income are key determinants of personal and societal socio-economic and physical and mental health and wellbeing, whilst unemployment is known to be a significant contributor to poverty, illness and a reduction in personal and social esteem. New development can improve people's access to training opportunities; for example, through delivering apprenticeships and other employment and training programmes during the construction phase and on-Site once operational.

10.30 Whilst the Proposed Scheme could deliver opportunities for people to access training (such as apprenticeships and/or placements during construction and at on-Site employment uses, which will be dependent on construction contractors and the Proposed Scheme's future occupiers) it is considered that these are likely to comprise only a limited proportion of the total jobs supported during the construction and operational stages.

10.31 Whilst a beneficial effect which could help meet local needs for apprenticeship opportunities, their delivery is anticipated to be of a scale which would be unlikely to be significant. Therefore, access to training opportunities for the local labour force will not be considered further in the ES.

Employment Generated During the Operational Stage

10.32 Sustained employment, such as that provided by the operation of businesses, is a key determinant of societal socio-economic health and provides wider physical and mental health benefits for the worker. Unemployment is known to be a significant contributor to poverty, illness and a reduction in personal and social esteem, and therefore the reduction in unemployment is often held as a key economic objective. New development can improve people's access to employment opportunities; for example, through the opening of new work opportunities at on-site occupiers once operational.

10.33 Whilst the operations of the PBSA component of the Proposed Scheme could deliver new employment opportunities (e.g. concierge, maintenance and security, which will be dependent on the Proposed Scheme's future occupiers), and the ground-floor/basement commercial uses will accommodate a number of employment opportunities (e.g. in the retail and leisure sectors), it is understood that the number of jobs created will be small in scale relative to recent employment trends locally.

10.34 Whilst a beneficial effect which could contribute towards sustaining local employment growth, their delivery is anticipated to be of a scale which would be unlikely to be significant.

Therefore, employment generated during the operational stage for the local labour force will not be considered further in the EIA or reported in the ES.

Effects Considered Likely to be Significant

10.35 **Table 10.1** outlines the effects that were considered likely to be significant and are reported within this Chapter.

Table 10.1: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Stage
Employment generated during the construction stage	Local labour force	Construction
Provision of PBSA	Students requiring accommodation	Operation

10.36 Whilst a number of effects were scoped out of the assessment as not likely to be significant as standalone effects in isolation (as set out in detail above), it should be noted that several of these effects did, however, contribute to the assessment of 'provision of PBSA' as an effect which *is* considered likely to be significant[b]. This reflects the wide-ranging socio-economic and health impacts related to the delivery of new residential accommodation, and the interaction of these effects is described in further detail at the relevant point of the chapter.

Assessment Methodology

Legislative Framework, Policy and Guidance

10.37 The following technical standards and guidance has informed the assessment of effects within this chapter:

- Homes and Communities Agency (HCA) (2014) Additionality Guide (4th Edition)[2];
- HCA (2015) Employment Density Guide (3rd Edition)[3];
- NHS Healthy Urban Development Unit (HUDU) (2019). Rapid Health Impact Assessment Toolkit (4th Edition)[4]; and
- IEMA (2017). Health in Environmental Impact Assessment: A Primer for a Proportionate Approach[5].

Defining the Study Area

10.38 In the absence of guidance or policy available to inform the definition of appropriate study areas, it is reasonable to define study areas based on an understanding of relevant local and wider economic geographies, and the extent to which socio-economic and human health effects are likely to be contained within these geographies. A plan of the Study Area is included at **Figure 10.1**, and shows:

[b] These effects include: 'social cohesion and inclusive design'; 'crime reduction and community safety'; access to active and sustainable travel options; and 'access to open space and sports & recreation facilities'.

- A **Local Impact Area** based on the administrative area of MCC. The 2011 Census[c] indicates that 38% of people working in Manchester also live within the authority. All effects assessed within the chapter are relevant to analyse at the scale of the local impact area; and

- A **Wider Impact Area** defined to cover the Greater Manchester Combined Authority (GMCA) area. The 2011 Census found that the majority (84%) of people working in Manchester lived within the wider impact area, suggesting a high level of socio-economic containment within this geography[6]. Employment-related effects assessed within the chapter are relevant to analyse at the scale of the local impact area with the wider impact area presented for added context.

Background Studies to Inform the ES / Establish the Baseline

10.39 The baseline was determined through desk-based research, relying primarily on data published by the Office for National Statistics (ONS), including the following datasets:

- 2011 Census[7];
- 2021 Census[8];
- Annual Population Survey[9];
- Claimant Count[10];
- Jobseekers Allowance by Occupation[11]; and
- Business Register & Employment Survey[12].

10.40 Further contextual information with regard to the baseline is drawn from a range of sources[d], including:

- NHS Healthy Urban Development Unit (HUDU);
- Department for Work and Pensions (DWP);
- Office for Health Improvement and Disparities (OHID);
- ONS;
- HM Government;
- HM Treasury;
- MCC; and
- House of Commons Library.

10.41 No additional background studies have been undertaken to inform the findings presented in this chapter. The assessment does, however, rely upon economic impact modelling to

[c] Where Census 2011 data has been used throughout this chapter, it should be noted that relevant data collected by the ONS for the 2021 Census has not yet been published publicly at the time writing

[d] Source references provided at the relevant points of the text.

understand the magnitude of effects. This assessment has been undertaken in accordance with best-practice guidance, as outlined above. The outputs of the economic impact modelling exercise inform the assessment of effects and are detailed within this chapter.

Assessment Process

10.42 As outlined above, there is no overarching guidance which sets out the preferred methodology for the preparation of assessments of the likely effects of development proposals in terms of socio-economic or human health impact. However, there are several methodological guides which cover key elements of the assessment, all of which have been listed above. These have been drawn upon as appropriate within the assessment, with the HCA Additionally Guide[13], alongside statistical evidence published by organisations such as the ONS being of particular relevance to the assessment of economic impacts.

10.43 Drawing on the above guidance, the following methodology has informed the assessment:

- **Employment generated during the construction stage** – Gross full-time equivalent (FTE) construction jobs have been estimated by dividing construction costs by the average annual turnover for construction sector employees in the North West region[14]. This has then been divided by the length of the construction period (i.e. number of years) to estimate average gross FTE jobs supported on average throughout the construction. Allowances have then made for leakage[e] and displacement[f] and standards set out in recognised guidance[15], in order to calculate net FTE jobs. Multipliers[g] have also been applied to estimate indirect and induced employment, drawing on guidance[16]. The extent to which employment supported by the construction of the Proposed Scheme impacts on baseline levels and growth of local employment in the context of wider economic trends has informed the level of effect against this indicator; and

- **Provision of Purpose-Built Student Accommodation (PBSA)** – The impact of the Proposed Scheme on the supply of PBSA in Manchester is established by comparing the amount of new PBSA proposed to a needs assessment on the current PBSA supply demand context as outlined within Kight Frank's PBSA Demand Study report, which was prepared to accompany the wider planning application. (**Appendix 10.1**).

Reporting of the Environmental Effect and Significance Criteria

10.44 The assessment of likely significant environmental effects as a result of the Proposed Scheme has taken into account the construction and operational stage. The following sections define the approach adopted within the assessment for the determination of sensitivity (or value/importance), magnitude of change (or impact), the level of effect and significance.

Determining Sensitivity of Receptor

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

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[e] Leakage is defined by the HCA Additionality Guide as "*The proportion of outputs that benefit those outside of the intervention's target area or group*". For example, the number of jobs which would be held by those living outside of the respective impact areas.

[f] Displacement is defined by the HCA Additionality Guide as "*The proportion of intervention outputs/outcomes accounted for by reduced outputs/outcomes elsewhere in the target area*".

[g] Multipliers are defined by the HCA Additionality Guide as "*Further economic activity (jobs, expenditure or income) associated with additional local income and local supplier purchases*".

10.46 The sensitivity of receptors is determined through comparison with wider regional and national trends. Consideration is also given to the priority and value attributed to specific receptors in strategy and policy terms. The assessment is based on professional judgement.

10.47 In the absence of industry-wide guidance on assessing the significance of socio-economic effects, **Table 10.2** provides a general overview of the sensitivity criteria which have been applied in the assessment. Given the broad range of effects assessed within the Chapter, it is not possible to define specific criteria that would be applicable across all receptors. The sensitivity of each specific receptor is therefore discussed and justified in turn within the main body of the Chapter, based on these general principles.

Table 10.2: Definition of the Sensitivity of Receptors

Sensitivity	Definition
High	Receptor of national importance, with little ability to absorb, adapt to or recover from change
Medium	Receptor of regional or local importance, with medium ability to absorb, adapt to or recover from change
Low	Receptor of local importance, with some ability to absorb, adapt to or recover from change
Negligible	Receptor of limited or no importance

Determining the Magnitude of Change

10.48 The magnitude of change has been considered as the change experienced from the current baseline conditions at the sensitive receptor and has been considered on a scale of **large**, **medium**, **small** or **negligible**.

10.49 In the absence of industry-wide guidance on assessing the significance of socio-economic effects, **Table 10.3** provides a general overview of the magnitude criteria which have been applied in the assessment.

10.50 To determine magnitude, the absolute impact attributable to the Proposed Scheme is benchmarked (where relevant) against the average annual rate of change in the corresponding socio-economic characteristics or baseline.

Table 10.3: Definition of the Magnitude of Change

Magnitude	Definition
Large	The change will result in substantial changes to baseline conditions, and/or will be highly likely to affect large numbers of people and/or businesses over the long-term, and, as such, should be acknowledged as an important consideration which (depending on the sensitivity of the receptor) is likely to be material in the decision-making process
Medium	The change will result in appreciable changes to baseline conditions and/or is likely to affect a reasonable number of people and/or businesses over a medium or long-term duration. The change may be

Magnitude	Definition
	important, but is not likely to be a key decision-making factor unless the relevant socio-economic resource or receptor is particularly sensitive
Small	The change will result in a perceptible difference from baseline conditions and is likely to affect a small number of people and/or businesses over a medium or short-term duration. The change may be raised as a local factor, but is unlikely to be critical in decision-making process
Negligible	The change does not result in variation beyond baseline conditions, and is unlikely to measurably affect people and/or businesses

Determining the Level of Effect

10.51 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. The level of effect has been determined using professional judgement and **Table 10.4** has been a tool which has assisted with this process.

10.52 Whilst **Table 10.4** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

Table 10.4: Matrix to Support Determining the Level of Effect

		Sensitivity (or value / importance)			
		High	Medium	Low	Negligible
Magnitude of Change	Large	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

10.53 The following terms have been used to define the level of the effects identified and these can be 'beneficial' or 'adverse':

- **Major effect**: where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
- **Moderate effect**: where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability,

tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;

- **Minor effect**: where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Proposed Scheme is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change; and

- **Negligible**: where the Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

10.54 The duration of the effect has been assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

Determining Significance

10.55 For each effect, a statement has been made as to whether the level of effect is '**Significant**' or '**Not Significant**'. This determination has been based on professional judgement and/or relevant guidance/legislation where applicable.

10.56 Significance has only been concluded for residual effects (i.e. following the identification of secondary mitigation).

Baseline Conditions

Economic Activity, Employment and Unemployment

10.57 Analysis of economic activity, employment and unemployment rates provides an indication of the latent labour force either currently unemployed or available to start work immediately. Over the year April 2022 – March 2023, the ONS's Annual Population Survey (APS)[17] indicates that economic activity rates amongst the working-age population of the local impact area of Manchester (72%) is lower than within the GMCA area (76%) and across England as a whole (79%). The employment rate in Manchester amongst the working age population, at 68%, is also lower than in the GMCA (73%) and Great Britain (76%).

10.58 The latest Claimant Count data published by the ONS[18] provides an up-to-date record of the number of people currently claiming benefits principally for the reason of being unemployed. This reveals that as of August 2023, there were 23,610 people in Manchester claiming out-of-work benefits. Of residents in Manchester aged 16-64, 6.2% were claiming out of work benefits, which is slightly higher than the 4.9% recorded across the GMCA.

10.59 Analysis of ONS data regarding Jobseeker's Allowance (JSA) claimants[19] (a sub-set of the above, which also captures the majority now claiming Universal Credit) highlights that circa 405 people were recorded as specifically seeking employment in construction-related trades in the local impact area in August 2023, rising to circa 2,290 at the scale of the wider impact area. This indicates that there is available construction labour locally and in the wider area.

10.60 The social impact of skills and employment is far reaching and has benefits at both the individual and wider societal level, shown clearly by the fact that the NHS's Healthy Urban

Development Unit (HUDU) consider access to training and employment opportunities as a 'primary determinant' of health[20].

10.61 Gaining education and employment can have significant economic and wellbeing benefits for both individuals and society. This is exemplified by the fact that health expenditure on an unemployed person is reported to be double the average expenditure per person, given that an individual's overall health and wellbeing – in terms of both physical mental health – is strongly associated with being in fulfilling and stable employment[21].

10.62 Research from the Government's Office for Health Improvement and Disparities (OHID, formerly Public Health England, PHE)[22] highlights the following benefits of having the necessary skills to obtain employment:

- Employment is generally the key means of obtaining adequate economic resources, which are essential for material wellbeing and full participation in society; and
- Work also meets important psychosocial needs in societies where employment is the norm and is central to individual identity, social roles and social status, with employment and socio-economic status being among the main drivers of health outcomes.

10.63 Whilst, conversely, research indicates that a lack of skills and unemployment:

- Causes the loss of regular income, the material and psychosocial impacts of which contributes to the link between unemployment and poor health;
- Causes additional psychological stressors related to status and self-esteem, identity and the loss of a core role in life, which impact on health;
- Is also associated with unhealthy behaviours, including increased smoking and alcohol consumption and decreased physical exercise; and
- Can have effects beyond the individual directly affected, with evidence suggesting that financial difficulties or associated stress can increase the risk of poor mental health among the families of those who are unemployed.

10.64 The ONS regularly monitors national wellbeing and their research[23] highlights a correlation between unemployment and people experiencing feelings of loneliness. Put another way, higher unemployment rates in an area are linked to higher loneliness rates.

10.65 Unemployment, therefore, poses a real threat not only to people's economic means but also their health and wellbeing, and the need for workers to have the skills required to take up new job opportunities is, therefore, one which meets both an economic and a social need.

Labour Market and Industry

10.66 The latest (2021) ONS Business Register and Employment Survey (BRES)[24] recorded that Manchester accommodates a total of 422,000 workforce jobs, which is approximately 30% of the 1.4 million jobs accommodated in the GMCA. As of 2015, Manchester accommodated 357,000 jobs, indicating that 65,000 additional jobs (an average of 10,900 per annum) were created in the area between 2015 and 2021.

10.67 BRES data indicates that as of 2021 the local impact area supported employment for 11,000 people in the construction sector, equating to 2.6% of total employment in the area, which is lower than the sector's 5.4% contribution to the total workforce in the GMCA region and the 5.0% in Great Britain. The construction industry supported 7,000 jobs in Manchester as of 2015, meaning that there has been an overall increase of 4,000 jobs (an average of circa 650 per annum) in employment in the sector during this time albeit with a degree of volatility between individual years.

10.68 Other key employment sectors in Manchester as of 2021 include professional, scientific & technical (accommodating 59,000 jobs, or 14% of employment); education (52,000, 12%); business administration and support services (47,000, 11%); education (40,000, 9%) and accommodation & food services (36,000, 9%).

10.69 The delivery of new employment and economic growth opportunities are local and national policy priorities as essential components of economic recovery following the Covid-19 pandemic. The Levelling Up White Paper[25] similarly outlines that a key objective of the Government over the period to 2030 is to "…*boost productivity, pay, jobs and living standards by growing the private sector*" and to close the gap in economic opportunities and outcomes between those top performing and other areas.

10.70 MCC's 'Powering Recovery: Manchester's Recovery and Investment Plan'[26] sets out how the Council will seek to ensure that the city emerges reinvigorated from the Covid-19 pandemic and rises to other challenges, such as the uncertainties of Brexit. The Plan sets out the leading role that Manchester can play in the levelling-up agenda through building on investments in economic assets and infrastructure and accelerating growth in high-productivity sectors. Co-operation between public bodies, business, academia and other partners is identified as key to tackling the Council's priorities, which focus on people, assets, innovation, and investment.

10.71 The need for new jobs and a boost to pay and living standards remain of vital importance in the current context of inflationary pressures and the cost-of-living crisis, with ONS research indicating that 94% of adults in Great Britain reported an increase in their living costs over the year to February 2023[27]. Indeed, it is noted that the high level of inflation has led to 'real wages' (i.e. wages adjusted to take account of inflation) falling in recent month; ONS data indicates that real wages were 3.0% lower in February 2023 compared with December 2022[28].

PBSA

10.72 Manchester's Core Strategy[29] states that students account for a significant proportion of the city's population, and also that much of the retail and leisure offer in areas of the city with high student populations has evolved to primarily meet student needs.

10.73 The Core Strategy aims to 'protect the sustainability and amenity of neighbourhoods' in relation to the occupation of Houses in Multiple Occupation (HMOs) as student households. Whilst family households are considered essential for sustainable communities, given that they support a range of local facilities such as schools and tend to have a greater commitment to the neighbourhood as they live there longer than other types of households, the Core Strategy reports that areas with a high concentration of student-occupied HMOs can experience increased prevalence of issues such as anti-social behaviour.

10.74 PBSA is therefore identified as key towards meeting demand for student accommodation in Manchester, whilst potentially also freeing up family housing and broadening housing choice for residents of all types in the city.

10.75 Knight Frank's Demand Study prepared for the Proposed Scheme[30] (**Appendix 10.1**) reports on the existing and pipeline supply of PBSA in Manchester, the demand pool and student to bedspace ratios. The Demand Study identifies 29,941 PBSA bedspaces in Manchester (including 16,058 within one mile of the Site of the Proposed Scheme), which accounts for just 31% of the total demand pool of c.99,100 full-time students across Manchester's three largest Higher Education Providers (HEP)[h]. Furthermore, in relation to the supply/demand imbalance in Manchester, the Demand Study cites recent analysis by CBRE, which identified a citywide shortage of 23,186 PBSA bedspaces.

10.76 It is additionally noted that the number of full-time students at the three HEPs increased by 17% between 2017/18 and 2021/22, and that growth in the number of students living within one mile of the Site of the Proposed Scheme has been higher still, at 35%.

10.77 The Demand Study also sets out that Manchester has recorded a relatively muted increase in PBSA supply since the start of 2012, having delivered 7,282 beds during this period (equivalent to 662 bed per annum). As such, delivery of student beds has fallen considerably short of the 23,576 full-time students added to the student population since the 2012/13 academic year.

10.78 The Demand Study identifies around 2,011 bedspaces in the pipeline (planning consented with none yet under construction), noting that delivery of these bedspaces in full would raise the proportion of the total demand pool with access to PBSA from 31% (as outline above) up to 33%.

10.79 The Demand Study subsequently calculates the student to bed ratio in Manchester; analysis indicates that Manchester provides a ratio of 3.2 students per bed space (or, alternatively expressed, 0.31 bedspaces per student). Within a one-mile radius of the Site of the Proposed Scheme, the ratio of students to bedspaces is higher still, at 4.6[i].

10.80 The Demand Study concludes that "*it is clear that Manchester has a severe supply/demand imbalance in PBSA stock*".

10.81 The Demand Study also reports that operator evidence suggests that PBSA provision in Manchester is widely perceived as older and of lower quality than that of competitor markets, and this sentiment is largely recognised by MCC. A person's ability or otherwise to access housing which is of good quality, is affordable, and which meets their needs can have a significant impact on their physical and mental health. As outlined by guidance from the UK Government's Office for Health Improvement and Disparities (published under the body's former title of Public Health England [PHE])[31], there are risks to an individual's health associated with living in:

- A cold, damp, or otherwise hazardous home (an unhealthy home);

[h] HEPs included in the analysis are: University of Manchester, Manchester Metropolitan University and the University of Salford.

[i] Analysis includes the two HEPs within one mile of the Site, the University of Manchester, Manchester Metropolitan University.

- A home that does not meet the household's needs due to risks such as being overcrowded or inaccessible to a disabled or older person (an unsuitable home); and

- A home that does not provide a sense of safety and security including precarious living circumstances and/or homelessness (an unstable home).

10.82 Poor housing conditions have all been shown to be associated with physical illnesses including eczema, hypothermia and heart disease, with respiratory health also having been shown to be particularly affected. Poor physical conditions can also negatively impact on mental health, due to the stress caused by living in insecure, overcrowded, cold, polluted or damp conditions[32]. As such, 'Housing Quality and Design' is included as a key determinant of health by the HUDU Rapid HIA Tool[33]. Research commissioned by Shelter[34] reported 20% of English adults surveyed stated that a housing issue had negatively impacted upon their mental health in the last 5 years.

Future Baseline

Employment

10.83 It is anticipated that the Proposed Scheme will be delivered over a 3-year period between 2024 (the commencement of site preparation) and 2027 (the completion of all works on Site and it becoming fully operational). The below therefore summarises Experian's latest employment forecasts[35] (at time of writing) for the future baseline at the commencement of the construction stage (including demolition) and the anticipated date of full completion/operation.

10.84 Between 2023 (baseline) and 2024 (commencement of construction):

- Total FTE employment is forecast to decrease very slightly in both Manchester and across the GMCA area (by 0.1% in both geographies); and

- Construction FTE employment is also forecast to decrease very slightly in both Manchester and across the GMCA area (by 0.9% and 0.1% in the respective geographies).

10.85 Between 2024 (commencement of construction) and 2027 (construction completion and commencement of operation):

- Total FTE employment is forecast to grow slightly in both Manchester and across the GMCA area (by 0.3% and 0.2% in the respective geographies); and

- Construction FTE employment is forecast to further decrease in Manchester and across the GMCA area (by a 1.9% and 1.1% in the respective geographies).

PBSA

10.86 The PBSA Demand Study (**Appendix 10.1**) sets out the limited pipeline of approved and submitted applications for PBSA within one mile of the Proposed Scheme (three schemes with planning granted, but where construction has not yet commenced, and a further three schemes with planning submitted). The Study affirms "*the seriousness of the demand and supply imbalance",* stating that "*it is highly unlikely that supply will keep pace with demand*", and that "*considering the expected growth in student numbers in the area and wider again in the UK market as a whole, the student housing supply versus demand imbalance is therefore*

expected to increase and as a result will continue to place more unwanted pressure on the local private rented market".

Primary and Tertiary Mitigation

Construction Stage

10.87 The following tertiary mitigation which has been evaluated as part of the assessment of construction stage assessment is outlined below:

- UK legislation and guidance issued by the Health and Safety Executive (including the Health and Safety at Work Act 1974 and the Construction (Design and Management) Regulations 2015[36] will be adhered to;
- The Site will be kept secure in accordance with the Construction (Design and Management) Regulations 2015[37] to minimise crime and anti-social behaviour;
- Site securement will be achieved through a combination of secure fencing, barriers or hoarding (depending on the exact requirements and proximity to specific works) at the outset of the enabling stage, with no public access; and
- All measures will accord with best practice in accordance with the Considerate Contractors Scheme and Site handbook for the construction of SUDS (CIRIA C698)[38].

Operational Stage

10.88 The following primary mitigation which has been evaluated as part of the operational stage assessment is outlined below.

- A number of design and other site security measures will be implemented to ensure safety for residents and the wider public, including:
  - The Proposed Scheme will be informed by 'Secured by Design' principals, incorporating design elements and site management measures to help 'design out' crime, to help people feel secure, minimising the potential for crime and anti-social behaviour;
  - Whilst the majority of the Site has been purposely developed to be publicly accessible, there will be areas where controlled access is required (i.e. entry to the accommodation blocks), and this will be controlled through means of managed control such as intercom, fob, bollards, or a keypad locking system (to be agreed); and
  - The Proposed Scheme will have on-site security staff, with staff present 24 hours a day.

Assessment of Effects, Secondary Mitigation and Residual Effects

Construction Stage

Employment Generated during the Construction Stage

10.89 Based on anticipated construction costs[j], and the average turnover per employee per annum in the construction sector in the North West[39], it is estimated that the Proposed Scheme has the capacity to support approximately 360 'person-years' of direct employment within the construction sector. Over the course of a build period of approximately 3 years, this equates to an average of 120 full-time equivalent (FTE) on and off-site construction jobs during the construction stage.

10.90 Of the new construction jobs created, not all will be additional to the local and wider impact area. A proportion of jobs will be taken by those living outside of the local impact area of Manchester or the wider GMCA area (referred to as 'leakage') and a proportion of jobs will be taken by those who, in the absence of the Proposed Scheme, could otherwise be working on alternative construction projects locally (referred to as 'displacement'). After assumptions regarding leakage and displacement have been applied, it is estimated that 75 FTE jobs will be directly supported across the wider impact area, of which 35 FTE jobs are likely to be taken by those living in the local impact area.

10.91 The beneficial economic impacts of the Proposed Scheme will extend beyond construction employment to include the generation of indirect benefits for the local economy. Investment in the Proposed Scheme will generate considerable expenditure on construction materials, goods and other services which will be purchased from a wide range of suppliers. This expenditure has far-ranging benefits both locally and further afield as it filters down the supply chain, and via the induced impacts of employment, through onward expenditure.

10.92 The result is that the initial investment in the Proposed Scheme is amplified in an economic 'multiplier' effect with linked benefits in terms of generated expenditure spent locally on goods and services. This will bring indirect employment and financial benefits for local individuals and firms involved in the skilled construction trades and associated professions. It could also help to sustain employment within this sector across the local and wider economy.

10.93 The construction of the Proposed Scheme could be expected to support a further 40 FTE jobs within the wider impact area via indirect and induced effects, including contracts within the supply chain, salaries and onward expenditure, inclusive of 10 FTE jobs in the local impact area.

10.94 The net additional impact describes the total economic impact of both direct and indirect effects and is the sum of the direct and indirect employment impacts. The assessment finds that a total of 115 net additional FTE positions could be generated each year across the wider impact area during the construction period, inclusive of 45 jobs in the local impact area (as summarised in **Table 10.5**).

[j] Construction cost estimated based on average prices/sqm sourced from BCIS.

Table 10.5: Construction Stage Employment

Employment Generated	Local Impact Area	Wider Impact Area
Person-years of Employment	360	
Construction Period (years)	3	
Gross FTE Employment	120	
Direct Net Additional FTE Employment	35	75
Indirect/Induced Net Additional FTE Employment	10	40
Total Net Additional FTE Employment	**45**	**115**

Source: Turley Economics 2023

10.95 The sensitivity of the local labour force is considered to be high, given the high numbers of people claiming JSA and other unemployment benefits who are seeking employment in the construction sector. This also reflects the heightened sensitivity in the wake of the pandemic and the local, regional and national priority to deliver jobs as part of economic recovery. Supporting employment opportunities is also likely to have heightened importance in the context of inflationary pressures and the growing cost-of-living crisis.

10.96 As of 2021, the construction sector supported 4,000 more jobs locally than in 2015 (equating to an average increase of 650 employees per year); the 120 gross direct construction jobs generated by the Proposed Scheme will therefore contribute to maintaining buoyancy in the sector going forwards, equating to 18% of one-year's employment growth in the sector. It is, albeit, also acknowledged that the 75 direct net additional jobs to be supported in construction equates to a small proportion (0.7%) of the total 11,000 jobs in the sector in Manchester. Therefore, the magnitude of change is considered to be small, relative to baseline indicators relating to total local construction employment numbers and recent change in construction employment. The concluded magnitude of change is also reflective of the sector's proportionate contribution to total employment locally (which is in lower than the GMCA and national rates) and the temporary, 3-year (therefore medium-term) period over which the additional employment will be generated.

10.97 Therefore, there is likely to be a direct and indirect, temporary, medium-term, beneficial effect which is considered to be **minor**.

Secondary Mitigation or Enhancement

10.98 No secondary mitigation or enhancement is required/has been identified.

Residual Effect

10.99 In the absence of secondary mitigation the residual effect for the local labour force is that same as that reported in the pre-mitigation scenario.

Significance

10.100 This effect is considered to be **Not Significant**.

Operational Stage

Provision of PBSA

10.101 Informed by data within the PBSA Demand Study[40] prepared for the Proposed Scheme (**Appendix 10.1**), it is calculated that the delivery of 577 new PBSA bedspaces would represent a 1.9% increase on the total number of PBSA bedspaces across Manchester as a whole, and a 3.6% increase on the total 16,058 PBSA bedspaces currently available within one mile of the Proposed Scheme. In the context of past delivery, the Proposed Scheme would represent 7.9% of total PBSA delivery since 2012 (7,282 bedspaces), and would account for just under (87% of) one year's worth of total new supply (662 bedspaces) delivered during this period.

10.102 Over and above this quantitative increase, the new provision will also contribute to a qualitative uplift in terms of the standard of student accommodation provision in Manchester. Whilst analysis (**Appendix 10.1**) highlights that PBSA provision in Manchester is widely perceived as older and of lower quality than that of competitor markets, the Proposed Scheme's new provision will ensure that 577 students are accommodated within housing of high environmental and accessibility standards, which – as set out in the baseline section – are key aspects contributing to a healthy home as defined by the NHS HUDU[41].

10.103 The Proposed Scheme's location and wider site design also mean that it will be well-placed to deliver health and wellbeing benefits to residents, with a number of further design measures contributing towards social cohesion (identified by the NHS HUDU[42] as a key determinant of physical and mental health) and creating a healthy and safe environment, delivering a notable qualitative uplift in resident wellbeing. The Proposed Scheme's on-site resident amenity provision includes a cinema room, study spaces, a games area and lounges, providing opportunities for health and wellbeing activities and social interaction between residents. Similarly the provision of an on-site gym will facilitate residents to pursue active and healthy lifestyles, another key determinant of physical and mental health.

10.104 Whilst the majority of the Site has been purposely developed to be publicly accessible, a range of design and other site security measures – as set out previously in relation to operational stage primary mitigation earlier in the chapter – will be implemented to ensure safety for residents and the wider public; this is a relevant consideration, given that 'crime reduction and community safety' is likewise identified by the NHS HUDU[43] as a key determinant of human physical and mental health.

10.105 The sensitivity of the provision of PBSA is considered to be high, given the acknowledged supply deficit for this kind of accommodation in Manchester. The magnitude of change is considered to be medium, given that the delivery of 577 PBSA bedspaces would equate to almost one year's worth of historic delivery, would be able to accommodate an equivalent number of students currently unable to access PBSA and would provide a permanent and long-term uplift to the provision of high-quality student accommodation options in Manchester. Therefore, there is a direct, permanent, long-term, beneficial effect which is considered to be **moderate**.

Secondary Mitigation or Enhancement

10.106 No secondary mitigation or enhancement is required/has been identified.

Residual Effect

10.107 In the absence of secondary mitigation the residual effect for the local labour force is that same as that reported in the pre-mitigation scenario.

Significance

10.108 This effect is considered to be **Significant**.

Limitations and Assumptions

10.109 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

- The assessment relies on secondary survey data such as the ONS's Census[44], APS[45] and BRES[46]. Each data source has methodological limitations related to data collection, and surveys also only represent the socio-economic context at a specific point in time[k].
- The future employment baseline is based on employment forecast data produced by Experian[47]. There are known uncertainties related to economic forecasting, especially in the current context of ongoing and developing uncertainty caused by factors (many interlinked) such as the Covid-19 pandemic, Brexit, the war in Ukraine, inflationary pressures and the cost-of-living crisis. However, where such forecasts are presented, they are considered appropriate to inform conclusions about how the economy and labour market might change in the future.

Summary

10.110 **Table 10.6** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

10.111 The table only provides a summary of the residual effects identified within the assessment and details of all primary, secondary and tertiary mitigation that has been taken into account is set out in detail within the Chapter and summarised within Environmental Management Plan included within **Volume 3: Environmental Management Plan**.

Table 10.6: Summary of Residual and Significant Effects

Effect	Receptor	Residual Effect	Is the Effect Significant?
Construction Stage			
Employment generated during the construction stage	Local labour force	Minor beneficial	NO
Operational Stage			
Provision of PBSA	Students requiring accommodation	Moderate beneficial	YES

[k] Where Census 2011 data has been used, it should be noted that relevant data collected by the ONS for the 2021 Census has not yet been published publicly at the time writing.

Reference

[1] Secretary of State (2015) Construction (Design and Management) Regulations 2015.
[2] Homes and Communities Agency (2014) Additionality Guide (4th Edition)
[3] Homes and Communities Agency (2015) Employment Density Guide (3rd Edition)
[4] NHS Healthy Urban Development Unit (HUDU) (2019) Rapid Health Impact Assessment Toolkit (4th Edition)
[5] IEMA (2017) Health in Environmental Impact Assessment: A Primer for a Proportionate Approach
[6] ONS (2012) 2011 Census
[7] ONS (2012) 2011 Census
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11. Noise and Vibration

Introduction

11.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to noise and vibration.

11.2 The Chapter describes the technical consultation that has been undertaken during the EIA, the scope of the assessment and assessment methodology, and a summary of the baseline information that has informed the assessment.

11.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details).

11.4 This Chapter, and its associated **Figure 11.1** and **Appendix 11.1**, is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**).

11.5 In addition, this Chapter should be read in conjunction with **Chapter 15: Assessment of Cumulative Effects**.

Summary of Consultation

11.6 No technical consultation has been undertaken to inform the assessment within this Chapter.

Scope of the Assessment

Effects Not Considered to be Significant

11.7 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this.

Vibration from the Proposed Scheme during operation

11.8 There will be no vibration sources associated with the operation of the Proposed Scheme, apart from mechanical plant on the building.

11.9 Any potential vibration from any new mechanical plant would only potentially impact on the residential properties associated with the Proposed Scheme. However, all plant items will be typical for such a scheme and installed on appropriate anti-vibration mounts installed as primary mitigation measures. These will be completely basic and standard mitigation measures.

11.10 As a result of the mitigation measures, any vibration will comply with the limits stated within Table 1 of British Standard 64721: 2008; '*Guide to evaluation of human exposure to vibration*

12. Wind Microclimate

Introduction

12.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to wind microclimate.

12.2 The Chapter describes the technical consultation that has been undertaken during the EIA, the scope of the assessment and assessment methodology, and a summary of the baseline information that has informed the assessment.

12.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details).

12.4 This Chapter, and its associated **Figures 12.1** to **12.2** and **Appendix 12.1**, is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**).

12.5 In addition, this Chapter should be read in conjunction with **Chapter 15: Assessment of Cumulative Effects**.

Summary of Consultation

12.6 No consultation has been undertaken to inform the Proposed Scheme and EIA. The consideration of likely significant effects and the methodology for the assessment is based on best industry practice.

Scope of the Assessment

Effects Not Considered to be Significant

12.7 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES.

Wind microclimate effects resulting from construction activities

12.8 With the southern part of the existing building façades retained, and parts of the façade along Gloucester Street also retained as a boundary wall, the demolition of the remaining parts of the existing building on the Site is not expected to significantly increase the exposure of sensitive surrounding receptors to prevailing winds from the south and southwest.

12.9 Potential effects on the local wind microclimate during construction are expected to gradually transition from the existing Site wind microclimate to those of the completed Scheme and would not be specific to construction activities. Nonetheless, as the built form (specifically the massing)

of the Proposed Scheme gradually occurs there will be instances where accelerated wind conditions may occur, albeit these changes will be gradual over the course of the construction stage. As the massing nears completion, the level of effect is likely to be similar to that being considered / assessed at the operational stage. However, in instances, mitigation measures required for appropriate wind conditions at the operational stage may or may not be implemented depending on the nature of the mitigation and as such, wind levels may be greater than that determined at the operational stage. Nonetheless, given that the Site will still be within the construction stage, the receptors within the Site (i.e. construction workers) are generally considered to be of a lower sensitivity (and subject to greater health and safety working practices than the general public during the operational stage) should adverse effects be greater than that at operation, the resulting level of effect would less than reported at the operational stage. The completed Scheme therefore represents a worst-case scenario in terms of both wind effects and sensitivity of receptors.

12.10 Therefore, potential wind microclimate effects on construction workers and users of the surrounding area resulting from construction works is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Effects Considered Likely to be Significant

12.11 **Table 12.1** outlines the effects that were considered likely to be significant and are reported within this Chapter.

Table 12.1: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Stage
Pedestrian Safety	Pedestrians and users of Proposed Scheme and surrounding area	Operation
Pedestrian Comfort – Proposed Scheme	Pedestrians and users of Proposed Scheme (thoroughfares, building entrances, amenity spaces)	Operation
Pedestrian Comfort – Surrounding Area	Pedestrians and users of surrounding area (thoroughfares, building entrances, amenity spaces)	Operation

Assessment Methodology

Legislative Framework, Policy and Guidance

12.12 The following legislation and policy has informed the assessment of effects within this Chapter:

- Policy EN2 Tall Buildings within Manchester's Local Development Framework[1], Core Strategy Development Plan Document.

12.13 The following guidance has informed the assessment of effects within this Chapter:

- The National Design Guide[2], which accompanies the NPPF guidance and identifies wind conditions as a specific design consideration for tall building proposals;
- Historic England Advice Note 4: Tall Buildings[3], which also identifies wind conditions as a specific design consideration for tall building proposals;
- The Guide to Development in Manchester[4], Supplementary Planning Document and Planning Guidance Section 2. Design and Section 12. The City Centre;
- BS EN 1991-1-4:2005[5] (the current UK and European Standard for wind actions on structures), which focuses on wind loading issues and does not address environmental wind flows, but does outline technical requirements for modelling wind effects; and
- The Lawson criteria[6] for pedestrian comfort and safety, which are recognised by Local Planning Authorities as suitable benchmark criteria for assessing the impact of environmental wind on pedestrian spaces and the consequent suitability of these spaces for planned uses.

Defining the Study Area

12.14 The study area was determined by means of professional judgement. The wind tunnel model covers an area of 360m from the centre of the Site. The spatial extent of potential accelerated winds emanating from the Proposed Scheme has then been considered, taking account of the height, form, orientation and surrounding obstructions. New and existing sensitive receptors have then been reviewed within this extent, resulting in a study area extending approximately 50 - 80m from the Site boundary.

Background Studies to Inform the ES / Establish the Baseline

12.15 **Table 12.2** summarises the background studies to establish the baseline wind conditions at the Site.

Table 12.2: Study / Survey / Analysis / Evaluation

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Wind tunnel testing	Wind tunnel testing was undertaken to reproduce the wind flows at the Site and on surrounding land to establish the pedestrian level wind environment in relation to comfort and safety. Details of the wind tunnel testing are provided in **Appendix 12.1**.	November 2023

Assessment Process

12.16 The detailed assessments of baseline and operational conditions (upon completion of the Proposed Scheme) combine the following elements to determine the probability of local wind speeds exceeding comfort and safety thresholds for a range of common activities, based on the Lawson criteria for pedestrian comfort and safety:

- Measured pedestrian level wind speeds at key areas in and around the Site, from model-scale boundary layer wind tunnel testing; and

- Long-term wind frequency statistics transposed from the nearest suitable weather centre to apply directly at the Site.

12.17 Details of the wind tunnel testing are provided in **Appendix 12.1**. The tests were conducted in RWDI Anemos Ltd.'s boundary layer wind tunnel facility, where an atmospheric boundary layer representative of that at the Site was simulated. The wind tunnel model was constructed at a scale of 1:300 and covers a full-scale extent of 360m from the centre of the Site. This is a standard model scale and extent, though taller surrounding buildings were also modelled on an outer ring, up to 500m from the centre of the Site. The model therefore reaches beyond the extent of potential significant effects of the Proposed Scheme and, in conjunction with the atmospheric boundary layer simulation, is sufficient to model the wind flows in and around the Site.

12.18 The Proposed Scheme was modelled based on drawing information provided by the project design team. The surrounding existing and consented future buildings were represented to a sufficient level of detail to reproduce the wind flows at the Site and on surrounding land. Larger existing and proposed deciduous trees were modelled in winter, or bare, form to represent the worst-case season.

12.19 Wind tunnel tests were carried out for the following configurations:

- Configuration 1: Existing Site (baseline) with existing surrounding buildings and vegetation;

- Configuration 2: The Proposed Scheme (including the landscaping proposals) with existing surrounding buildings and vegetation; and

- Configuration 3: The Proposed Scheme (including the landscaping proposals) with existing and future (cumulative) surrounding buildings and existing vegetation.

12.20 For surrounding developments, the list of committed developments, as set out in **Chapter 15**, were reviewed using publicly available information and professional experience to determine their relevance to the wind microclimate assessment. In line with standard practice, recently completed developments, or developments currently under construction with significant above-ground construction progressed, were included within the baseline and existing surrounding context (Configurations 1 and 2), in their completed form. This included the following schemes:

- Approved Project 18 Plot 9A First Street (Ref 132600/FO/2021)

- Approved Project 31 Viadux (Ref 115871/FO/2017 & 126868/JO/2020)

- Approved Project 32 Plot 11 First Street (Ref 125573/FO/2019)

- Approved Project 34 70 Great Bridgewater Street (Ref 129081/FO/2021)

- Approved Project 41 John Dalton West (Ref 125799/FO/2019)

12.21 The committed future developments modelled for the cumulative effects assessment (Configuration 3) in **Chapter 15** comprised the following surrounding schemes:

- Approved Project 2 One City Road (Ref 128002/FO/2020)
- Approved Project 3 2-4 Whitworth Street West (Ref 126308/FO/2020)
- Approved Project 6 Plot 10 First Street (Ref 136043/FO/2023)
- Approved Project 8 Apex Tower (Ref 133172/FO/2022)
- Approved Project 11 10-12 Whitworth St West (Ref 111003/FO/2016/C1)
- Approved Project 13 Plot G Great Jackson Street (Ref 129273/FO/2021) – east tower only
- Approved Project 14 Plot F Great Jackson Street (Ref 132199/FO/2021) – east tower only
- Approved Project 20 Great Marlborough St (Ref 121252/FO/2018)
- Approved Project 24 One Medlock St (Ref 135419/FO/2022)
- Approved Project 25 Plot 10A First Street (Ref 136170/FO/2023)
- Approved Project 26 Great Northern (Ref 135565/FO/2022) – east towers only
- Approved Project 33 35 Whitworth Street West (Ref 128804/FO/2020)

12.22 Further committed developments in the area were considered too distant from the Site to have any potential significant cumulative effects.

12.23 To inform the testing, an initial experience-based review was carried out to identify areas of potential accelerated winds in and around the Site and to identify the potential extent of likely significant wind effects within the surrounding area. Existing and proposed pedestrian activities were also reviewed to identify areas of increased sensitivity to wind effects, such as recreational areas and building entrances. Wind speed measurements at key identified locations were then made using probes capable of measuring fluctuating pressure differences that are calibrated against wind speed. A system of probes running simultaneously were used to obtain results from up to 93 locations. Details of the measurement locations and the assumed uses are included in **Appendix 12.1**.

12.24 Measurements were taken for a full range of wind directions in increments of 22.5°. This is commonly applied and is considered sufficient to provide a robust and appropriate assessment, whilst helping optimise the testing efficiencies. To fully meet the requirements of the Lawson criteria, recordings were taken for a sufficient length of time to determine the mean and gust wind speeds.

12.25 Long-term wind frequency statistics from Manchester Airport were sourced for the period 2001 to 2015. This weather station was selected as providing the most representative data for the region and is considered suitable to provide a statistically robust climate model for the Site. Climate data for subsequent years was reviewed but was considered to show an uncharacteristic reduction in recorded wind speeds for some wind directions, suggesting potential interference effects from a surrounding structure (either from a new structure or relocation of the anemometer). As a precaution, the later, calmer, data was therefore omitted. The retained data was corrected to apply directly at the Site, taking account of differences in upwind terrain and altitude between the weather centre and the Site based on the widely accepted Deaves and Harris log law wind model of the atmospheric boundary layer and BS EN 1991-1-4:2005.

12.26 For each location, the measured wind speeds from the wind tunnel tests were combined with the long-term wind frequency statistics to assess the wind environment in terms of the exceedance of threshold wind speeds for pedestrian safety and perceived comfort levels during standard pedestrian activities.

12.27 Details of the Lawson criteria for pedestrian safety, or distress, are presented in **Table 12.3**. The criteria are based on the exceedance of the threshold wind speeds, considering mean-hourly and gust-equivalent-mean values, occurring once per annum. These thresholds represent wind speeds with the potential to destabilise the less able or more susceptible members of the public (including elderly, cyclists and children) and able-bodied persons.

Table 12.3: Lawson Criteria for Pedestrian Safety, or Distress

Threshold mean-hourly wind speed exceeded once a year	Safety Rating		Qualifying Comments
15 m/s	S2	Unsuitable for general public	Less able-bodied persons and cyclists find conditions physically difficult.
20 m/s	S1	Unsuitable for able-bodied	Able-bodied persons find conditions difficult. Physically impossible to remain standing during gusts.

12.28 Details of the Lawson criteria for pedestrian comfort are presented in **Table 12.4** and are based on the exceedance of threshold wind speeds, considering mean-hourly and gust-equivalent-mean values, occurring less than 5% of the time. The thresholds represent upper bounds of acceptability for a range of common activities. The value of 5% has been established as giving a reasonable allowance for extreme and relatively infrequent winds that are acceptable within each category.

Table 12.4: Lawson Criteria for Pedestrian Comfort

Threshold Mean-hourly Wind Speed Exceeded < 5% of the Time	Comfort Rating		Qualifying Comments
4 m/s	C4	Long-term Sitting	Reading a newspaper and eating and drinking.
6 m/s	C3	Standing or short-term Sitting	Appropriate for bus stops, window shopping and building entrances.
8 m/s	C2	Walking or Strolling	General areas of walking and sightseeing.
10 m/s	C1	Business walking	Local areas around tall buildings where people are not likely to linger.

12.29 The pedestrian level wind environment assessment has been summarised in terms of suitability of wind conditions for various activities, based on the above criteria. The assessment took full account of seasonal variations in wind conditions and pedestrian activities. Thus, conditions for recreational activities focused on summer but also considered spring and autumn. Recreational activities did not consider winter comfort ratings as it is anticipated that users would not demand suitable conditions 95% of the time in winter but would instead be satisfied to use the amenity spaces on occasions when conditions, including precipitation and temperature, permit. Conditions for pedestrian thoroughfare, access or waiting (for example at bus stops) considered all seasons, with winter being predominantly the critical season due to generally higher wind speeds in the winter months.

12.30 The activities considered, and their relation to the comfort criteria detailed above, are shown in **Table 12.5** in order of decreasing sensitivity to wind speeds. Conditions considered suitable for the more sensitive activities would also be suitable for the subsequent, less sensitive uses.

Table 12.5: Suitability Assessment

Suitability		Target Lawson comfort and safety criteria for specified seasons
Outdoor seating	For long periods of sitting, such as for an outdoor café or picnic area.	'Long-term sitting' (C4) in at least summer.
Entrances, waiting areas	For pedestrian ingress / egress at entrances, or short periods of sitting or standing such as at a bus stop, taxi rank, meeting point, window shopping, etc.	'Standing or short-term sitting' (C3) in all seasons.
General leisure	For leisure uses excluding long	'Standing or short-term sitting' (C3)

Suitability		Target Lawson comfort and safety criteria for specified seasons
(excluding seating areas)	periods of outdoor sitting, such as active leisure, general park spaces, children's play area, etc.	from spring to autumn.
Thoroughfare	For pedestrian access to, and passage through, the site and surrounding area.	'Business walking' / 'Walking or strolling' (C1/C2) in all seasons - 'Walking or strolling' (C2) desired but 'Business walking' (C1) may be acceptable in some areas.
Unsuitable	Unsuitable for all activities.	Exceeds comfort criterion for 'Business walking' (C1) or safety criteria (S1/S2).

Reporting of the Environmental Effect and Significance Criteria

12.31 The assessment of likely significant environmental effects as a result of the Proposed Scheme has taken into account the operational stage. The following sections define the approach adopted within the assessment for the determination of sensitivity (or value/importance), magnitude of change (or impact), the level of effect and significance.

Determining Sensitivity of Receptor

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

12.33 Although pedestrian perception, and thus sensitivity, differs with the activity being undertaken, this is directly considered within the assessment criteria. The assessment criteria apply upper bounds of acceptability, and so exceedances have the potential to fundamentally alter the character of a space. It is therefore appropriate to consider the sensitivity of all receptors as **high**.

Determining the Magnitude of Change

12.34 The magnitude of change has been considered as the change experienced from the current baseline conditions at the sensitive receptor and has been considered on a scale of **large**, **medium**, **small** or **negligible**.

12.35 For the purpose of the assessment a change that affects suitability in terms of safety is generally deemed to be of large magnitude, while a change that affects suitability in terms of comfort is deemed to be of either medium or small magnitude.

Determining the Level of Effect

12.36 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. **Table 12.6** has been a tool which has assisted with this process.

12.37 Whilst **Table 12.6** provides ranges, the level of effect is confirmed as a single level and not a

range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

Table 12.6: Matrix to Support Determining the Level of Effect

Magnitude of Change	Sensitivity (or value / importance)			
	High	Medium	Low	Negligible
Large	Major	Moderate to Major	Minor to Moderate	Negligible
Medium	Moderate to Major	Moderate	Minor	Negligible
Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

12.38 The following terms have been used to define the level of the effects identified and these can be 'beneficial' or 'adverse':

- **Major effect**: effects on pedestrian safety, where conditions change from suitable to unsuitable (adverse effect) or from unsuitable to suitable (beneficial effect), are generally considered major;
- **Moderate effect**:
  - effects on pedestrian safety, where the effect is marginal relative to the safety criteria, may be considered moderate. If a moderate significance is applied, details to explain and justify this are included in the discussion;
  - effects on pedestrian comfort where conditions change from suitable to unsuitable (adverse effect) or from unsuitable to suitable (beneficial effect) for current or planned activities are deemed moderate;
- **Minor effect**: where conditions change from marginal (or tolerable) to suitable or unsuitable for current or planned activities the effect is deemed minor. Similarly, a change from suitable or unsuitable to marginal / tolerable is also deemed minor; and
- **Negligible**: any effect that does not alter the suitability of wind conditions with respect to current or planned activities is considered negligible.

12.39 As an example of the above levels of effect, where conditions at a building frontage with no current entrances are suitable only for strolling and a proposed development introduced an entrance in this area, wind conditions would need to improve to be suitable for pedestrian ingress / egress for the effect to be negligible. If wind conditions became marginally windy for an

entrance, the impact would be minor adverse even if wind speeds were lower, due to the introduction of a more sensitive activity.

12.40 Where existing conditions are calmer than required for existing activities, an increase in wind speeds could be accommodated without the effect being significant, provided conditions remain suitable for pedestrian activities.

12.41 The duration of the effect has been assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

Determining Significance

12.42 For each effect, a statement has been made as to whether the level of effect is '**Significant**' or '**Not Significant**'. This determination has been based on professional judgement and/or relevant guidance/legislation where applicable.

12.43 Significance has only been concluded for residual effects (i.e. following the identification of secondary mitigation).

Baseline Conditions

12.44 The wind climate expected at the Site is summarised in **Figure 12.1** in terms of the annual wind speed and direction probability distributions at a reference height of 118m, representing the approximate maximum height of the Proposed Scheme, above local ground level. Seasonal wind speed and direction probability distributions are presented in **Appendix 12.1**.

12.45 Based on the wind climate statistics, winds from the southerly quadrant are prevalent. Light to moderate winds from the south and south-south-east are most common, whilst stronger winds more frequently blow from the south-south-west. Winds from the west-south-west and west also occur frequently, and extreme wind speeds (relevant to pedestrian safety) are most likely to blow from this direction. Northerly winds are generally light and rare, though cold north-easterly winds are common during spring. Wind speeds are generally higher during winter and lower during summer.

12.46 The existing Site is occupied by a mid-rise structure which is partially exposed to prevailing southerly and south-westerly winds but is largely sheltered from winds approaching from other directions. The resulting pedestrian level wind environment in the area around the existing Site is presented in terms of the Lawson comfort and safety criteria in **Appendix 12.1**.

12.47 The potential for accelerated pedestrian level winds is mainly limited to channelling of south-westerly, westerly and north-easterly winds along Cambridge Street, between the existing Site and the Cambridge Street development to the east. This effect is limited by the modest scale of the buildings, and resulting conditions are suitable for at least short periods of sitting or standing. Conditions on thoroughfares around the Site are therefore considered suitable for pedestrian passage.

12.48 Entrances to the existing and surrounding buildings are expected to enjoy suitable conditions for

pedestrian ingress / egress. Active frontages are also considered suitable for at least short periods of standing, such as for window shopping.

12.49 Outdoor seating areas in the northeast area of the First Street North development enjoy suitable conditions for recreational activities including long periods of outdoor sitting, such as for outdoor café seating. The Cambridge Street development's riverside landscaped space enjoys similar conditions.

12.50 On this basis, current wind conditions in and around the Site are considered suitable for existing pedestrian activities.

Future Baseline

12.51 Effects of the future baseline were not directly assessed by a wind tunnel test. Instead, professional judgement has been used to estimate the effects on the local wind microclimate.

12.52 Potential future changes in wind patterns due to climate change are expected to be minor, whilst the introduction of the future surrounding developments is generally expected to increase the shelter in and around the Site from approaching winds. The potential future baseline conditions are not therefore expected to materially differ from the existing conditions described above.

Primary and Tertiary Mitigation

Operational Stage

12.53 The primary and tertiary mitigation which has been evaluated as part of the operational stage assessment is outlined below.

- Semi-mature trees, of around 6 to 8m height and comprising a deciduous species with substantial retained solidity in winter (i.e. significant canopies with numerous branches), distributed across the Public Square within the Site;
- A 1.1m high solid wall extending from the northwest corner of the proposed building, along the Site boundary, towards the neighbouring First Street North development; and
- A 1.1m high glazed balustrade around the perimeter of the ground floor terrace overhanging the river.

12.54 These features, as modelled, are illustrated in **Appendix 12.1**.

Assessment of Effects, Secondary Mitigation and Residual Effects

Operational Stage

12.55 Upon completion, the Proposed Scheme will represent a substantial structure. However, the tower element is orientated to present a relatively narrow obstruction to prevailing southerly winds. In addition, the retained lower element creates a substantial podium, which largely prevents downdraughts from the tower's southerly elevation from reaching pedestrian level.

12.56 The Proposed Scheme's tower presents a wider façade to the stronger west-south-westerly winds, but the Site is substantially sheltered from these winds by the existing First Street North development, at least at low-to-mid levels. In addition, the area along the base of the Proposed Scheme's west elevation is occupied by the sunken River Medlock. Downdraughts reaching the river level and subsequently channelling around the Proposed Scheme are not therefore expected to impact directly on pedestrianised areas, and the northwest corner of the Proposed Scheme is further protected by the proposed wall and the existing riverside fences.

12.57 Whilst the potential for accelerated pedestrian level winds is therefore limited, the Proposed Scheme does introduce a Public Square with sensitive recreational uses. However, outdoor seating spilling out from the northerly elevation is substantially sheltered from prevailing southerly winds, as well as stronger west-south-westerly and westerly winds. The wider Public Square also benefits from the retained building façade which creates a porous boundary wall along Gloucester Street, a large canopy extending out from the northern elevation of the Proposed Scheme and proposed trees distributed across the open space.

12.58 The Proposed Scheme also introduces two private seating terraces set back behind the retained existing façade at Level 03 (in a revised location from that wind tunnel tested) and a ground floor terrace around the curved southern façade of the podium block, overhanging the river, which is locally sheltered by a glazed balustrade.

12.59 The pedestrian level wind environment in and around the Site resulting from the above effects and accounting for the proposed landscaping features is presented in terms of the Lawson comfort and safety criteria in **Appendix 12.1**. Pedestrian level conditions are further summarised graphically in terms of likely suitability for pedestrian activities in **Figure 12.2**, based on the seasonal targets outlined in **Table 12.5**. This presentation applies expert judgement to extrapolate from the key-point measurements in order to indicatively cover the Site and surrounding area.

Pedestrian Safety

12.60 Pedestrian level wind conditions in and around the Site remain rated as safe for all users.

12.61 The sensitivity of pedestrians and users of the Proposed Scheme and surrounding developments, with regards to safety, is considered to be high. The magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, long-term effect which is considered to be **negligible**.

Secondary Mitigation or Enhancement

12.62 No secondary mitigation or enhancement is required/has been identified.

Residual Effect

12.63 In the absence of secondary mitigation the residual effects on pedestrian safety is the same as that reported in the pre-mitigation scenario.

Significance

12.64 This effect is considered to be **Not Significant**.

Pedestrian Comfort – Proposed Scheme

12.65 In terms of pedestrian comfort, with respect to wind force, conditions on thoroughfares within and alongside the Site are suitable for at least leisurely strolling and are thus considered suitable for pedestrian access to, and passage through or past, the Site.

12.66 The entrances to the Proposed Scheme enjoy suitable conditions for pedestrian ingress / egress.

12.67 The Public Square enjoys suitable conditions for long periods of outdoor sitting, such as for café outdoor seating, during at least summer. Conditions are suitable for recreational activities including at least short periods of sitting, such as for a meeting point for example, for the remainder of the year. These conditions are expected to be considered suitable for proposed recreational uses.

12.68 The Level 03 private terraces are located in the northern part of the floor, wrapping around the tower's northwest and northeast corners.. The wind tunnel tests demonstrated that conditions around the north side of the Proposed Scheme are relatively benign. However, there may be a small contribution to this effect by the podium block helping limit some downdraughts, from the tower's western and eastern elevations, from directly impacting at pedestrian level. The potential for these downdraughts to get caught between the tower and extended podium façades, and channel around the tower corners, cannot be ruled out. Resulting conditions may therefore be windier than would typically be targeted for a seating terrace. However, the affected space is privately managed and recreational uses of the terraces will be limited to fair weather usage. With this managed limitation on usage, the conditions are expected to be considered at least tolerable.

12.69 The ground floor terrace, overhanging the river, enjoys suitable conditions for outdoor seating during at least summer and is expected to be considered suitable for proposed recreational uses.

12.70 Overall, the sensitivity of pedestrians and users of the Proposed Scheme, with regards to comfort, is considered to be high. The magnitude of change is considered to be negligible to no worse than minor. Therefore, there is likely to be a direct, long-term effect which is considered to be **negligible** at ground level and no worse than **minor adverse** at the L03 private terraces.

Secondary Mitigation or Enhancement

12.71 No secondary mitigation or enhancement is required/has been identified.

Residual Effect

12.72 In the absence of secondary mitigation the residual effects on pedestrian comfort within the Proposed Scheme is the same as that reported in the pre-mitigation scenario.

Significance

12.73 This effect is considered to be **Not Significant**.

Pedestrian Comfort – Surrounding Area

12.74 With the introduction of the Proposed Scheme, wind conditions along thoroughfares in the surrounding area remain suitable for at least leisurely strolling. Entrances to surrounding buildings are expected to retain suitable conditions for pedestrian ingress / egress and amenity

spaces are expected to retain suitable conditions for associated recreational activities.

12.75 Overall, the sensitivity of pedestrians and users of surrounding developments, with regards to comfort, is considered to be high. The magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, long-term effect which is considered to be **negligible**.

Secondary Mitigation or Enhancement

12.76 No secondary mitigation or enhancement is required/has been identified.

Residual Effect

12.77 In the absence of secondary mitigation the residual effects on pedestrian comfort within the surrounding area is the same as that reported in the pre-mitigation scenario.

Significance

12.78 This effect is considered to be **Not Significant**.

Limitations and Assumptions

12.79 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

- The assessment is based on boundary layer wind tunnel testing of a physical scale model. This represents best industry practice, and provides a detailed, robust, quantitative assessment.
- Historical wind statistics are used as standard practice due, in part, to lack of certainty in potential future changes in wind patterns, though any changes are expected to be minor.
- Subsequent to completion of the wind tunnel tests, the following amendments of particular relevance to wind microclimate have been introduced:
  - the Proposed Scheme's tower element has reduced in height by 2.425m;
  - the Proposed Scheme's tower element's end elevations have reduced in width by 0.4m (with the main west and east elevations both pushing inwards by 0.2m);
  - the glazed balustrade around the perimeter of the ground floor terrace, overhanging the river, has increased in height to 1.3m;
  - the landscaping at the interface with First Street has been revised to reflect the amended site boundary, with the 1.1m high solid wall amended to extend straight out from northwest corner of the building, and a proposed tree removed and the existing hedge reinserted within the First Street site.

  Sensitivity checks were carried out during the wind tunnel studies to review the effects of changes in height of the tower (of up to 6m) and the landscaping (including the interface with First Street). Based on these tests, it is concluded that the changes to the tower massing and landscaping interface with First Street would have no material effect on the

suitability of wind conditions. The increase in height of the ground floor terrace balustrade is also considered insignificant. The conclusions of the pedestrian level wind microclimate assessment are therefore considered to remain valid.

- Subsequent to completion of the wind tunnel tests, the following amendments of particular relevance to wind microclimate have also been introduced:

  – the private L03 terraces have been relocated from the west side of the tower to the north side, wrapping around both the northwest and northeast corners of the tower.

  Wind conditions at the revised L03 terrace locations have potential to be different from the location tested. The qualitative assessment of potential effects at the L03 terraces, presented in Paragraph 12.68, is therefore based on professional judgement.

Summary

12.80 **Table 12.7** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

12.81 The table only provides a summary of the residual effects identified within the assessment and details of all primary, secondary and tertiary mitigation that has been taken into account is set out in detail within the Chapter and summarised within Environmental Management Plan included within **Volume 3: Environmental Management Plan**.

Table 12.7: Summary of Residual and Significant Effects

Effect	Receptor	Residual Effect	Is the Effect Significant?
Pedestrian Safety	Pedestrians and users of Proposed Scheme and surrounding area	Negligible	NO
Pedestrian Comfort – Proposed Scheme	Pedestrians and users of Proposed Scheme (thoroughfares, building entrances, amenity spaces)	Negligible to no worse than minor adverse	NO
Pedestrian Comfort – Surrounding Area	Pedestrians and users of surrounding area (thoroughfares, building entrances, amenity spaces)	Negligible	NO

References

[1] Manchester City Council (July 2012), Local Development Framework Core Strategy Development Plan Document.

[2] Ministry of Housing, Communities and Local Government (2021). National Design Guide. Planning practice guidance for beautiful, enduring and successful places.
[3] Historic England (2022). Tall Buildings: Historic England Advice Note 4.
[4] Manchester City Council (2007), The Guide to Development in Manchester, Supplementary Planning Document and Planning Guidance.
[5] BS EN 1991-1-4:2005 Eurocode 1: Actions on structures - Part 1-4: General actions - Wind actions.
[6] Lawson, T.V. (1990). "The Determination of the Wind Environment of a Building Complex before Construction" Department of Aerospace Engineering, University of Bristol, Report Number TVL 9025.

11.85 As identified by the above, with the exception of road traffic where the magnitude of change will be negligible, the magnitude of change as a result of other typical construction activities will be medium to large at the 'worst-case' affected receptors.

11.86 Therefore, there is likely to be a direct, temporary, short to medium-term adverse effect which is considered to be moderate up to major depending on the exact construction activities occurring. The period relates to how long each of the activities occur and not the entire construction period.

11.87 This is to be expected from a city centre development with nearby residential properties.

Secondary Mitigation or Enhancement

11.88 Secondary mitigation could be considered to minimise construction noise impact, specifically adopting best practice measures during the construction stage as set out within BS 5228-1 & 2 2009+A1:2014 Code of Practice for Noise and Vibration Control on Open Construction Sites.

11.89 A typical mitigation measure for construction noise would be screening from site perimeter hoarding, which could help limit noise impact from low level activities. However, in this instance, as the nearest residential receivers to the Site are located in multi storey buildings, perimeter hoarding will offer little to no noise attenuation for works occurring above the height of the hoarding.

11.90 Other elements of mitigation could include:

- Careful selection of demolition/construction methods and plant to be used;
- Restriction of drop heights onto lorries;
- Regular maintenance and servicing of vehicles, equipment and plan in accordance with the manufacturers recommendations;
- Use of temporary acoustic barriers where appropriate and other noise containment measures such as screens, sheeting and acoustic hoardings at the construction site boundary to minimise noise breakout and reduce noise levels at the potentially affected receptors; and
- Locating Site generators and other stationary equipment away from residential receivers where possible.

11.91 Any adopted best practice measures or mitigation identified above would form part of a Construction Environmental Management Plan (CEMP), which would be subject to planning condition.

11.92 Additional potential measures that could be explored that go beyond standard best practice (but may not be feasible) are:

- Significant noise barriers or screening (these would be much taller than normal, include overhangs or be located on tall framework); and

- Significant noise enclosures for any stationary plant (this would be specifically designed enclosures for individual works and could, for example, include a lid over the enclosure.

11.93 Whilst the above could be considered to minimise impacts, it is considered that it is unlikely to change the outcome of the assessment where plant is not stationary (e.g. mounted excavators breaking concrete).

11.94 The likely reduction in noise levels from all measures set out above cannot be assessed at this stage and would require a detailed assessment when exact details of construction methods and equipment to be used are clearly defined.

Residual Effect

11.95 The noise reduction available from secondary measures will be limited as the residential properties are tall buildings close to the Site, meaning that any screening effects will be limited. Furthermore, any non-standard enclosures can only be assessed when full details of construction methodology are known.

11.96 The sensitivity of the residential receptors on Cambridge St and First St are considered to be high. The magnitude of change, following secondary mitigation, is considered to be medium to large depending on the construction activity. Therefore, there is likely to be a direct, temporary, short to medium-term adverse residual effect which is considered to be moderate up to major depending on the construction activities.

Significance

11.97 This effect of construction noise is considered to be **Significant**.

Nuisance and disturbance as a result of vibration from construction activities

11.98 Vibration during construction work may arise from activities such as piling (e.g. for building foundations), ground improvement and road construction. Selection of plant and methods will need to consider the possible effects of vibration on nearby buildings and their occupants.

11.99 The Onepoint Apartments on Cambridge Street at around 45m from the centre of the Site will be the worst-case affected residential receiver, which forms the basis of the assessment of construction vibration. The effect will be lower at properties located further away.

11.100 Groundborne vibration from construction work has broadly two potential impacts; cosmetic/structural damage and the likelihood of adverse comments. As stated in BS5228-1, the satisfactory magnitudes referred to in the standard relate to adverse comments by building occupants and are not determined by factors such as short-term health hazard or working efficiency.

11.101 Vibration magnitudes that would normally result in adverse comment can sometimes be tolerated, particularly for temporary disturbances or infrequent brief events; an example would be a construction project. However, to reduce adverse comment, the affected community would usually need to be advised of the likely effects, the duration of the activity and that the likelihood of building damage is very low even when vibration levels are well above perception thresholds.

11.102 Structural damage to buildings by vibration is extremely rare and, if at all, only occurs when receiving buildings or structures are located very close (e.g. at least within around 10m) to very intensive vibration generating activities and/or are vulnerable due to their structural condition. Given that the nearest receptor is approximately 18m from the stie it is reasonable to assume that potential structural or even cosmetic damage is negligible.

11.103 In terms of the impact on humans, perceptible vibration can give rise to complaints of disturbance over a wider area from the works. Depending on details of any proposed vibration causing activities, it is possible that certain activities such as piling/compacting, occurring close to the existing residential buildings, could give rise to perceptible vibration.

11.104 It is not possible to provide any detailed vibration assessment without full details of the plant and methods to be used. However, an indicative assessment, based on guidance in BS5228-2, is provided in **Table 11.14**, below.

Table 11.14: Assessment of Potential Vibration Impact during Construction at Nearest Residential (The Assembly) on Cambridge St.

Piling method	Estimated Vibration Level at Receptor, mm/s	Magnitude of Change
Percussive	8.0	Large
Piling (CFA)	0.4	Small
Piling (Rotary)	0.8	Small
Vibratory	5.4	Large

11.105 The sensitivity of the residential receptors on Cambridge St are considered to be high. The magnitude of change is considered to be small to Large depending on the piling activity. Therefore, there is likely to be a direct, temporary, short to medium-term adverse effect which is considered to be minor up to major depending on the piling activities.

11.106 For other receptors (identified in **Table 11.2**), the magnitude of change would be small due to an increase in distance from the source of vibration and screening.

Secondary Mitigation or Enhancement

11.107 Based on the vibration assessment above a large magnitude of change occurs during the use of percussive and vibratory piling methods. To reduce vibration piling will be undertaken using either CFA (controlled flight auger) or Rotary methods.

Residual Effect

11.108 The sensitivity of the residential receptors on Cambridge St are considered to be high. The magnitude of change, following secondary mitigation is considered to be small. Therefore, there is likely to be a direct, temporary, short to medium-term adverse residual effect which is considered to be minor based on CFA or Rotary piled methods being used.

11.109 For other receptors, any residual effects would be lower.

Significance

11.110 This effect of construction vibration is considered to be **Not Significant.**

Limitations and Assumptions

11.111 To ensure transparency within the EIA process, the following limitations and assumptions have been identified. There are inherent tolerances and levels of uncertainty to all environmental noise assessments. These tolerances are present due to:

- The accuracy of sound measurement equipment;
- The accuracy of noise prediction models/formula and input data;
- Temporal variation of sound pressure;
- Variations in frequency content of sound;
- Losses due to complex interactions along sound transmission paths; and
- Meteorological effects on sound pressure.

11.112 For EIA purposes, understandably, a defined cut off limit must be used to assess the magnitude of impact. However, in reality, the effects will be based on a sliding scale from no effect to significant with no absolute defined noise levels defining these.

11.113 As such, for EIA assessments whilst the outcome could move between bands of significance as a result of the above uncertainties (e.g. low to moderate or vice versa) in reality, the change in noise level is likely to be negligible i.e. up to 2dB typically.

11.114 In addition to the above, the construction noise assessment has been based on the typical worst-case operations. The actual noise levels can only be confirmed when full and clear details of operations and plant types and their location within the Site are known.

11.115 It is not possible to provide an accurate vibration assessment without full details of the Site specific plant and methods to be used. An indicative assessment, based on guidance in BS5228-2 has been used in the absence of specific data for the Proposed Scheme.

11.116 With regard to the combined effect of construction noise it has been assumed that each Approved Project identified in **Chapter 14: Assessment of Cumulative Effects** will use the same construction methods as used for the Proposed Scheme.

Summary

11.117 **Table 11.15** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

11.118 The table only provides a summary of the residual effects identified within the assessment and details of all primary, secondary and tertiary mitigation that has been taken into account is set out in detail within the Chapter and summarised within Environmental Management Plan included within **Volume 3: Environmental Management Plan**.

Table 11.15: Summary of Residual and Significant Effects

Effect Construction Stage	Receptor	Residual Effect	Is the Effect Significant?
Nuisance and disturbance as a result of noise from construction activities including traffic	The Assembly, 1 Cambridge Street (Some 25m to the east of the Site) Vita House	Up to Major Adverse	YES
Nuisance and disturbance as a result of vibration from construction activities	The Assembly, 1 Cambridge Street (Some 45m from the centre of the Site to the east)	Minor Adverse	NO

References

[1] Control of Pollution Act 1974 Part III Noise available at https://www.legislation.gov.uk/ukpga/1974/40/part/III/1991-02-01
[2] The Environmental Protection Act, 1990 available at https://www.legislation.gov.uk/ukpga/1990/43/contents
[3] Department for Environment, Food and Rural Affairs (2015) 'Noise Policy Statement for England (NPSE)'
[4] Department for Levelling Up, Housing and Communities 2012 (Updated September 2023) 'National Planning Policy Framework (NPPF)'
[5] British Standard 7445: 1991; "Description and measurement of environmental noise" (BS7445)
[6] British Standard 5228-1: 2009+A1:2014; "Code of practice for noise and vibration control on construction and open sites. Part 1: Noise" (BS5228-1)
[7] British Standard 64721: 2008; 'Guide to evaluation of human exposure to vibration in buildings – Vibration sources other than blasting' (BS6472)
[8] ISO 9613-2: 1996; Acoustics – 'Attenuation of sound during propagation outdoors - Part 2: General method of calculation' (ISO 9613-2)
[9] British Standard 4142:2014+A1:2019; 'Methods for rating and assessing industrial and commercial sound' (BS4142)
[10] World Health Organisation (1999) 'Guidelines for Community Noise'
[11] British Standard 8233:2014 – 'Guidance for sound insulation and noise reduction for buildings' (BS8233)
[12] Manchester City Council (2015) 'Planning & Noise Technical Guidance' 2015
[13] Institute of Environmental Management and Assessment (2014) 'Guidelines for Environmental Noise Impact Assessment' Version 1.2

12. Wind Microclimate

Introduction

12.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to wind microclimate.

12.2 The Chapter describes the technical consultation that has been undertaken during the EIA, the scope of the assessment and assessment methodology, and a summary of the baseline information that has informed the assessment.

12.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details).

12.4 This Chapter, and its associated **Figures 12.1** to **12.2** and **Appendix 12.1**, is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**).

12.5 In addition, this Chapter should be read in conjunction with **Chapter 15: Assessment of Cumulative Effects**.

Summary of Consultation

12.6 No consultation has been undertaken to inform the Proposed Scheme and EIA. The consideration of likely significant effects and the methodology for the assessment is based on best industry practice.

Scope of the Assessment

Effects Not Considered to be Significant

12.7 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES.

Wind microclimate effects resulting from construction activities

12.8 With the southern part of the existing building façades retained, and parts of the façade along Gloucester Street also retained as a boundary wall, the demolition of the remaining parts of the existing building on the Site is not expected to significantly increase the exposure of sensitive surrounding receptors to prevailing winds from the south and southwest.

12.9 Potential effects on the local wind microclimate during construction are expected to gradually transition from the existing Site wind microclimate to those of the completed Scheme and would not be specific to construction activities. Nonetheless, as the built form (specifically the massing)

of the Proposed Scheme gradually occurs there will be instances where accelerated wind conditions may occur, albeit these changes will be gradual over the course of the construction stage. As the massing nears completion, the level of effect is likely to be similar to that being considered / assessed at the operational stage. However, in instances, mitigation measures required for appropriate wind conditions at the operational stage may or may not be implemented depending on the nature of the mitigation and as such, wind levels may be greater than that determined at the operational stage. Nonetheless, given that the Site will still be within the construction stage, the receptors within the Site (i.e. construction workers) are generally considered to be of a lower sensitivity (and subject to greater health and safety working practices than the general public during the operational stage) should adverse effects be greater than that at operation, the resulting level of effect would less than reported at the operational stage. The completed Scheme therefore represents a worst-case scenario in terms of both wind effects and sensitivity of receptors.

12.10 Therefore, potential wind microclimate effects on construction workers and users of the surrounding area resulting from construction works is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Effects Considered Likely to be Significant

12.11 **Table 12.1** outlines the effects that were considered likely to be significant and are reported within this Chapter.

Table 12.1: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Stage
Pedestrian Safety	Pedestrians and users of Proposed Scheme and surrounding area	Operation
Pedestrian Comfort – Proposed Scheme	Pedestrians and users of Proposed Scheme (thoroughfares, building entrances, amenity spaces)	Operation
Pedestrian Comfort – Surrounding Area	Pedestrians and users of surrounding area (thoroughfares, building entrances, amenity spaces)	Operation

Assessment Methodology

Legislative Framework, Policy and Guidance

12.12 The following legislation and policy has informed the assessment of effects within this Chapter:

- Policy EN2 Tall Buildings within Manchester's Local Development Framework[1], Core Strategy Development Plan Document.

12.13 The following guidance has informed the assessment of effects within this Chapter:

- The National Design Guide[2], which accompanies the NPPF guidance and identifies wind conditions as a specific design consideration for tall building proposals;
- Historic England Advice Note 4: Tall Buildings[3], which also identifies wind conditions as a specific design consideration for tall building proposals;
- The Guide to Development in Manchester[4], Supplementary Planning Document and Planning Guidance Section 2. Design and Section 12. The City Centre;
- BS EN 1991-1-4:2005[5] (the current UK and European Standard for wind actions on structures), which focuses on wind loading issues and does not address environmental wind flows, but does outline technical requirements for modelling wind effects; and
- The Lawson criteria[6] for pedestrian comfort and safety, which are recognised by Local Planning Authorities as suitable benchmark criteria for assessing the impact of environmental wind on pedestrian spaces and the consequent suitability of these spaces for planned uses.

Defining the Study Area

12.14 The study area was determined by means of professional judgement. The wind tunnel model covers an area of 360m from the centre of the Site. The spatial extent of potential accelerated winds emanating from the Proposed Scheme has then been considered, taking account of the height, form, orientation and surrounding obstructions. New and existing sensitive receptors have then been reviewed within this extent, resulting in a study area extending approximately 50 - 80m from the Site boundary.

Background Studies to Inform the ES / Establish the Baseline

12.15 **Table 12.2** summarises the background studies to establish the baseline wind conditions at the Site.

Table 12.2: Study / Survey / Analysis / Evaluation

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Wind tunnel testing	Wind tunnel testing was undertaken to reproduce the wind flows at the Site and on surrounding land to establish the pedestrian level wind environment in relation to comfort and safety. Details of the wind tunnel testing are provided in **Appendix 12.1**.	November 2023

Assessment Process

12.16 The detailed assessments of baseline and operational conditions (upon completion of the Proposed Scheme) combine the following elements to determine the probability of local wind speeds exceeding comfort and safety thresholds for a range of common activities, based on the Lawson criteria for pedestrian comfort and safety:

- Measured pedestrian level wind speeds at key areas in and around the Site, from model-scale boundary layer wind tunnel testing; and

- Long-term wind frequency statistics transposed from the nearest suitable weather centre to apply directly at the Site.

12.17 Details of the wind tunnel testing are provided in **Appendix 12.1**. The tests were conducted in RWDI Anemos Ltd.'s boundary layer wind tunnel facility, where an atmospheric boundary layer representative of that at the Site was simulated. The wind tunnel model was constructed at a scale of 1:300 and covers a full-scale extent of 360m from the centre of the Site. This is a standard model scale and extent, though taller surrounding buildings were also modelled on an outer ring, up to 500m from the centre of the Site. The model therefore reaches beyond the extent of potential significant effects of the Proposed Scheme and, in conjunction with the atmospheric boundary layer simulation, is sufficient to model the wind flows in and around the Site.

12.18 The Proposed Scheme was modelled based on drawing information provided by the project design team. The wind tunnel modelling has considered a series of heights of the Proposed Scheme including, +143.525m AOD, +149.525m AOD and +155.525m AOD, as at the time of modelling the final height of the Proposed Scheme was under review. As set out within **Chapter 4: Development Specification**, the height of the Proposed Scheme is +147.125m AOD. The assessment within this Chapter is based on the modelling outputs for the +149.525m AOD as it is considered the most representative. It should be noted that the outputs of modelling across all scenarios showed no material difference in results (i.e. assessment conclusions presented within this Chapter are unchanged regardless of the height tested). The surrounding existing and consented future buildings were represented to a sufficient level of detail to reproduce the wind flows at the Site and on surrounding land. Larger existing and proposed deciduous trees were modelled in winter, or bare, form to represent the worst-case season.

12.19 Wind tunnel tests were carried out for the following configurations:

- Configuration 1: Existing Site (baseline) with existing surrounding buildings and vegetation;

- Configuration 2: The Proposed Scheme (including the landscaping proposals) with existing surrounding buildings and vegetation; and

- Configuration 3: The Proposed Scheme (including the landscaping proposals) with existing and future (cumulative) surrounding buildings and existing vegetation.

12.20 For surrounding developments, the list of committed developments, as set out in **Chapter 15**, were reviewed using publicly available information and professional experience to determine their relevance to the wind microclimate assessment. In line with standard practice, recently completed developments, or developments currently under construction with significant above-ground construction progressed, were included within the baseline and existing surrounding context (Configurations 1 and 2), in their completed form. This included the following schemes:

- Approved Project 18 Plot 9A First Street (Ref 132600/FO/2021)

- Approved Project 31 Viadux (Ref 115871/FO/2017 & 126868/JO/2020)
- Approved Project 32 Plot 11 First Street (Ref 125573/FO/2019)
- Approved Project 34 70 Great Bridgewater Street (Ref 129081/FO/2021)
- Approved Project 41 John Dalton West (Ref 125799/FO/2019)

12.21 The committed future developments modelled for the cumulative effects assessment (Configuration 3) in **Chapter 15** comprised the following surrounding schemes:

- Approved Project 2 One City Road (Ref 128002/FO/2020)
- Approved Project 3 2-4 Whitworth Street West (Ref 126308/FO/2020)
- Approved Project 6 Plot 10 First Street (Ref 136043/FO/2023)
- Approved Project 8 Apex Tower (Ref 133172/FO/2022)
- Approved Project 11 10-12 Whitworth St West (Ref 111003/FO/2016/C1)
- Approved Project 13 Plot G Great Jackson Street (Ref 129273/FO/2021) – east tower only
- Approved Project 14 Plot F Great Jackson Street (Ref 132199/FO/2021) – east tower only
- Approved Project 20 Great Marlborough St (Ref 121252/FO/2018)
- Approved Project 24 One Medlock St (Ref 135419/FO/2022)
- Approved Project 25 Plot 10A First Street (Ref 136170/FO/2023)
- Approved Project 26 Great Northern (Ref 135565/FO/2022) – east towers only
- Approved Project 33 35 Whitworth Street West (Ref 128804/FO/2020)

12.22 Further committed developments in the area were considered too distant from the Site to have any potential significant cumulative effects.

12.23 To inform the testing, an initial experience-based review was carried out to identify areas of potential accelerated winds in and around the Site and to identify the potential extent of likely significant wind effects within the surrounding area. Existing and proposed pedestrian activities were also reviewed to identify areas of increased sensitivity to wind effects, such as recreational areas and building entrances. Wind speed measurements at key identified locations were then made using probes capable of measuring fluctuating pressure differences that are calibrated against wind speed. A system of probes running simultaneously were used to obtain results from up to 93 locations. Details of the measurement locations and the assumed uses are included in

Appendix 12.1.

12.24 Measurements were taken for a full range of wind directions in increments of 22.5°. This is commonly applied and is considered sufficient to provide a robust and appropriate assessment, whilst helping optimise the testing efficiencies. To fully meet the requirements of the Lawson criteria, recordings were taken for a sufficient length of time to determine the mean and gust wind speeds.

12.25 Long-term wind frequency statistics from Manchester Airport were sourced for the period 2001 to 2015. This weather station was selected as providing the most representative data for the region and is considered suitable to provide a statistically robust climate model for the Site. Climate data for subsequent years was reviewed but was considered to show an uncharacteristic reduction in recorded wind speeds for some wind directions, suggesting potential interference effects from a surrounding structure (either from a new structure or relocation of the anemometer). As a precaution, the later, calmer, data was therefore omitted. The retained data was corrected to apply directly at the Site, taking account of differences in upwind terrain and altitude between the weather centre and the Site based on the widely accepted Deaves and Harris log law wind model of the atmospheric boundary layer and BS EN 1991-1-4:2005.

12.26 For each location, the measured wind speeds from the wind tunnel tests were combined with the long-term wind frequency statistics to assess the wind environment in terms of the exceedance of threshold wind speeds for pedestrian safety and perceived comfort levels during standard pedestrian activities.

12.27 Details of the Lawson criteria for pedestrian safety, or distress, are presented in **Table 12.3**. The criteria are based on the exceedance of the threshold wind speeds, considering mean-hourly and gust-equivalent-mean values, occurring once per annum. These thresholds represent wind speeds with the potential to destabilise the less able or more susceptible members of the public (including elderly, cyclists and children) and able-bodied persons.

Table 12.3: Lawson Criteria for Pedestrian Safety, or Distress

Threshold mean-hourly wind speed exceeded once a year	Safety Rating		Qualifying Comments
15 m/s	S2	Unsuitable for general public	Less able-bodied persons and cyclists find conditions physically difficult.
20 m/s	S1	Unsuitable for able-bodied	Able-bodied persons find conditions difficult. Physically impossible to remain standing during gusts.

12.28 Details of the Lawson criteria for pedestrian comfort are presented in **Table 12.4** and are based on the exceedance of threshold wind speeds, considering mean-hourly and gust-equivalent-mean values, occurring less than 5% of the time. The thresholds represent upper bounds of

acceptability for a range of common activities. The value of 5% has been established as giving a reasonable allowance for extreme and relatively infrequent winds that are acceptable within each category.

Table 12.4: Lawson Criteria for Pedestrian Comfort

Threshold Mean-hourly Wind Speed Exceeded < 5% of the Time	Comfort Rating		Qualifying Comments
4 m/s	C4	Long-term Sitting	Reading a newspaper and eating and drinking.
6 m/s	C3	Standing or short-term Sitting	Appropriate for bus stops, window shopping and building entrances.
8 m/s	C2	Walking or Strolling	General areas of walking and sightseeing.
10 m/s	C1	Business walking	Local areas around tall buildings where people are not likely to linger.

12.29 The pedestrian level wind environment assessment has been summarised in terms of suitability of wind conditions for various activities, based on the above criteria. The assessment took full account of seasonal variations in wind conditions and pedestrian activities. Thus, conditions for recreational activities focused on summer but also considered spring and autumn. Recreational activities did not consider winter comfort ratings as it is anticipated that users would not demand suitable conditions 95% of the time in winter but would instead be satisfied to use the amenity spaces on occasions when conditions, including precipitation and temperature, permit. Conditions for pedestrian thoroughfare, access or waiting (for example at bus stops) considered all seasons, with winter being predominantly the critical season due to generally higher wind speeds in the winter months.

12.30 The activities considered, and their relation to the comfort criteria detailed above, are shown in **Table 12.5** in order of decreasing sensitivity to wind speeds. Conditions considered suitable for the more sensitive activities would also be suitable for the subsequent, less sensitive uses.

Table 12.5: Suitability Assessment

Suitability		Target Lawson comfort and safety criteria for specified seasons
Outdoor seating	For long periods of sitting, such as for an outdoor café or picnic area.	'Long-term sitting' (C4) in at least summer.
Entrances, waiting areas	For pedestrian ingress / egress at entrances, or short periods of sitting or standing such as at a bus stop,	'Standing or short-term sitting' (C3) in all seasons.

Suitability		Target Lawson comfort and safety criteria for specified seasons
	taxi rank, meeting point, window shopping, etc.	
General leisure (excluding seating areas)	For leisure uses excluding long periods of outdoor sitting, such as active leisure, general park spaces, children's play area, etc.	'Standing or short-term sitting' (C3) from spring to autumn.
Thoroughfare	For pedestrian access to, and passage through, the site and surrounding area.	'Business walking' / 'Walking or strolling' (C1/C2) in all seasons - 'Walking or strolling' (C2) desired but 'Business walking' (C1) may be acceptable in some areas.
Unsuitable	Unsuitable for all activities.	Exceeds comfort criterion for 'Business walking' (C1) or safety criteria (S1/S2).

Reporting of the Environmental Effect and Significance Criteria

12.31 The assessment of likely significant environmental effects as a result of the Proposed Scheme has taken into account the operational stage. The following sections define the approach adopted within the assessment for the determination of sensitivity (or value/importance), magnitude of change (or impact), the level of effect and significance.

Determining Sensitivity of Receptor

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

12.33 Although pedestrian perception, and thus sensitivity, differs with the activity being undertaken, this is directly considered within the assessment criteria. The assessment criteria apply upper bounds of acceptability, and so exceedances have the potential to fundamentally alter the character of a space. It is therefore appropriate to consider the sensitivity of all receptors as **high**.

Determining the Magnitude of Change

12.34 The magnitude of change has been considered as the change experienced from the current baseline conditions at the sensitive receptor and has been considered on a scale of **large**, **medium**, **small** or **negligible**.

12.35 For the purpose of the assessment a change that affects suitability in terms of safety is generally deemed to be of large magnitude, while a change that affects suitability in terms of comfort is deemed to be of either medium or small magnitude.

Determining the Level of Effect

12.36 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. **Table 12.6** has been a tool which

has assisted with this process.

12.37 Whilst **Table 12.6** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

Table 12.6: Matrix to Support Determining the Level of Effect

Magnitude of Change	Sensitivity (or value / importance)			
	High	Medium	Low	Negligible
Large	Major	Moderate to Major	Minor to Moderate	Negligible
Medium	Moderate to Major	Moderate	Minor	Negligible
Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

12.38 The following terms have been used to define the level of the effects identified and these can be 'beneficial' or 'adverse':

- **Major effect**: effects on pedestrian safety, where conditions change from suitable to unsuitable (adverse effect) or from unsuitable to suitable (beneficial effect), are generally considered major;
- **Moderate effect**:
  - effects on pedestrian safety, where the effect is marginal relative to the safety criteria, may be considered moderate. If a moderate significance is applied, details to explain and justify this are included in the discussion;
  - effects on pedestrian comfort where conditions change from suitable to unsuitable (adverse effect) or from unsuitable to suitable (beneficial effect) for current or planned activities are deemed moderate;
- **Minor effect**: where conditions change from marginal (or tolerable) to suitable or unsuitable for current or planned activities the effect is deemed minor. Similarly, a change from suitable or unsuitable to marginal / tolerable is also deemed minor; and
- **Negligible**: any effect that does not alter the suitability of wind conditions with respect to current or planned activities is considered negligible.

12.39 As an example of the above levels of effect, where conditions at a building frontage with no current entrances are suitable only for strolling and a proposed development introduced an

entrance in this area, wind conditions would need to improve to be suitable for pedestrian ingress / egress for the effect to be negligible. If wind conditions became marginally windy for an entrance, the impact would be minor adverse even if wind speeds were lower, due to the introduction of a more sensitive activity.

12.40 Where existing conditions are calmer than required for existing activities, an increase in wind speeds could be accommodated without the effect being significant, provided conditions remain suitable for pedestrian activities.

12.41 The duration of the effect has been assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

Determining Significance

12.42 For each effect, a statement has been made as to whether the level of effect is '**Significant**' or '**Not Significant**'. This determination has been based on professional judgement and/or relevant guidance/legislation where applicable.

12.43 Significance has only been concluded for residual effects (i.e. following the identification of secondary mitigation).

Baseline Conditions

12.44 The wind climate expected at the Site is summarised in **Figure 12.1** in terms of the annual wind speed and direction probability distributions at a reference height of 118m, representing the approximate maximum height of the Proposed Scheme, above local ground level. Seasonal wind speed and direction probability distributions are presented in **Appendix 12.1**.

12.45 Based on the wind climate statistics, winds from the southerly quadrant are prevalent. Light to moderate winds from the south and south-south-east are most common, whilst stronger winds more frequently blow from the south-south-west. Winds from the west-south-west and west also occur frequently, and extreme wind speeds (relevant to pedestrian safety) are most likely to blow from this direction. Northerly winds are generally light and rare, though cold north-easterly winds are common during spring. Wind speeds are generally higher during winter and lower during summer.

12.46 The existing Site is occupied by a mid-rise structure which is partially exposed to prevailing southerly and south-westerly winds but is largely sheltered from winds approaching from other directions. The resulting pedestrian level wind environment in the area around the existing Site is presented in terms of the Lawson comfort and safety criteria in **Appendix 12.1**.

12.47 The potential for accelerated pedestrian level winds is mainly limited to channelling of south-westerly, westerly and north-easterly winds along Cambridge Street, between the existing Site and the Cambridge Street development to the east. This effect is limited by the modest scale of the buildings, and resulting conditions are suitable for at least short periods of sitting or standing. Conditions on thoroughfares around the Site are therefore considered suitable for pedestrian passage.

12.48 Entrances to the existing and surrounding buildings are expected to enjoy suitable conditions for pedestrian ingress / egress. Active frontages are also considered suitable for at least short periods of standing, such as for window shopping.

12.49 Outdoor seating areas in the northeast area of the First Street North development enjoy suitable conditions for recreational activities including long periods of outdoor sitting, such as for outdoor café seating. The Cambridge Street development's riverside landscaped space enjoys similar conditions.

12.50 On this basis, current wind conditions in and around the Site are considered suitable for existing pedestrian activities.

Future Baseline

12.51 Effects of the future baseline were not directly assessed by a wind tunnel test. Instead, professional judgement has been used to estimate the effects on the local wind microclimate.

12.52 Potential future changes in wind patterns due to climate change are expected to be minor, whilst the introduction of the future surrounding developments is generally expected to increase the shelter in and around the Site from approaching winds. The potential future baseline conditions are not therefore expected to materially differ from the existing conditions described above.

Primary and Tertiary Mitigation

Operational Stage

12.53 The primary and tertiary mitigation which has been evaluated as part of the operational stage assessment is outlined below.

- Semi-mature trees, of around 6 to 8m height and comprising a deciduous species with substantial retained solidity in winter (i.e. significant canopies with numerous branches), distributed across the Public Square within the Site;
- A 1.1m high solid wall extending from the northwest corner of the proposed building, along the Site boundary, towards the neighbouring First Street North development; and
- A 1.1m high glazed balustrade around the perimeter of the ground floor terrace overhanging the river.

12.54 These features, as modelled, are illustrated in **Appendix 12.1**.

Assessment of Effects, Secondary Mitigation and Residual Effects

Operational Stage

12.55 Upon completion, the Proposed Scheme will represent a substantial structure. However, the tower element is orientated to present a relatively narrow obstruction to prevailing southerly winds. In addition, the retained lower element creates a substantial podium, which largely

prevents downdraughts from the tower's southerly elevation from reaching pedestrian level.

12.56 The Proposed Scheme's tower presents a wider façade to the stronger west-south-westerly winds, but the Site is substantially sheltered from these winds by the existing First Street North development, at least at low-to-mid levels. In addition, the area along the base of the Proposed Scheme's west elevation is occupied by the sunken River Medlock. Downdraughts reaching the river level and subsequently channelling around the Proposed Scheme are not therefore expected to impact directly on pedestrianised areas, and the northwest corner of the Proposed Scheme is further protected by the proposed wall and the existing riverside fences.

12.57 Whilst the potential for accelerated pedestrian level winds is therefore limited, the Proposed Scheme does introduce a Public Square with sensitive recreational uses. However, outdoor seating spilling out from the northerly elevation is substantially sheltered from prevailing southerly winds, as well as stronger west-south-westerly and westerly winds. The wider Public Square also benefits from the retained building façade which creates a porous boundary wall along Gloucester Street, a large canopy extending out from the northern elevation of the Proposed Scheme and proposed trees distributed across the open space.

12.58 The Proposed Scheme also introduces a seating terrace set back behind the retained existing façade at Level 03, which is substantially sheltered from winds approaching from all directions, and a ground floor terrace around the curved southern façade of the podium block, overhanging the river, which is locally sheltered by a glazed balustrade.

12.59 The pedestrian level wind environment in and around the Site resulting from the above effects and accounting for the proposed landscaping features is presented in terms of the Lawson comfort and safety criteria in **Appendix 12.1**. Pedestrian level conditions are further summarised graphically in terms of likely suitability for pedestrian activities in **Figure 12.2**, based on the seasonal targets outlined in **Table 12.5**. This presentation applies expert judgement to extrapolate from the key-point measurements in order to indicatively cover the Site and surrounding area.

Pedestrian Safety

12.60 Pedestrian level wind conditions in and around the Site remain rated as safe for all users.

12.61 The sensitivity of pedestrians and users of the Proposed Scheme and surrounding developments, with regards to safety, is considered to be high. The magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, long-term effect which is considered to be **negligible**.

Secondary Mitigation or Enhancement

12.62 No secondary mitigation or enhancement is required/has been identified.

Residual Effect

12.63 In the absence of secondary mitigation the residual effects on pedestrian safety is the same as that reported in the pre-mitigation scenario.

Significance

12.64 This effect is considered to be **Not Significant**.

Pedestrian Comfort – Proposed Scheme

12.65 In terms of pedestrian comfort, with respect to wind force, conditions on thoroughfares within and alongside the Site are suitable for at least leisurely strolling and are thus considered suitable for pedestrian access to, and passage through or past, the Site.

12.66 The entrances to the Proposed Scheme enjoy suitable conditions for pedestrian ingress / egress.

12.67 The Public Square enjoys suitable conditions for long periods of outdoor sitting, such as for café outdoor seating, during at least summer. Conditions are suitable for recreational activities including at least short periods of sitting, such as for a meeting point for example, for the remainder of the year. These conditions are expected to be considered suitable for proposed recreational uses.

12.68 The Level 03 terrace enjoys suitable conditions for outdoor seating throughout the year.

12.69 The ground floor terrace, overhanging the river, enjoys suitable conditions for outdoor seating during at least summer and is expected to be considered suitable for proposed recreational uses.

12.70 Overall, the sensitivity of pedestrians and users of the Proposed Scheme, with regards to comfort, is considered to be high. The magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, long-term effect which is considered to be **negligible**.

Secondary Mitigation or Enhancement

12.71 No secondary mitigation or enhancement is required/has been identified.

Residual Effect

12.72 In the absence of secondary mitigation the residual effects on pedestrian comfort within the Proposed Scheme is the same as that reported in the pre-mitigation scenario.

Significance

12.73 This effect is considered to be **Not Significant**.

Pedestrian Comfort – Surrounding Area

12.74 With the introduction of the Proposed Scheme, wind conditions along thoroughfares in the surrounding area remain suitable for at least leisurely strolling. Entrances to surrounding buildings are expected to retain suitable conditions for pedestrian ingress / egress and amenity spaces are expected to retain suitable conditions for associated recreational activities.

12.75 Overall, the sensitivity of pedestrians and users of surrounding developments, with regards to comfort, is considered to be high. The magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, long-term effect which is considered to be **negligible**.

Secondary Mitigation or Enhancement

12.76 No secondary mitigation or enhancement is required/has been identified.

Residual Effect

12.77 In the absence of secondary mitigation the residual effects on pedestrian comfort within the surrounding area is the same as that reported in the pre-mitigation scenario.

Significance

12.78 This effect is considered to be **Not Significant**.

Limitations and Assumptions

12.79 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

- The assessment is based on boundary layer wind tunnel testing of a physical scale model. This represents best industry practice, and provides a detailed, robust, quantitative assessment;
- Historical wind statistics are used as standard practice due, in part, to lack of certainty in potential future changes in wind patterns, though any changes are expected to be minor; and
- Subsequent to completion of wind tunnel tests, the Proposed Scheme's tower element was reduced in height by 2.4m. Sensitivity checks carried out during the wind tunnel studies showed that changes in height of this magnitude would have no material effect on the results and the conclusions of the assessment are therefore considered to remain valid.

Summary

12.80 **Table 12.7** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

12.81 The table only provides a summary of the residual effects identified within the assessment and details of all primary, secondary and tertiary mitigation that has been taken into account is set out in detail within the Chapter and summarised within Environmental Management Plan included within **Volume 3: Environmental Management Plan**.

Table 12.7: Summary of Residual and Significant Effects

Effect	Receptor	Residual Effect	Is the Effect Significant?
Pedestrian Safety	Pedestrians and users of Proposed Scheme and surrounding area	Negligible	NO
Pedestrian Comfort – Proposed Scheme	Pedestrians and users of Proposed Scheme (thoroughfares, building entrances, amenity spaces)	Negligible	NO

Effect	Receptor	Residual Effect	Is the Effect Significant?
Pedestrian Comfort – Surrounding Area	Pedestrians and users of surrounding area (thoroughfares, building entrances, amenity spaces)	Negligible	NO

References

[1] Manchester City Council (July 2012), Local Development Framework Core Strategy Development Plan Document.
[2] Ministry of Housing, Communities and Local Government (2021). National Design Guide. Planning practice guidance for beautiful, enduring and successful places.
[3] Historic England (2022). Tall Buildings: Historic England Advice Note 4.
[4] Manchester City Council (2007), The Guide to Development in Manchester, Supplementary Planning Document and Planning Guidance.
[5] BS EN 1991-1-4:2005 Eurocode 1: Actions on structures - Part 1-4: General actions - Wind actions.
[6] Lawson, T.V. (1990). "The Determination of the Wind Environment of a Building Complex before Construction" Department of Aerospace Engineering, University of Bristol, Report Number TVL 9025.

13. Daylight, Sunlight and Overshadowing

Introduction

13.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to daylight, sunlight and overshadowing.

13.2 The Chapter describes the technical consultation that has been undertaken during the EIA, the scope of the assessment and assessment methodology, and a summary of the baseline information that has informed the assessment.

13.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details).

13.4 This Chapter, and its associated **Figure 13.1** and **Appendix 13.1** and **13.2**, is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**).

13.5 In addition, this Chapter should be read in conjunction with **Chapter 15: Assessment of Cumulative Effects**.

Summary of Consultation

13.6 There are no specialists within Manchester City Council (MCC) or other statutory consultees relevant to the area of daylight, sunlight and overshadowing. As such, no consultation has been undertaken.

Scope of the Assessment

Effects Not Considered to be Significant

13.7 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this.

Effects upon the daylight and sunlight amenity within commercial properties

13.8 The BRE Guidelines[1] consider that residential properties have the highest requirement for daylight and sunlight. As such, daylight and sunlight effects to commercial buildings surrounding the Site are not considered to be significant and will not be considered further in the ES.

Reduced daylight and sunlight amenity within surrounding residential receptors during demolition and construction

13.9 Owing to the evolving and changing nature of construction activities, the assessment of potential

effects during construction of the Proposed Scheme on daylight and sunlight to surrounding properties will not be modelled.

13.10 Since the potential daylight and sunlight effects relating to construction works will vary throughout the construction programme and gradually increase to the potential effects identified for the completed Proposed Scheme, the interim construction effects will not be assessed quantitatively as it is considered that the completed Proposed Scheme represents the worst-case assessment in terms of likely daylight and sunlight.

13.11 Therefore, reduced daylight and sunlight amenity within the surrounding residential receptors during the demolition and construction stages is not considered to be significant (or if it is, only on parity with the completed Proposed Scheme) and will not be considered further in the ES.

Increased overshadowing to surrounding areas of outdoor amenity space

13.12 In the northern hemisphere the sun rises in the east, travels to the south and sets in the west. Any shadows cast by the Proposed Scheme will, therefore, fall within approximately 180° of due north. As the only evident area of outdoor amenity space is to the south of the Site, increased overshadowing to surrounding areas of outdoor amenity space is not considered to be significant and will not be considered further in the ES.

Solar Glare from the facades of the Proposed Scheme

13.13 As the façade of the Proposed Scheme is not intended to be highly glazed and the Site is not located on any major road junctions and is set back from the railway, which is located to the north of the Site, any solar glare effects are unlikely to be significant and will not be considered further in the ES.

Effects Considered Likely to be Significant

13.14 **Table 13.1** outlines the effects that were considered likely to be significant and are reported within this Chapter.

Table 13.1: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Stage
Reduced daylight and sunlight amenity	21-35 Whitworth Street West (*Ref 1* ***Figure 13.1***) 84-88 Great Bridgewater Street (*Ref 2* ***Figure 13.1***) The Assembly, 1 Cambridge Street (*Ref 3* ***Figure 13.1***) Macintosh Mills (*Ref 4* ***Figure 13.1***) Vita House (*Ref 5* ***Figure 13.1)***	Operation

Assessment Methodology

Legislative Framework, Policy and Guidance

13.15 There is no legislation that governs daylight and sunlight. The criteria for assessment relating to daylight and sunlight is covered by national and local policy in addition to BRE guidance as set out below.

13.16 The following legislation and policy have informed the assessment of effects within this Chapter:

- Revised National Planning Policy Framework 2023[2];
- National Planning Policy Guidance 2021[3];
- Manchester Core Strategy (2012 – 2027)[4]; and
- Guide to Development in Manchester Supplementary Planning Document and Planning Guidance (Adopted April 2007)[5].

13.17 The following guidance has informed the assessment of effects within this Chapter:

- BRE 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' (2022).

Defining the Study Area

13.18 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."*

13.19 There is no specific guidance relating to the extent of a study area. The scope of residential properties that have been assessed has been determined through professional judgement, considering their orientation and proximity to the Site. In relation to the Proposed Scheme, the sensitive receptors fall within 130m from the centre of the Site.

13.20 The location of the surrounding sensitive receptors can be seen in **Figure 13.1**.

Background Studies to Inform the ES / Establish the Baseline

13.21 **Table 13.2** summarises all analysis undertaken to inform the assessment presented within this Chapter.

Table 13.2: Background Technical Analysis

Analysis	Overview	Date of Completion
Daylight and sunlight baseline assessment	An assessment of the baseline daylight and sunlight levels to the surrounding sensitive receptors	September 2023

Assessment Process

Methodology for Determining Operational Effects

13.22 The following approaches are undertaken to assess the daylight and sunlight effects upon the surrounding sensitive receptors when the Proposed Scheme is completed and operational:

- Daylight
  - Vertical Sky Component (VSC) Method; and
  - No Sky Line (NSL) Method.
- Sunlight
  - Annual Probable Sunlight Hours (APSH).

Outline Approach for Daylight and Sunlight Assessments

13.23 The technical analyses carried out to inform the daylight and sunlight assessment have been undertaken by creating a digital three-dimensional (3D) model of the existing Site and Proposed Scheme, based on 3D photogrammetry.

13.24 The 3D model uses Waldram 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.

13.25 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 Scheme in terms of light.

Daylight

13.26 The assessment of changes to the availability of daylight presented within this Chapter has been informed by two common methods, as set out below.

Vertical Sky Component (VSC) Method

13.27 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".*

13.28 This ratio is the percentage of the total unobstructed view that is available, once obstructions (e.g. the Proposed Scheme), are placed in front of the point of view.

13.29 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 'Waldram Diagram'.

13.30 The Waldram 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.

Due to the limitations of peripheral vision, the maximum VSC value is almost 40% for a completely unobstructed vertical wall or window. *No Sky Line (NSL) Method*

13.31 The BRE Guidelines provide that where room layouts are known, the effect on the daylight distribution can be calculated by plotting the NSL. In terms of the surrounding receptors, it has not been possible to obtain room layouts for all of the properties and therefore layouts have been assumed where information is not available.

13.32 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.

13.33 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.

13.34 In regard to deep rooms which are lit by windows on one side, the BRE Guidelines state (para.2.2.10):

"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."

Sunlight

Annual Probable Sunlight Hours (APSH) Method

13.35 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 would amount to 1486, and each spot equates to 14.86 hours of the total annual sunlight hours.

13.36 In determining the effects of a development on the availability of sunlight, the assessment considers the number of spots calculated in the Baseline scenario compared to the scenario with the Proposed Scheme in place. Furthermore, assessment considers scenarios during the year and 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.

13.37 The BRE Guidelines note that:

"In housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day, but especially *in the afternoon."*

"all main living rooms of dwellings…should be checked if they have a window facing within 90° of

due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun".

"If the main living room to a dwelling has a main window facing within 90° of due north, but a secondary window facing within 90° of due south, sunlight to the secondary window should be checked."

"…a south facing window will, in general, receive most sunlight, while a north facing one will receive it only on a handful of occasions. East and west facing windows will receive sunlight only at certain times of day".

13.38 At Section 3.1.12 the BRE states that:

"If a room has multiple windows, the amount of sunlight received by each can be added together provided they occur at different times and sunlight hours are not double counted."

Receptor Modelling

13.39 Where a sensitive receptor has rooms with windows which face the Site, any mitigating/dual aspect windows will also be modelled.

13.40 The following sensitive receptors have been modelled to publicly available floor plans:-

- The Assembly, 1 Cambridge Street;
- Macintosh Mills; and
- Vita House.

13.41 Where information to identify habitable rooms was unavailable, room uses and layouts were assumed to be habitable and their sizes and layouts assumed using professional judgement. In relation to sunlight modelling and analysis, where floor plans are not available and so making it difficult to determine room uses or confirm which window should be considered as the 'main windows', all the rooms with windows facing the Site and within 90 degrees of due south have been considered in the assessment.

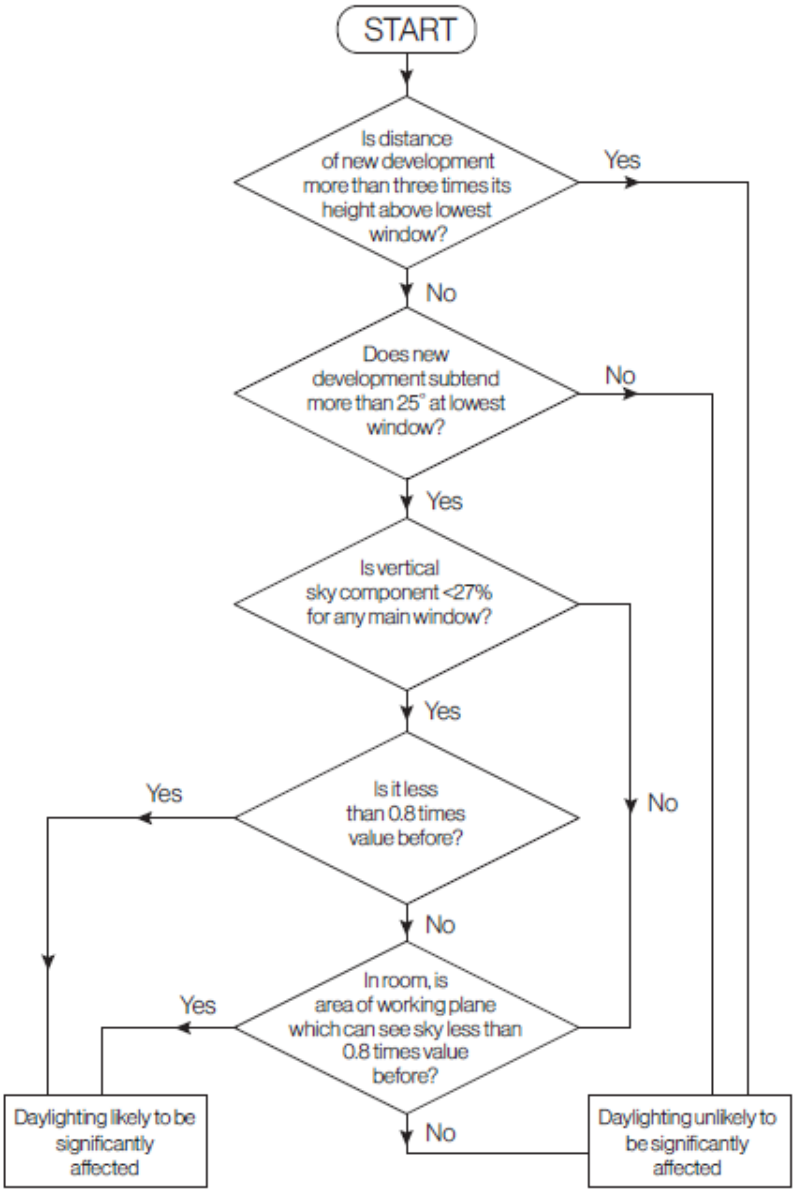
13.42 Windows that do not face within 90 degrees of due south do not have a realistic expectation of direct sunlight, due to their orientation and the sunlight path in the northern hemisphere.

Assessment Methodology

Daylight

13.43 To decide whether the daylight amenity within a neighbouring room is likely to be adversely affected by the construction of a proposed development, the BRE recommends the following assessment process be undertaken using the results of the above described VSC and NSL assessments in combination.

Figure 13.1 – BRE Decision Chart



Sunlight

13.44 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%.

Summary of Criteria for Daylight and Sunlight

13.45 The following table provides a summary of the criteria set out within the BRE Guidelines for daylight and sunlight.

Table 13.3: Summary of Daylight and Sunlight Assessment Criteria

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 is 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%.

Reporting of the Environmental Effect and Significance Criteria

13.46 The assessment of likely significant environmental effects as a result of the Proposed Scheme has taken into account the operational stage. The following sections define the approach adopted within the assessment for the determination of sensitivity (or value/importance), magnitude of change (or impact), the level of effect and significance.

Determining Sensitivity of Receptor

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

13.48 It is important that the location and nature of the Site and surroundings are considered when determining the sensitivity of the receptors identified. The BRE Guide is very clear that the targets provided are not mandatory. The location of the Proposed Scheme 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 PPG.

13.49 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. Therefore, for the purpose of this assessment sensitivity classification has been assigned based on how the receptor is able to

accommodate or adapt to the effect of the development, given that the existing residential receptors surrounding the Site are in a city centre location where there is an expectation for a higher density of development.

13.50 Furthermore, the use of the surrounding residential receptors is a material consideration in determining sensitivity, and student accommodation is typically viewed as having a lower sensitivity to changes in daylight.

13.51 Based on the above, the sensitivity of identified receptors considered within this assessment are defined below.

13.52 The following receptors are defined as having a low sensitivity:

- Vita House (Student Accommodation).

13.53 The following receptors are defined as having a medium sensitivity:

- 21-35 Whitworth Street West;
- 84-88 Great Bridgewater Street;
- Cambridge Street; and
- Macintosh Mills.

Determining the Magnitude of Change

13.54 The magnitude of change has been considered as the change experienced from the current baseline conditions at the sensitive receptor and has been considered on a scale of **large**, **medium**, **small** or **negligible**.

13.55 For daylight and sunlight, the BRE Guidelines outline the approach within the accompanying appendix, in terms of assigning criteria to assess the effects. Where the BRE guidance refers to the magnitude of impacts (referred to in this ES Chapter as 'magnitude of change') as major, moderate, minor and negligible below, these should be read as large, medium, small and negligible respectively:

"Adverse impacts occur when there is a significant decrease in the amount of skylight and sunlight reaching an existing building where it is required…The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied."

"Where the loss of skylight or sunlight fully meets the guidelines, the impact is assessed as negligible or minor adverse. Where the loss of light is well within the guidelines, or only a small number of windows or limited area of open space lose light (within the guidelines), a classification of negligible impact is more appropriate. Where the loss of light is only just within the guidelines and a larger number of windows or open space are affected, a minor adverse impact would be more appropriate, especially if there is a particularly strong requirement for daylight and sunlight in the affected building or open space."

"Where the loss of skylight or sunlight does not meet the guidelines in this book, the impact is assessed as minor, moderate or major adverse. Factors tending towards a minor adverse impact include:

- Only *a small number of windows are affected;*
- *The loss of light is only marginally outside the guidelines;*
- *An affected room has other sources of skylight or sunlight; and*
- *The affected building only has a low level of requirement for skylight or sunlight."*

13.56 The classification of major adverse is documented within Paragraph 7 of the BRE Guidelines:

"Factors tending towards a major adverse impact include:

- *a large number of windows are affected;*
- *the loss of light is substantially outside the guidelines;*
- *all the windows in a particular property are affected; and*
- *the affected indoor spaces have a particular strong requirement for skylight or sunlight, e.g. a living room in a dwelling".*

Beneficial impacts occur when there is a significant increase in the amount of skylight and sunlight reaching an existing building. Beneficial impacts should be worked out on the same principals as adverse impacts."

13.57 The BRE Guidelines do not provide any guidance on what constitutes a moderate (i.e. medium) magnitude of change.

13.58 Therefore, best practice guidance and professional judgment will be used to determine any impacts based on the guidance set out in Appendix I of the BRE Guidelines.

13.59 The initial numerical criteria for determining the magnitude of change are based on percentage alterations, as follows:

Table 13.4: Summary of Daylight and Sunlight Assessment Criteria

Magnitude of Change	Percentage Alteration from Baseline
Negligible	0-20%
Small	20-29.9%
Medium	30-39.9%
Large	40%+

Determining the Level of Effect

13.60 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. The level of effect has been determined using professional judgement and **Table 13.5** has been a tool which has assisted with this process.

13.61 Whilst **Table 13.5** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

Table 13.5: Matrix to Support Determining the Level of Effect

Magnitude of Change / Impact	Sensitivity (or value / importance)			
	High	Medium	Low	Negligible
Large	Major	Moderate to Major	Minor to Moderate	Negligible
Medium	Moderate to Major	Moderate	Minor	Negligible
Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

13.62 The following terms have been used to define the level of the effects identified and these can be 'beneficial' or 'adverse':

- **Major effect**: where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
- **Moderate effect**: where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;
- **Minor effect**: where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Proposed Scheme is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change; and
- **Negligible**: where the Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

13.63 The duration of the effect has been assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

Determining Significance

13.64 For each effect, a statement has been made as to whether the level of effect is '**Significant**' or '**Not Significant**'. This determination has been based on professional judgement and/or relevant guidance/legislation where applicable.

13.65 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.

13.66 Significance has only been concluded for residual effects (i.e. following the identification of secondary mitigation).

Baseline Conditions

13.67 The full Baseline daylight and sunlight results can be found in **Appendix 13.2** and are summarised in **Table 13.6** below.

13.68 A total of 877 windows facing the Site serving 698 rooms within 5 buildings were assessed for VSC and NSL for daylight and 236 rooms were assessed for APSH for sunlight within the 3 buildings which are material for consideration in sunlight terms i.e. their windows are orientated to within 90° of due south.

13.69 Out of the 877 windows assessed for daylight, 528 (60%) meet the BRE guidelines for VSC. For NSL, 486 (70%) of the 698 rooms assessed meet the BRE criteria. For sunlight, 189 (80%) of the 236 rooms assessed meet the BRE criteria for both Winter and Annual APSH.

13.70 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.

Table 13.6: Baseline Daylight and Sunlight results to surrounding sensitive receptors

Address	Windows that meet VSC Criteria		Rooms that meet NSL Criteria		Rooms that meet APSH Criteria	
	Total	Pass	Total	Pass	Total	Pass
84-88 Great Bridgewater Street	108	29	62	28	61	53
21-35 Whitworth Street West	56	55	56	56	56	56
The Assembly, 1 Cambridge Street	427	231	355	310	119	80

Address	Windows that meet VSC Criteria		Rooms that meet NSL Criteria		Rooms that meet APSH Criteria	
	Total	Pass	Total	Pass	Total	Pass
Vita House	129	114	129	2	0	0
Macintosh Mills	157	99	96	90	0	0
Total	**877**	**528**	**698**	**486**	**236**	**189**

Future Baseline

13.71 If the Proposed Scheme was not constructed the baseline daylight and sunlight levels would remain the same as there are no 'natural' factors that would influence baseline conditions, only human induced changes (i.e., development). With respect to human induced changes, any proposed development of the Site could influence the baseline conditions of varying degrees, as any drivers for change in baseline conditions would be linked to massing and layout of any development.

Primary and Tertiary Mitigation

Operational Stage

13.72 No primary or tertiary mitigation has been considered as part of the operational stage assessment.

Assessment of Effects, Secondary Mitigation and Residual Effects

Operational Stage

Reduced daylight and sunlight amenity

13.73 The outputs of the computer modelling for both daylight and sunlight are provided in full within **Appendix 13.2**, with the key metrics provided in **Tables 13.7** to **13.10** below.

13.74 A total of 877 windows facing the Site serving 698 rooms within 5 buildings have been assessed for VSC and NSL for daylight, whilst 236 rooms were assessed for APSH for sunlight within the 3 buildings which are material for consideration in sunlight terms i.e. their windows are orientated to within 90o.of due south.

13.75 The breakdown of the baseline results against the Proposed Scheme for each of the individual buildings forming part of this assessment are discussed in more detail below.

Table 13.7: Summary of VSC Daylight Results

Address	Total No. of windows	No. of windows that meet BRE Guidelines	Below BRE Guidelines Magnitude of Change		
			Small	Medium	Large
84-88 Great Bridgewater Street	108	101	3	1	3
21-35 Whitworth Street West	56	38	18	0	0
The Assembly, 1 Cambridge Street	427	336	42	21	28
Vita House	129	79	50	0	0
Macintosh Mills	157	157	0	0	0
Total	**877**	**711**	**113**	**22**	**31**

Table 13.8: Summary of NSL Daylight Results

Address	Total No. of rooms	No. of rooms that meet BRE Guidelines	Below BRE Guidelines Magnitude of Change		
			Small	Medium	Large
84-88 Great Bridgewater Street	62	62	0	0	0
21-35 Whitworth Street West	56	56	0	0	0
The Assembly, 1 Cambridge Street	355	330	7	7	11
Vita House	129	109	17	3	0
Macintosh Mills	96	96	0	0	0
Total	**698**	**653**	**24**	**10**	**11**

Table 13.9: Summary of Annual Sunlight Results

Address	Total No. of rooms	No. of rooms that meet BRE Guidelines	Below BRE Guidelines Magnitude of Change		
			Small	Medium	Large
21-35 Whitworth Street West	56	56	0	0	0
84-88 Great Bridgewater Street	61	61	0	0	0
The Assembly, 1 Cambridge Street	119	101	0	3	15
Total	**236**	**218**	**0**	**3**	**15**

Table 13.10: Summary of Winter Sunlight Results

Address	Total No. of rooms	No. of rooms that meet BRE Guidelines	Below BRE Guidelines Magnitude of Change		
			Small	Medium	Large
21-35 Whitworth Street West	56	56	0	0	0
84-88 Great Bridgewater Street	61	60	0	0	1
The Assembly, 1 Cambridge Street	119	119	0	0	0
Total	**236**	**235**	**0**	**0**	**1**

84-88 Great Bridgewater Street

Daylight

13.76 A total of 108 windows serving 62 rooms were assessed for daylight within this property.

13.77 Any changes in daylight amenity (VSC & NSL) to 59 of the 62 rooms assessed will be fully BRE compliant. The effect upon the daylight amenity within these 59 rooms is therefore considered to be negligible as, in accordance with the BRE's decision chart, the daylighting within these rooms is unlikely to be significantly affected.

13.78 One or more of the windows serving the remaining three rooms have very low (0.2% to 9.7%) baseline VSC values against the BRE recommended 27%. This means that the 0.1% to 2.2% actual changes in VSC caused by the Proposed Scheme, present themselves, when expressed as a percentage of the baseline values, as small to large when, in fact, VSC changes of this level are unlikely to be noticeable to the occupants of the three rooms. All 3 rooms will be fully BRE

compliant in NSL terms. The magnitude of change upon the daylight amenity within these three rooms is therefore considered to be small.

13.79 The sensitivity of 84-88 Great Bridgewater Street is considered to be medium. The magnitude of change is considered to be small. Therefore, there is likely to be a direct, permanent, long-term adverse daylight effect upon this property which is considered to be minor.

Secondary Mitigation or Enhancement

13.80 No secondary mitigation or enhancement is required.

Residual Effect

13.81 In the absence of secondary mitigation, the residual effects for this property are the same as that reported in the pre-mitigation scenario.

Significance

13.82 This effect is considered to be **Not Significant.**

Sunlight

13.83 A total of 97 windows serving 61 rooms were assessed for sunlight within this property.

13.84 Any changes in sunlight amenity to 60 of the 61 rooms assessed will be fully BRE compliant.

13.85 The remaining room will experience a BRE compliant change to its level of total APSH leaving it with 35% total APSH against the BRE recommended 25% and a change in winter APSH which leaves the room with 4% winter APSH compared to the BRE recommended 5%. The change in sunlight amenity to this room is, therefore, considered to be small.

13.86 The sensitivity of 84-88 Great Bridgewater Street is considered to be medium. The magnitude of change is considered to be small. Therefore, there is likely to be a direct, permanent, long term adverse effect upon the sunlight amenity to this property which is considered to be minor.

Secondary Mitigation or Enhancement

13.87 No secondary mitigation or enhancement is required.

Residual Effect

13.88 In the absence of secondary mitigation, the residual effects for this property are the same as that reported in the pre-mitigation scenario.

Significance

13.89 This effect is considered to be **Not Significant.**

21-35 Whitworth Street West

Daylight

13.90 A total of 56 windows serving 56 rooms were assessed for daylight within this property.

13.91 Any changes in daylight amenity (VSC & NSL) to 38 of the 56 rooms assessed will be fully BRE compliant. The effect upon daylight amenity within these 38 rooms is therefore considered to be negligible as, in accordance with the BRE's decision chart, the daylighting within these rooms is unlikely to be significantly affected.

13.92 The windows serving the remaining 17 rooms will experience changes in VSC which are between 0.1% and 8.6% beyond the BRE recommended 20%. All 18 rooms will, however, be fully BRE compliant in NSL terms. The magnitude of change upon daylight amenity within these 18 rooms is therefore considered to be small.

13.93 The sensitivity of 21-35 Whitworth Street West is considered to be medium. The magnitude of change is considered to be small. Therefore, there is likely to be a direct, permanent, long-term adverse daylight effect upon this property which is considered to be minor.

Secondary Mitigation or Enhancement

13.94 No secondary mitigation or enhancement is required.

Residual Effect

13.95 In the absence of secondary mitigation, the residual effects for this property are the same as that reported in the pre-mitigation scenario.

Significance

13.96 This effect is considered to be **Not Significant.**

Sunlight

13.97 A total of 56 windows serving 56 rooms were assessed for sunlight within this property.

13.98 Any changes in sunlight amenity to all of the 56 rooms assessed will be fully BRE compliant.

13.99 The sensitivity of 21-35 Whitworth Street West is considered to be medium. The magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, permanent, long term negligible effect upon sunlight amenity to this property.

Secondary Mitigation or Enhancement

13.100 No secondary mitigation or enhancement is required.

Residual Effect

13.101 In the absence of secondary mitigation, the residual effects for this property are the same as that reported in the pre-mitigation scenario.

Significance

13.102 This effect is considered to be **Not Significant.**

The Assembly, 1 Cambridge Street

Daylight

13.103 A total of 427 windows serving 355 rooms were assessed for daylight within this property.

13.104 Any changes in daylight amenity (VSC & NSL) to 272 of the 355 rooms assessed will be fully BRE compliant. The effect upon the daylight amenity within these 272 rooms is therefore considered to be negligible as, in accordance with the BRE's decision chart, the daylighting within these rooms is unlikely to be significantly affected.

13.105 37 of the remaining 82 rooms will experience changes in VSC and/or NSL which are minor. The effect upon the daylight amenity within these 37 rooms is therefore considered to be minor.

13.106 Eight of the 46 remaining rooms are served by two windows, one of which is a small secondary window that faces the Site and which, by virtue of its location, has a restricted view of the sky and a low VSC value in the baseline situation. The Proposed Scheme will result in small (no greater than 7.7%) changes in VSC to these secondary windows which, when expressed in percentage of baseline terms, suggest that the magnitude of change in daylight amenity to the rooms served by these secondary windows may be medium to large. With the larger and main windows facing away from the Site, however, all of these rooms will experience a less than 1% change in daylight distribution within the room (NSL). The magnitude of change upon the daylight amenity within these six rooms is therefore also considered to be small.

13.107 There are four further rooms, all served by two windows, one of which has a restricted view of the sky by virtue of its location. As a result, these windows have low and non BRE compliant (less than 17.2% against the BRE recommended 27%) baseline VSC levels. Construction of the Proposed Scheme will result in minor VSC changes to the non-restricted windows but, due to the low baseline levels, moderate changes to the other window despite the absolute changes being no greater than 5.8%. In terms of changes in NSL to the rooms served by these windows, these will be BRE compliant with the rooms retaining daylight distribution (NSL) to between 76.4% and 79.2% of the room areas. The magnitude of change upon the daylight amenity within these four rooms is therefore also considered to be small.

13.108 The windows serving the remaining 34 rooms all face the Site and have a restricted view of the sky by virtue of their location and, in respect to 16 of those rooms, the windows also being recessed behind a balcony area. This means that these rooms all have low and non BRE compliant baseline VSC levels. The inherent architecture of this property is, therefore, placing an unreasonable burden on the Site, which is demonstrated by the fact that the small (no greater than 7.8%) changes in VSC caused by it, when expressed in percentage of baseline terms, suggest a medium to large magnitude of change to the daylight amenity to the rooms than is likely in reality.

13.109 The sensitivity of The Assembly, 1 Cambridge Street is considered to be medium. In view of the isolated number (less than 10%) and location of the more materially affected rooms, the overall magnitude of change is considered to be small. Therefore, there is likely to be a direct, permanent, long-term adverse daylight effect upon this property which is considered to be minor.

Secondary Mitigation or Enhancement

13.110 No secondary mitigation or enhancement is required.

Residual Effect

13.111 In the absence of secondary mitigation, the residual effects for this property are the same as that reported in the pre-mitigation scenario.

Significance

13.112 This effect is considered to be **Not Significant.**

Sunlight

13.113 A total of 168 windows serving 119 rooms were assessed for sunlight within this property.

13.114 Any changes in sunlight amenity to 101 of the 119 rooms assessed will be fully BRE compliant. The effect upon the sunlight amenity to these 101 rooms is therefore considered to be negligible.

13.115 The magnitude of change to the sunlight amenity within the remaining 18 rooms ranges from medium to large, which is due once again to the inherent architecture of the property.

13.116 The sensitivity of The Assembly, 1 Cambridge Street is considered to be medium. In view of the isolated number and location of the more materially affected rooms, the magnitude of change is considered to be small. Therefore, there is likely to be a direct, permanent, long-term adverse sunlight effect upon this property which is considered to be minor.

Secondary Mitigation or Enhancement

13.117 No secondary mitigation or enhancement is required.

Residual Effect

13.118 In the absence of secondary mitigation, the residual effects for this property are the same as that reported in the pre-mitigation scenario.

Significance

13.119 This effect is considered to be **Not Significant.**

Vita House

Daylight

13.120 A total of 129 windows serving 129 rooms were assessed for daylight within this property.

13.121 Any changes in daylight amenity (VSC & NSL) to 79 of the 129 rooms assessed will be fully BRE compliant. The magnitude of change upon the daylight amenity within these 79 rooms is therefore considered to be negligible as, in accordance with the BRE's decision chart, the daylighting within these rooms is unlikely to be significantly affected.

13.122 47 of the remaining 50 rooms will experience changes in VSC and/or NSL which are minor. The magnitude of change upon the daylight amenity within these 47 rooms is therefore considered to be small.

13.123 The windows serving the remaining three rooms will experience minor changes in VSC and moderate changes in NSL. All of the windows will, however, retain very reasonable VSC levels of between 17.4% and 19.3% in context. The magnitude of change upon the daylight amenity within these 3 rooms is therefore also considered to be small.

13.124 The sensitivity of Vita House is considered to be low. The magnitude of change is considered to be small. Therefore, there is likely to be a direct, permanent, long-term, adverse daylight effect upon this property, which is considered to be minor.

Secondary Mitigation or Enhancement

13.125 No secondary mitigation or enhancement is recommended.

Residual Effect

13.126 In the absence of secondary mitigation, the residual effects for this property are the same as that reported in the pre-mitigation scenario.

Significance

13.127 This effect is considered to be **Not Significant.**

Sunlight

13.128 This property is not material for sunlight assessment as none of the windows within it are orientated to within 90°of due south.

Macintosh Mills

Daylight

13.129 A total of 157 windows serving 96 rooms were assessed for daylight within this property.

13.130 Any changes in daylight amenity (VSC & NSL) to all 96 rooms assessed will be fully BRE compliant. The effect upon the daylight amenity within these 96 rooms is therefore considered to be negligible as, in accordance with the BRE's decision chart, the daylighting within these rooms is unlikely to be significantly affected.

13.131 The sensitivity of Macintosh Mills is considered to be medium. The magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, permanent, long term negligible effect on the daylight amenity to this property.

Secondary Mitigation or Enhancement

13.132 No secondary mitigation or enhancement is required.

Residual Effect

13.133 In the absence of secondary mitigation, the residual effects for this property are the same as that reported in the pre-mitigation scenario.

Significance

13.134 This effect is considered to be **Not Significant.**

Sunlight

13.135 This property is not material for sunlight assessment as none of the windows within it are orientated to within 90°of due south.

Limitations and Assumptions

13.136 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

- 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. Where layout information was not available, assumptions have been made as to the use and internal configuration of the rooms (from external observations during a site inspection) behind the fenestration observed.

- 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.

Summary

13.137 **Table 13.11** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

13.138 The table only provides a summary of the residual effects identified within the assessment. Details of all primary, secondary and tertiary mitigation that has been taken into account is set out in detail within the Chapter and summarised within Environmental Management Plan included within **Volume 3: Environmental Management Plan**.

Table 13.11: Summary of Residual and Significant Effects

Effect	Receptor	Residual Effect	Is the Effect Significant?
Operational Stage			
Reduced daylight amenity	21-35 Whitworth Street West	Minor Adverse	No
	84-88 Great Bridgewater Street	Minor Adverse	No
	The Assembly, 1 Cambridge Street	Minor Adverse	No
	Macintosh Mills	Negligible	No
	Vita House	Minor Adverse	No
Reduced sunlight amenity	21-35 Whitworth Street West	Negligible	No
	84-88 Great Bridgewater Street	Minor Adverse	No
	The Assembly, 1 Cambridge Street	Minor Adverse	No

References

[1] Building Research Establishment (BRE) (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice, Third Edition

[2] Ministry of Housing, Communities & Local Government (2021). National Planning Policy Framework. 2023.

[3] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2021). National Planning Policy Guidance. 2021.

[4] Manchester City Council (2012). Manchester Core Strategy (2012 – 2027).

[5] Manchester City Council (2007). Guide to Development in Manchester Supplementary Planning Document and Planning Guidance Adopted April 2007

14. Flood Risk and Drainage

Introduction

14.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Proposed Scheme in relation to Flood Risk and Drainage.

14.2 The Chapter describes the technical consultation that has been undertaken during the EIA, the scope of the assessment and assessment methodology, and a summary of the baseline information that has informed the assessment.

14.3 In line with **Chapter 2: Approach to EIA**, the assessment reports on the likely significant environmental effects, the further mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects. The conclusions are provided both in terms of the residual effects and whether these are considered significant. The assessment of effects takes into consideration both primary and tertiary mitigation (see **Chapter 2: Approach to EIA** for further details).

14.4 This Chapter should be read in conjunction with the **Drainage Strategy** (**Appendix 14.1**) and **Flood Risk Assessment (FRA)** (**Appendix 14.2**).

14.5 Furthermore, this Chapter is intended to be read as part of the wider ES with particular reference to the introductory Chapters of this ES (**Chapters 1 – 5**) and **Chapter 15: Assessment of Cumulative Effects**.

Summary of Consultation

14.6 No technical consultation has been undertaken as part of the preparation of this chapter.

Scope of the Assessment

Effects Not Considered to be Significant

14.7 The following effects are considered unlikely to be significant and therefore will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this.

Impacts to groundwater quality during construction stage

14.8 During the construction stage there is a risk of potential contaminants including fuel or oils from mechanical plant, dirty water, cement and general impacting such as fines, silts and general detritus and building materials on the adjacent watercourse (i.e. River Medlock) through infiltration or through overland flow. Such effects would be localised and temporary and will be subject to controlled through the adoption of common best practice measures, set out as part of a Construction Environmental Management Plan (CEMP), including (but not limited to):

- Management of construction works so as to comply with the necessary standards and consent conditions as identified by the Environment Agency (EA) and Manchester City Council (MCC);

- All construction workers will be briefed on the importance of the water quality, location of the surface water features off-site and the location and use of the accidental spill kits as part of the site induction;

- To prevent drains becoming blocked by cement or other solid waste debris the exposure of bare earth and storage of materials in stockpiles will be minimised. Good housekeeping practices will be applied, concrete will not be allowed to enter drains and lightweight materials will be covered or weighted down;

- Any areas where there is increased risk of hydrocarbon/chemical spillage and hazardous substance stores additional precautions will be taken in accordance with best practice (such as spill kits and bunded containers / areas); and

- All plant and machinery will be maintained in a good condition and any maintenance required will be undertaken within safe areas.

14.9 Therefore, contamination of groundwater from construction stage activities, resulting in changes to groundwater quality is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Changes to surface water runoff due to stockpiling of materials effecting overland flows

14.10 Stockpiling of materials during the construction stage of the Proposed Scheme may, in the short-term, restrict flows and result in ponding of water on-site prior to the implementation of the permanent drainage strategy. In order to maintain flow paths across the Site prior to the implementation of the permanent drainage strategy the effect can be mitigated for through standard measures included within the CEMP such as stockpiling of materials to be kept to a minimum and space will be provided between stockpiles to minimise the impact on overland flow.

14.11 Therefore, the potential changes to surface water runoff due to the stockpiling of materials effecting overland flow is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Changes to surface water quality due to contamination of surface water runoff from construction stage activities

14.12 The construction stage of the Proposed Scheme has the potential to affect the quality of local waterbodies through the mobilisation of contaminants, sediments, and accidental spillages and the creation of new pollutant pathways through infiltration or through overland flow. Source of contaminants include fuel or oils from mechanical plant, dirty water, cement.

14.13 The construction works for the Proposed Scheme will be carried out using best practice and will incorporate mitigation measures as follows:

- Temporary surface water management plan including temporary surface water flow routes, temporary drainage structures, temporary surface water holding areas/structures and temporary pumping equipment;

- Drainage routing measures to ensure that surface water does not flow out of the Site boundary and onto neighbouring sites; and

- Planning of works to ensure that major earthworks are carried out during dry periods where surface water can be better managed and contained.

14.14 Therefore, contamination of surface water arising from construction activities and therefore effect water quality is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Changes to flood risk due to construction stage activities

14.15 The Proposed Scheme lies largely within a Flood Zone 2 area that have a medium probability of flooding (between 1in100 and 1in1000 annual probability of flooding) from the River Medlock. The existing basement is deemed to sit within Flood Zone 3 and therefore at high risk of flooding (greater than 1in100). The risk to the site during construction is deemed to be low due to the short term nature of works (i.e. up to 3 years for construction stage). Whilst the chance of a flood event storm could occur during the construction stage, the impact of such a flood is expected to be lower than those predicted. One reason is due to the predicted flood levels also including an allowance for climate change which covers predictions of flooding in the future. The nature of a relatively short construction period would not need to factor in allowances for climate change. In addition, in the event of a flood risk, the site could be evacuated accordingly and this would typically be covered within a site specific CEMP.

14.16 Due to existing and proposed site levels, the works will not change or encroach within any critical flood plain storage or cause any obstruction to the natural flow of water, and therefore the risk to increasing flood risk to the local flood risk zone receptors is not considered to be significant and will not be considered further in the EIA or reported in the ES.

14.17 There may be an increased surface water risk of flooding within the construction site or adjacent areas due to removal of existing drainage features during construction. It is expected that the appointed contractor would comply with the relevant industry guidance for site management and surface water control and these would be established and set out as part of a CEMP. As such, the risk of surface water flooding due to site activities is not considered to be significant and will not be considered further in the EIA or reported in the ES.

14.18 Risk of flooding from reservoirs and other artificial infrastructure is considered to be very low. Typically, these systems are actively managed, and the likelihood of flooding is therefore very low given strict maintenance and inspection regimes being routinely undertaken. Reservoirs may flood in the event of a dam collapse resulting in the release of a significantly large volume of water, although reservoirs in the UK have an excellent safety record and the probability of such an event is considered extremely low.

14.19 Groundwater flooding is the result of an elevated underground water table enabling water to permeate to the surface. The risk to life is generally insignificant owing to the slow rate at which flooding takes place, although substantial damage to property can occur. The Greater Manchester sub-regional SFRA states there are no known occurrences of groundwater. Flooding within the Manchester City Council's boundary, however, groundwater flood mapping supplied within the Level 2 SFRA indicates the Site lies within an area that is at risk, although the mapping does not specify a probability or severity of flooding. At present, the risk of groundwater flooding can be deemed to be low, and ground investigation of adjacent

sites support this conclusion. A site-specific Phase 2 intrusive site investigation will be undertaken to provide site-specific data to confirm this risk.

14.20 Therefore, overall, changes to flood risk during construction stage is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Changes to surface water quality due pollutants being flushed from impermeable surfaces during the operational stage

14.21 There is a risk of contamination of surface water due to spillage of contaminants and flushing of pollutants from impermeable surfaces during the operation stage of the Proposed Scheme. However, the risk of pollutants from the Proposed Scheme is deemed low as the source of surface water run-off is generated from roofs, low risk contamination, and low trafficked landscaped areas, also low risk of contamination. In addition the proposed surface water drainage strategy seeks to improve water quality with the introduction of Sustainable Drainage (SuDS) measures. The SuDS features intended to be included as part of the Proposed Scheme are detailed in the **Drainage Strategy** (**Appendix 14.1**).

Increased demand on foul drainage system

14.22 An independent foul water drainage system, separate to the surface water drainage system, will be provided and will discharge solely to public sewers within the adjacent highway. The foul water discharge rate is a considerable increase on the baseline condition due to the introduction of new student beds and the increased water supply. However, in comparison to the reduction in surface water flow from the public sewer due to the proposal for this being redirected into the River Medlock at a restricted discharge rate, there will be a beneficial reduction in overall flows into the public sewer.

14.23 With these primary mitigation measures in place, the risk of contamination of surface water receptors due to spillage of contaminants or increase in foul water flows during operation is not considered to the significant and will not be considered further in the EIA or reported in the ES.

Effects Considered Likely to be Significant

14.24 **Table 14.1** outlines the effects that were considered likely to be significant and are reported within this Chapter.

Table 14.1: Effects Considered Likely to be Significant

Likely Significant Effect	Receptors	Applicable Stage
Surface water run-off – connection of new drainage system	Sewer systems within and adjacent to the Site	Construction
Surface water runoff – discharge rate	Watercourse adjacent to the Site (the River Medlock), sewer within and adjacent to the Site	Operation
Flood Risk Zones – Proposed Development Within Fluvial Flood Zone 3	End users of the proposed scheme.	Operation

Assessment Methodology

Legislative Framework, Policy and Guidance

14.25 The following legislation, policy and guidance has informed the assessment of effects within this Chapter:

- National Planning Policy Framework[1];
- Planning Practice Guidance[2];
- Manchester City Council Level 2 Strategic Flood Risk Assessment (March 2011)[3]; and
- Manchester Core Strategy (Policy EN14 Flood Risk)[4].

14.26 Furthe details on the above identified legislation, policy and guidance is set out within the **Flood Risk Assessment (FRA)** (**Appendix 14.2**), and where policy compliance is achieved, this is discussed within the **Planning Statement**.

Defining the Study Area

14.27 The Site (**Figure 1.1**) is bounded by Manchester Oxford Road railway station viaduct to the north, Gloucester Street to the east, and the River Medlock to the south and west.

14.28 The receptors identified as susceptible to potential impact from the Proposed Scheme are the watercourse adjacent to the Site (the River Medlock), sewer systems within and adjacent to the Site, and the proposed scheme buildings within the Flood Risk Zone. The geographical area relevant to each receptor is detailed in **Table 14.2**.

Table 14.2: Receptors Susceptible to Potential Impact from the Proposed Scheme

Designation	Receptors
International	None
National	None
Regional	None
County	None
Borough / District	Public sewer system and the River Medlock
Local / Neighbourhood	Proposed buildings, on site sewers.

Background Studies to Inform the ES / Establish the Baseline

14.29 **Table 14.3** summarises all studies/surveys/analysis/evaluations undertaken to inform the assessment presented within this Chapter.

Table 14.3: Background Studies / Surveys / Evaluations /Analysis

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Site Specific Flood Risk Assessment (**Appendix 14.2**)	A site-specific flood risk assessment has been undertaken to determine the flood zone and flood levels across the Site.	September 2023
Phase 1 Preliminary Risk Assessment	A desk-based Preliminary Risk Assessment with site reconnaissance to ascertain if there is a potential contamination risk.	September 2023
Topographical Survey	Topographical survey providing site levels, existing building dimensions and elevations and Site features.	April 2017
Information request from United Utilities (wastewater developer, property services and water services)	Understanding existing site constraints, history of flooding and the status of an existing UU borehole.	August, 2023

Assessment Process

14.30 A Flood Risk Assessment (FRA) (**Appendix 14.2**) for the Proposed Scheme has been undertaken and informs the assessment within this Chapter. The FRA, and therefore the assessment within this Chapter, is based upon readily available information along with site walkover surveys.

14.31 The FRA is intended to identify and quantify the extent to which the Proposed Scheme is likely to be affected by flooding, and whether the surrounding areas would be put at greater risk as a result of the Proposed Scheme. The scope of the studies undertaken is as listed below:

- Establish whether the development is itself at risk from flooding from varying sources, as required by NPPF;
- Characterise the Flood Zone(s) within which the site is located, and identify the vulnerability classification of the proposed site uses, in line with PPS25;
- Identify and advise as to measures which may be required to mitigate the risk of flooding; and
- Establish whether the development may result in increased flood risk elsewhere and advise appropriate measures to mitigate any increased risk.

14.32 The works undertaken in fulfilling the above stated scope are as follows:

- Initial assessment of available information including the Manchester, Salford & Trafford Strategic Flood Risk Assessment (SFRA), identified that the only risk of flooding to the Site is from the River Medlock which runs adjacent to the site;

- Flood levels for the River Medlock were reviewed to confirm the Flood Zone as identified on the EA Flood Map for Planning;
- Review of Site Investigation information and Geo-environmental reporting; and
- An assessment of the existing site drainage regime has been undertaken, and used to inform the post development drainage strategy.

14.33 The outcome of the FRA has been used to establish the flood risk elements of this ES chapter with the following key considerations:

- Risk of flooding from various sources to the site during construction and during operation.
- Development proposals which may have an impact on the environment.
- Proposed flood risk mitigation measures, which have a beneficial impact on flood risk and water quality of surface water run-off from the site.

Reporting of the Environmental Effect and Significance Criteria

14.34 The assessment of likely significant environmental effects as a result of the Proposed Scheme has taken into account the construction and operational stage. The following sections define the approach adopted within the assessment for the determination of sensitivity (or value/importance), magnitude of change (or impact), the level of effect and significance.

Determining Sensitivity of Receptor

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

14.36 **Table 14.4** sets out the sensitivity of the receptor. The sensitivity of the receptor is based on the qualitative review and professional judgment of the ability that the receptor has to absorb any change from its existing baseline level.

Table 14.4: Sensitivity of Receptor

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 or is of low or local importance.

Determining the Magnitude of Change

14.37 The magnitude of change has been considered as the change experienced from the current baseline conditions at the sensitive receptor and has been considered on a scale of **large**, **medium**, **small** or **negligible**.

14.38 **Table 14.5** sets out the magnitude of the environmental impact which the development will have. The magnitude is based on the qualitative review and professional judgment of the magnitude of deviation which the Proposed Scheme will have on the existing baseline conditions.

Table 14.5: Magnitude of Change Criteria

Magnitude of Impact	Criteria for Assessing Impact
Large benefit	The proposed development, without mitigation measures, will have a substantial positive impact on the environment in comparison to baseline indicators
Medium benefit	The proposed development, without mitigation measures, will have a positive impact on the environment, that is neither deemed substantial, nor small, in comparison to baseline indicators.
Small benefit	The proposed development, without mitigation measures, will have a small positive impact on the environment in comparison to baseline indicators.
Negligible/no impact	The proposed development, without mitigation measures, will have little or no impact on the environment in comparison with baseline indicators.
Small adverse	The proposed development, without mitigation measures, will have a small negative impact on the environment, in comparison to baseline indicators.
Medium adverse	The proposed development, without mitigation measures, will have a negative impact on the environment that is neither deemed to be substantial, nor small, in comparison to baseline indicators.
Large adverse	The proposed development, without mitigation measures, will have a substantial negative impact on the environment, in comparison to baseline indicators.

Determining the Level of Effect

14.39 The level of effect has been informed by the magnitude of change due to the Proposed Scheme and the evaluation of the sensitivity of the affected receptor. The level of effect has been determined using professional judgement and **Table 14.6** has been a tool which has assisted with this process.

14.40 Whilst **Table 14.6** provides ranges, the level of effect is confirmed as a single level and not a range, informed by professional judgement. For each effect, it has been concluded whether the effect is '*beneficial*' or '*adverse*'.

Table 14.6: Matrix to Support Determining the Level of Effect

		Sensitivity (or value / importance)			
		High	Medium	Low	Negligible
Magnitude of Change	Large	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

14.41 The following terms have been used to define the level of the effects identified and these can be 'beneficial' or 'adverse':

- **Major effect**: where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
- **Moderate effect**: where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;
- **Minor effect**: where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Proposed Scheme is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change; and
- **Negligible**: where the Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

14.42 The duration of the effect has been assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

Determining Significance

14.43 For each effect, a statement has been made as to whether the level of effect is '**Significant**' or '**Not Significant**'. This determination has been based on professional judgement and/or relevant guidance/legislation where applicable.

14.44 Significance has only been concluded for residual effects (i.e. following the identification of secondary mitigation).

Baseline Conditions

Topography

14.45 A building survey has been carried out on Site and since the Site is covered completely by buildings, the levels AOD are internal floor levels. Basement level to the west of the Site is 28.30m AOD. The central rectangular building ground floor level is 31.13m, and the shed to the north and east is 30.81m.

Ground Conditions

14.46 A **Phase 1 Desktop Study Ground Investigation**[5] has been carried out. A summary of the findings of the investigation are set out below:

- Geology at the Site seems to comprise of made ground overlaying clay and soft red sandstone with competent sandstone and marl below this;
- Deep made ground and / or relic in-ground structures (from former buildings) may be present on Site which could affect groundworks (e.g. grubbing out of structures) and type of foundations required (e.g. deepening of foundations / pilling);
- No past or present underground mining recorded within the Site;
- Unexploded Ordnance (UXO) Risk considered to be low;
- No significant source of ground gas identified within the desktop study. Gas monitoring or precautionary gas protection recommended if significant made ground or putrescible material is identified through future intrusive investigation (as detailed in **Chapter 6: Topics which are Not Significant**);
- Likely probability of sulphate attack on concrete;
- Likely probability of dermal contact or inhalation of soil, fibres and dust containing heavy metals, PAHs, hydrocarbons and other inorganic and organic contaminants (made ground, cotton mill, printing works); and
- Likely probability of direct contact with phytotoxic contaminants in areas of proposed soft landscaping as contamination considered possible, which may be taken up by flora.

14.47 No Phase 2, intrusive ground investigation has been undertaken on the Site at the time of writing.

Ground Water Vulnerability

14.48 The **Phase 1 Preliminary Risk Assessment**, highlighted the following risk to ground water:

- Onsite sources of volatile contamination identified (hydrocarbons or solvents) – moderate risk assumed due to the extensive industrial heritage. Low probability of inhalation of vapours due to the concrete floors present on site.
- Sources of mobile contaminants identified on Site (metals, PAHs, hydrocarbons, volatile compound). Low probability of mobile contaminants to migrate due to the

concrete floors present on Site. Groundwater and surface water sampling recommended due to the extensive industrial heritage of the Site.

- Moderate risk assumed at this stage of organic contaminants posing a risk to water pipes. Potable waters risk assessment recommended once pipeline depths and routes are known.

Flood Risk

14.49 Current Environment Agency flood maps show the Site falls within Flood Zone 2. Flood Zone 2 covers areas that have a medium probability of flooding (between 1in100 and 1in1000 annual probability of flooding) from the River Medlock.

14.50 However, the Environment Agency have advised that due to the level of the existing building basement, the basement should be deemed as flood zone 3. The extent of flood zone 3 would therefore cover the extent of the existing building basement.

14.51 There are no known cases of flooding from surcharging of the adjacent sewer network or any other sources.

Overland Flow

14.52 The Site, generally, sits slightly higher than ground levels on Gloucester Street and as such is not deemed to be susceptible to flooding from overland flow.

Existing Drainage

14.53 From site records, surveys and site visits undertaken to date, it is understood the existing site is predominantly served by a combined foul and surface water drainage system which discharges into the public sewer in Gloucester Street. It is also understood that a portion of the existing roof drains directly into the River Medlock via rainwater downpipes.

Future Baseline

14.54 The future baseline conditions without implementation of the Proposed Scheme or any other planned development would see a potential increase in surface water run-off from the Site due to:

- Potential lack of maintenance of an uninhabited site resulting in increased overland flow from the Site to the surrounding areas including adopted highways and the River Medlock; and

- An increase in rainfall due to the effect of climate change without any allowance within the existing drainage system to cater for the increased flows. This would increase the surface water discharge rates and risk of overland flow from the Site to the surrounding areas including adopted highways and the River Medlock.

14.55 The flood risk from the River Medlock may also increase over time due to the effects of climate change and without the implementation of any mitigation measures that may otherwise be introduced through development.

14.56 Non-maintained roof drainage and below ground drainage features may give rise to further deterioration of the grounds and building structure.

Primary and Tertiary Mitigation

Construction Stage

14.57 The following primary and tertiary mitigation which has been evaluated as part of the construction stage assessment is outlined below.

Temporary Drainage Strategy

14.58 The Principal Contractor will be responsible for managing storm water run-off and foul water effluent generated during the temporary construction stage. A Surface Water Management Plan in accordance with best practice guidance such as BS8582:2013 Code of practice for surface water management for development sites will be prepared and included as part of a CEMP. This will include the re-use of existing drainage features, such as gullies and channels, including any discharge agreements required with the local sewer authority / The Environment Agency or LLFA. It may also be necessary to introduce perimeter cut off drains to prevent overland run-off and additional interceptors for pollution and debris collection.

Operational Stage

14.59 The following primary and tertiary mitigation which has been evaluated as part of the operational stage assessment is outlined below.

Surface Water Runoff

14.60 The Drainage Strategy (**Appendix 14.1**) allows for a reduction in the surface water runoff rate through the provision of storm water attenuation storage and SuDS features. Storage volumes have been determined to restrict peak surface water runoff rates from impermeable areas of the Proposed Scheme. The pre-development brownfield discharge rate has been determined based on the modified rational method taking the existing impermeable catchment (100% of the site area) into account. This results in a discharge rate of 37.8l/s for the 1 year return period storm. Approximately 61% of the existing site discharges to the adoptable sewer in Gloucester Street. The proposed discharge rate aims to reduce this to a maximum discharge rate of 18.9l/s (50% reduction) for all storms up to the 1:100 + climate change allowance event.

Surface Water Quality

14.61 The surface water drainage strategy will improve water quality by the introduction of SuDS features such as rain gardens and permeable surfacing. Details of the SuDS features to be used are shown on the Drainage Strategy drawings which can be found in Appendix F of the FRA (**Appendix 14.1**).

Groundwater Quality

14.62 The use of SuDS features such as rain gardens and permeable surfacing which are included in the Drainage Strategy (**Appendix 14.2**), will improve the quality of surface water runoff.

Flood Risk Zones

14.63 The finished floor levels (FFL) of the proposed residential units, which are classified by the Technical Guidance to the NPPF as being more vulnerable, will be set a minimum level equivalent to the 1 in 200 year plus climate change level plus an additional 600mm. All commercial units, classified as less vulnerable, will have the FFL set at a minimum of the equivalent to the 1 in 200 year plus climate change level plus an additional 300mm. This is described in more detail in the FRA (**Appendix 14.1**), but also reflected in the elevations

14.64 The existing flood zone cannot be altered without wider interventions within the River Medlock catchment area. However, locally with the development site, the basement windows are proposed to be blocked up to mitigate the risk of flooding to the lower ground / basement level of the building. The basement level will also not include any sleeping accommodation. All other floor levels will be at or above existing floor ground floor level which is at least 30.79m AOD and is therefore higher than the 1:100 year flood event plus 240mm freeboard of 29.85m AOD.

Assessment of Effects, Secondary Mitigation and Residual Effects

Construction Stage

Surface water run-off – connection of new drainage system – local

14.65 During the drainage installation works there is the potential, albeit short term, for the existing drainage to be temporarily disconnected from its outfall, which could lead to localised flooding within the boundary of the site itself therefore impact upon on-site construction workers.

14.66 The sensitivity of existing drainage infrastructure receptor is considered to be medium. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be minor.

Secondary Mitigation or Enhancement

14.67 The connection of the new drainage to the existing public sewer system would be undertaken over a short, isolated period of time. These works should be undertaken during a dry period to mitigate the impact.

Residual Effect

14.68 The sensitivity of existing drainage infrastructure receptor is considered to be low . The magnitude of change, following secondary mitigation, is considered to be small. Therefore, there is likely to be a direct, temporary, short-term, adverse residual effect which is considered to be negligible.

Significance

This effect is considered to be **Not Significant**.

Operational Stage

Surface water runoff – discharge rates – local + Borough

14.69 The surface water runoff from the Proposed Scheme will discharge into the River Medlock at a rate reduced by 50% of the pre-development brownfield run-off rate. The surface water discharge into the public sewer is reduced considerably and only existing adopted highway, beyond the site boundary, will continue to discharge into the public sewer.

14.70 Foul water flows will increase as a result of the Proposed Scheme. Nonetheless, the increase in foul flow will be less than the reduction in surface water flow into the public sewer (as set out above) so there is a net benefit on the public sewer network.

14.71 The sensitivity of the River Medlock is considered to be medium (as there is currently unrestricted flow off site). The magnitude of change is considered to be small. Therefore,

there is likely to be an indirect, permanent, long-term, beneficial effect which is considered to be minor.

14.72 The sensitivity of the United Utilities public sewer is considered to be low. The magnitude of change is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be minor.

Secondary Mitigation or Enhancement

14.73 No secondary mitigation or enhancement is required.

Residual Effect

14.74 In the absence of secondary mitigation the residual effects is that same as that reported in the pre-mitigation scenario.

Significance

14.75 This effect is considered to be Not **Significant**.

Flood Risk Zones – Proposed Development Within Flood Zone - Local

14.76 The Proposed Scheme lies within a Flood Zone 2, with the basement deemed as being within Flood Zone 3. Therefore there is a risk of flooding of the Proposed Scheme. This is an existing flood risk to the Site due to its proximity to the River Medlock and is also an existing flood risk to the building. Due to existing and proposed site levels, the works will not change or encroach within any critical flood plain storage or cause any obstruction to the natural flow of water. As a result of the Proposed Scheme storm water flows generated from the Site will be restricted to provide a betterment on pre-development run-off rates whilst also taking into account an allowance for future climate change.

14.77 The sensitivity of the Proposed Scheme building is considered to be high. The magnitude of change is considered to be small. Therefore, there is likely to be a direct, permanent, long-term, beneficial effect which is considered to be minor to moderate.

Secondary Mitigation or Enhancement

14.78 No secondary mitigation or enhancement is required/has been identified.

Residual Effect

14.79 In the absence of secondary mitigation the residual effect is that same as that reported in the pre-mitigation scenario.

Significance

14.80 This effect is considered to be **Not Significant**.

Limitations and Assumptions

14.81 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

- The assessment has been informed by information sourced from statutory authorities including the EA and statutory utilities and as such, is to some extent dependent on the accuracy of this information;

- A Phase 2 ground investigation has not yet been undertaken at the site, and therefore any information relating potential sources of contamination are based on desk-top study only;

- Any contractor would be competent and be a member of a relevant scheme such a Considerate Contractors requiring them to comply with relevant industry guidance for construction site management; and

- A drainage survey will be undertaken to determine a more accurate split between existing surface water discharge to the public sewer and surface water discharge into the River Medlock.

Summary

14.82 **Table 14.7** provides a summary of the effects, receptors, residual effects and conclusions of significance considered within the Chapter.

14.83 The table only provides a summary of the residual effects identified within the assessment and details of all primary, secondary and tertiary mitigation that has been taken into account is set out in detail within the Chapter and summarised within Environmental Management Plan included within **Volume 3: Environmental Management Plan**.

Table 14.7: Summary of Residual and Significant Effects

Effect	Receptor	Residual Effect	Is the Effect Significant?
Construction Stage			
Surface water run-off – connection of new drainage system	Public sewer system	Negligible	NO
Operational Stage			
Surface water runoff – discharge rate	River Medlock Public sewer system	Minor Beneficial Minor Beneficial	NO
Flood Zones – proposed development within flood zone	Proposed buildings	Minor to Moderate Beneficial	NO

References

[1] Department for Levelling Up, Housing and Communities (2012) National Planning Policy Framework (NPPF). Available at: https://www.gov.uk/guidance/national-planning-policy-framework
[2] Department for Levelling Up, Housing and Communities (2023) Planning Practice Guidance. Available at: https://www.gov.uk/government/collections/planning-practice-guidance

[3] Manchester City Council (2012) Strategic Flood Risk Assessment. Available at: https://www.manchester.gov.uk/info/500207/planning_and_regeneration/4700/strategic_flood_risk_assessment/2

[4] Manchester City Council (2012) Core Strategy. Available at: https://www.manchester.gov.uk/info/200074/planning/3301/core_strategy

[5] LK Consult Ltd (June 2018). Phase 1 Preliminary Risk Assessment.

15. Assessment of Cumulative Effects

Introduction

15.1 This Chapter reports the assessment of cumulative effects arising from the Proposed Scheme, in line with Schedule 4, Paragraph 5(e) of the EIA Regulations, which states the need to consider the following:

"the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources".

15.2 To accord with the EIA Regulations, in terms of providing an assessment of cumulative effects, this assessment has considered the following types of cumulative effects:

- **Effect interactions**: the interaction of environmental effects of the Proposed Scheme affecting the same receptor either within the Site or in the local area; and
- **In-combination interactions**: the combination of environmental effects of the Proposed Scheme with existing or approved projects affecting the same receptor.

Legislative Framework and Guidance

15.3 Planning Practice Guidance[1] (PPG) refers to the need for cumulative effects to be assessed as part of an ES, but at present, there is no widely accepted current methodology or best practice for the assessment of cumulative effects. As such, the methodology has been based on previous experience and knowledge at Turley, the types of receptors being assessed and the nature of the Proposed Scheme.

Assessment Methodology

15.4 The assessment of cumulative effects, for both effect interactions and in-combination effects, is largely qualitative in nature. The assessment of effect interactions is based on information contained within the ES, whilst the assessment of in-combination effects is also based on publicly available information (i.e. the planning applications submitted for the projects considered for in-combination effects). The approach to the assessment of both effect and in-combination interactions is set out in the following sections.

Effect Interactions

15.5 Following the completion of the **Technical Chapters 7 – 14**, the residual effects have been collated into a matrix so that effect interactions on common receptors[a] can be identified. Where a residual effect is concluded in **Technical Chapters 7 – 14** to be neither adverse nor beneficial, i.e. negligible, then this was excluded from the matrix (**Table 15.2** and **15.3**).

[a] The common sensitive receptors considered within this assessment are those which are assessed within two or more of the technical assessments within the ES.

This is on the basis that a negligible residual effect is unlikely to cause a noticeable change at a receptor or the receptor is not considered sensitive to a change.

15.6 Where residual effects have been considered to be 'minor' or greater, receptors have been categorised into receptor categories, defined by the 'factors' categories outlined in Schedule 4, Paragraph 4 of the EIA Regulations. The threshold has been set at 'minor' as this is considered to address the potential for a number of 'not significant' effects to a receptor becoming significant when they are considered together.

15.7 Where the level of effect ranged across receptors assessed, the worst case level of effect was included in **Tables 15.2** and **15.3**, i.e. the 'least beneficial' or 'most adverse'. If no residual effects for a receptor group were identified, these were not included in **Tables 15.2** and **15.3**.

15.8 Where effect interactions have been identified, a qualitative appraisal has been undertaken for the relevant receptor categories. The qualitative evaluation at the receptor level considered the following:

- Magnitude of change for each residual effects;
- Sensitivity/value/importance of the receptor/receiving environment to change; or/and
- Duration and reversibility of effect.

15.9 This process has been documented within the Assessment of Effect Interactions section of this Chapter.

In-Combination Effects

15.10 The assessment of potential in-combination effects has followed a two-step approach, as detailed below.

Step 1: Identification and Evaluation of Projects for Further Consideration

15.11 A review of planning applications submitted to MCC has been undertaken to identify an initial list of projects (referred to as 'Approved Projects') that could give rise to in-combination effects with the Proposed Scheme. The review considered projects that have submitted applications, rather than any projects that are foreseeable or allocated sites. This is due to it being unlikely that there will be sufficient information to inform a robust in-combination assessment for schemes where no application is yet submitted.

15.12 Applicable projects for consideration of in-combination effects were determined using the following criteria:

- Permitted application(s) either under construction or not yet implemented;
- Submitted application(s) not yet determined but have the potential to be determined prior to the submission of the Proposed Scheme;

- All refusals subject to appeal procedures not yet determined but have the potential to be determined prior to the submission of the Proposed Scheme;

- Located in common geographical area, taken to be within 1km of the Site;

- The project being of a relevant scale, the minimum threshold for this has been projects that have been or would be considered Schedule 1 developments within the EIA Regulations, or Schedule 2 developments, at which there is a potential for 'likely significant effects'. This threshold was be applied with caution.

15.13 In the application of these criteria, if a planning application had not been supported by an EIA it has been assumed that MCC had undertaken a screening exercise upon receipt of the application or issued a screening opinion and concluded that an EIA is not required and therefore the project was not considered to result in 'likely significant effects' (i.e. not EIA development).

15.14 The list of Approved Projects was shared with MCC in October 2023 who requested MCC ref: 136043 (Office scheme Plot 10A First St) be included in the cumulative assessment. This is included as Approved Project 6.

15.15 The final list of Approved Projects is set out in **Table 15.1** and shown on **Figure 15.1**.

Step 2: Assessment of In-Combination Effect

15.16 A review of available information for each Approved Project was undertaken using MCC's online planning portal. Relevant ES's or other relevant environmental reports were downloaded for consideration by the project team. Where no environmental reporting was available, professional judgement was used in order to determine any potential in-combination effect.

15.17 Where available, consideration was also given to whether there is likely to be a concurrent construction or operational stage with the Proposed Scheme.

15.18 The sensitive receptors identified for the Proposed Scheme were then cross checked against the receptors identified within the Approved Projects. In order for there to be a potential in-combination effect, there needs to be a potential effect on the same receptor for a similar duration within the overall programme for the Proposed Scheme.

15.19 The qualitative evaluation at the receptor level considered the following:

- Combined magnitude of change of all Approved Projects;

- Sensitivity/value/importance of the receptor/receiving environment to change; or/and

- Duration and reversibility of effect.

15.20 Through a combination of the qualitative evaluation and mitigation presented in the ES, conclusions have been drawn as to the likelihood for significant in-combination environmental effects.

Table 15.1: List of Approved Projects for In-Combination Assessment

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
1	125655/FO/2019	Water Street Manchester M3 4JQ	Full Planning Permission for the erection of 32 storey plus two basement level mixed use building (sui generis), comprising co-living units, amenity space, gym and flexible commercial space, landscaping, access and other associated works	900m northwest	Under construction
2	128002/FO/2020	One City Road 1 City Road East Manchester M15 4PN	Full Planning Application for demolition of existing structures on site, erection of one 11-storey plus basement office building (Use Class E) and one 14-storey plus basement office building with ground floor commercial unit (Use Class E), landscaping, highways works, and associated works	200m west	Approved
3	126308/FO/2020	2-4 Whitworth Street West Manchester M1 5WX (Travelodge Deansgate Locks)	The demolition of 2 to 4 Whitworth Street West and the construction of a mixed-use building, comprising flexible units for retail, food and drink use at ground floor level with a hotel at upper storeys, together with associated landscaping, servicing, cycle parking and other associated works.	275m west	Approved
4	125451/FO/2019	Plot 12 Circle Square Masterplan	Erection of new 15 storey building plus basement to include basement plant room, ground floor reception, cycle store and commercial space (flexible Use Classes A1 (Shop), A2 (Financial and Professional Services), A3 (Restaurant and Cafe), A4 (Drinking Establishment), D1 (Non-residential Institutions - Creche only) and D2 (Assembly and Leisure - Gym only) and 14 storeys of offices (Use Class B1) together with rooftop lounge and	400m northwest	Under construction

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
			terrace, associated means of access and external landscaping around base of building		
5	135834/FO/2022	Albert Bridge House Bridge Street Manchester M3 5AH	Creation of a mixed use development comprising two separate components in the form of an office building of up to 19 storeys with ground floor commercial, leisure, food and drink uses (All Use Class E (g)) and/ or drinking establishment (Sui Generis), and, a residential building up to 45 storeys (Use Class C3a) with additional roof top plant, basement car parking, cycle parking, landscaping and public realm, servicing and access arrangements, highway alterations and other associated works following demolition of the existing building complex	930m northwest	Under construction
6	136043/FO/2023	Land Bounded By River Street To The North, Plot 10B To The East, Hulme Street To The South And The Development Plot 9A To The West	Erection of 13-storey office building (Use Class E) with associated public realm, external roof terraces (floors 11 and 12) and other associated works including external amenity spaces (Plot 10A)	100m southwest	Under construction
7	135028/FO/2022	Land Bound By King Street West, St Marys Parsonage, Garden Lane And Smithy Lane	Erection of 14 storey building and the refurbishment of the existing buildings at 3 Smithy Lane and Carriage Works on Garden Lane / St Mary's Parsonage with ground floor extension to form office accommodation (Class E) with front of house and commercial floorspace at ground floor (Class E) with associated landscaping and other works	940m northwest	Approved

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
		Manchester M3 2JP	following demolition of existing buildings at 27-29 King Street West and 31-33 King Street West and link bridge from Carriage Works on Garden Lane / St Mary's Parsonage to 3 St Mary's Parsonage		
8	133172/FO/2022	Land Bounded By Trumpet Street, Albion Street & Great Bridgewater Street Manchester M1 5LE (Apex Tower)	Erection of a 26 storey residential tower for 72 apartments (Use Class C3) with associated car parking, cycle parking, servicing, and associated landscaping works	190m northwest	Awaiting decision
9	130387/FO/2021	The Former Gamecock Public House Boundary Lane Manchester M15 6GE	Erection of a part 7, part 11 storey purpose built student accommodation building comprising 197 bed spaces (56no. studios, 14 no. threedios, 10 no. cluster units (Sui Generis use class) with ancillary amenity space, a ground floor community hub (proposed for Use Classes F2(b), E(b), E(3), E(f)) and associated landscape works and infrastructure	760m south	Awaiting decision
10	136874/FO/2023	Echo Street Manchester M1 3QJ	Erection of 3 interlinked towers ranging from 27, 21 and 16 storeys together with intermediary link buildings (15 and 11 storeys) to form Purpose Built Student Accommodation (Sui Generis) with associated amenity space and external landscaping and other associated works	780m northeast	Under construction

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
11	111003/FO/2016/C1	10-12 Whitworth Street West Manchester M1 5WY	Demolition of existing building at 10 - 12 Whitworth Street West, and redevelopment of the site for a new 35 storey residential building (Use Class C3) comprising 327 apartments, with associated residents' services, facilities and communal spaces: servicing, highways, public realm and associated works.	220m west	Under construction
12	123261/FO/2019	Land Bounded By Arundel Street, Ellesmere Street, The A57 (M) Inner Ring Road (Mancunian Way) And Worsley Street Manchester	Erection of a part 8 and 9 storey building located on Arundel Street and Worsley Street, a part 11 and 23-storey residential building located on the Mancunian Way and refurbishment and conversion of the existing DOT Building to form 355 residential apartments in total (Use Class C3a) together with commercial uses (Use Classes A1, A2, B1, D1 and D2) along with associated car parking, cycle parking, access, landscaping and other associated work	950m west	Approved
13	129273/FO/2021	34 Great Jackson Street Manchester M15 4NG	Demolition of existing structures and the construction of two residential buildings of 56 storeys (plus basement and roof plant) (use class C3), with ground floor commercial uses (use class E), car parking, cycle provision, landscaping, access and other associated works	400m southwest	Awaiting Decision
14	132199/FO/2021	Plot F Great Jackson Street Manchester M15 4AX	Full planning permission for the demolition of existing structures and the erection of two 51-storey residential buildings (Use Class C3) across two phases, including residential amenity facilities, basement car parking, landscaping and public realm, servicing and access arrangements, highways alterations, and associated works.	370m southwest	Under construction

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
15	130553/FO/2021	Land Bounded By John Dalton Street, Ridgefield, Bow Street And South King Street Manchester	Demolition of the existing buildings and structures and the erection of a 10-storey plus basement office building (Use Class E(g)), with flexible ground floor and basement uses (Use Class E) and rooftop amenity space, works to facilitate the pedestrianisation of the southern part of Ridgefield and other associated works.	770m north	Under construction
16	125804/FO/2019	325 - 327 Deansgate Manchester M3 4LQ (StayCity Deansgate)	Demolition of existing buildings and structures on-site and erection of 22-storey building comprising apart-hotel (Use Class C1) with flexible commercial uses at ground floor and within existing viaduct arches (Use Class A1, A2, A3, A4, D2), access, landscaping and other associated works	390m west	Under construction
17	127612/FO/2020	Old Granada Studios Atherton Street Manchester M3 3GS	Part redevelopment and part refurbishment including the conversion of the existing Granada House building into a 175 bed hotel (Use Class C1) with associated private members club (Sui Generis); and erection of new single storey rooftop bar and restaurant (Use Classes A3 and A4); external terrace and rooftop pool in addition to the erection of a new ten storey building for office (Use Class B1) and ground floor retail or workspaces (Use Class A1/A3 and/or B1); retention of Studios for current use as filming studios (Use Class B1) and erection of modular workspaces (Use Class B1) with associated access and servicing arrangements; public realm and other associated works	790m northwest	Under construction
18	132600/FO/2021	Plot 9 First Street Manchester M15 4FN	Erection of a nine-storey building with rooftop plant and basement comprising office accommodation (Use Class E(c)) with ancillary facilities for occupiers including roof	150m southwest	Under construction

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
			top terrace, winter gardens, gym/ yoga studio, basement car parking (26 spaces) and cycle parking (130 spaces) landscaping and other associated works		
19	125833/FO/2019	Land Bounded By River Street To The North, Plot 10 To The East, Hulme Street To The South And Medlock Street To The West Manchester	Erection of a basement plus 11-storey building comprising office accommodation (Use Class B1), flexible commercial space (Use Classes A1 (Shops), A2 (Professional and Financial Services), A3 (Restaurants and Cafes), A4 (Drinking Establishments), B1 (offices), and D2 (Gymnasium), car parking, cycling parking and associated facilities, landscaping, and associated works.	140m southwest	Under construction
20	121252/FO/2018	Great Marlborough Street Car Park Great Marlborough Street Manchester M1 5NJ (Student Castle)	Partial reconfiguration of existing Multi-Storey Car Park (MSCP), including temporary access off Great Marlborough Street, construction of 5 storey external ramps, closure of vehicular access to top level; and construction of new facade; and partial demolition of the surplus part of existing MSCP and erection of a part 55, part 11 storey, part 4 storey mixed-use building comprising 853 Purpose Built Student Accommodation units (sui generis), ancillary amenity space and support facilities, and 786sqm (GIA) SME incubator workspace (Use Class B1), including public realm improvements and other associated work	185m northwest	Approved
21	118040/FO/2017	Granada House Atherton Street	Part redevelopment and part refurbishment of the site, following demolition of existing buildings and structures, including the Annex Building fronting Atherton Street, the	790m northwest	Under construction

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
		Manchester M3 3GS	Administration Block and Security Lodge fronting Quay Street, Mechanical Workshop areas and Stores to the rear of Studio 8, former Staff Welfare Suite to the rear of Studios 2 and 6, to allow the erection of 10 storey residential and office building (use Class C3 / B1) comprising 22 residential units with rooftop pool, ground floor retail units (Use Class A1, A2 or A3) and amenity space; conversion of Studios 2, 6, 8 and 12 to event spaces and filming studios (Sui Generis); conversion of the existing Granada House building into a hotel (Use Class C1) with associated private members club (Sui Generis); restaurant and cafe use (Use Class A3) and drinking establishment uses (Use Class A4); erection of a new single storey rooftop bar / restaurant associated with the hotel and private members club; erection of 4 storey modular office building the the rear of Granada House; inclusion of a Combined Heat and Power (CHP) Energy Centre; creation of temporary car parking to the rear of Granada House; works associated with access and servicing of the wider development, and associated public realm and landscaping works.		
22	134287/FO/2022	Alberton House 30 St Marys Parsonage Manchester M3 2WJ	Demolition of existing building and erection of a 19 storey (ground including mezzanine, plus 18) building above basement level to form a mixed use office development with ancillary office amenity including gym for use by office occupiers, (Use Class E(g(i)) flexible commercial floorspace at ground floor and mezzanine (Use Class E (a), (b), (c) and/ or drinking establishment Sui Generis),	965m northwest	Approved

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
			flexible office floorspace (Use Class E(g(i)) at Levels 1-16, and two floors of wellness centre (Sui Generis) at Levels 17 and 18 including ancillary food and beverage (Use Class E (a), (b), (g(i)) and/ or drinking establishment Sui Generis), cycle parking, landscaping, highways and other associated works.		
23	134288/FO/2022	No.3 Circle Square Land Bounded By Princess Street, Newman Street (Formerly Brancaster Road) And Cloak Street Manchester M1 7ED	Erection of 15 storey building comprising office space (Use Class E(g)(i)) and ancillary flexible commercial uses (Use Class E), rooftop terrace, highway works, landscaping, and other associated works	400m southwest	Under construction
24	135419/FO/2022	One Medlock Street Manchester M15 5FJ	Demolition of the existing hotel building and structures and redevelopment of the site to comprise two separate buildings: one 13 storey office building with commercial unit (Use Class E) at ground floor; a part 11, part 38 storey building comprising 1,014 purpose built student accommodation units (sui generis) with ground floor office/community uses (Use Class E, F1 or F2); and associated ancillary internal and external amenity space, hard and soft landscaping and associated highway works.	230m southwest	Approved
25	136170/FO/2023	Land Bounded By River Street To	Erection of 14-storey building comprising purpose-built student accommodation (PBSA) (Sui Generis) and ground	70m southwest	Under construction

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
		The North, River Street And Vacant Lane To The East, Hulme Street To The South And Plot 10A Of The First Street Masterplan To The West Manchester	floor Food Hall (Sui Generis Use), and other associated works including external amenity spaces, public realm, secure cycle parking, access and servicing arrangements (Plot 10B)		
26	135565/FO/2022	Land Bounded By Deansgate, Great Bridgewater Street, Watson Street & Peter Street Manchester M3 4EN	Demolition of the central atrium, car park ramps, and other elements, retention of casino (Sui Generis), bowling alley and existing food and drink unit (Use Class E) alongside to allow refurbishment, restoration and re-use of the Great Northern Car Park to provide office accommodation, retail and/or food and drink uses (Use Class E) and ancillary areas; and Refurbishment, restoration, partial demolition and erection of a 3-storey extension to Deansgate Terrace (northern section) and Goods Yard Entrance to form office, retail and / or food and drink use (Use Class E) and drinking establishments / hot food takeaway (Sui Generis), with associated public realm works comprising the reconfiguration of Great Northern Square and the introduction of additional public realm with associated hard and soft landscaping, highways works, access and servicing facilities, rooftop plant and other associated	440m northwest	Approved

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
			works; and Partial demolition of the existing leisure box to erect three residential buildings (ground plus 16, 27 and 34 storeys) to provide 746 residential apartments (Use Class C3), reconfiguration of existing car parking together with the creation of office, retail and / or food and drink use (Use Class E), or Sui Generis (drinking establishments / hot food takeaway) at ground floor and level 3, hard and soft landscaping, together with highways works, access and servicing facilities, rooftop plant and other associated works; and, External alterations and restoration of Deansgate Terrace (southern section) to provide office, retail or food and drink use (Use Class E) or Sui Generis (drinking establishments / hot food takeaway / live music venue), along with delivery of associated public realm, highways works, plant, and associated works		
27	137227/FO/2023	Plot D Great Jackson Street Manchester M15 4NP	Full planning permission for the demolition of existing structures and the erection of one residential building to a height of 71 storeys comprising 642 homes (Use Class C3) with food and drink uses (Use Class E) and / or drinking establishment (Sui Generis); and one office building (Use Class E); with basement car parking, cycle parking, landscaping and public realm, servicing and access arrangements, highways alterations and associated works.	500m southwest	Awaiting decision
28	137226/FO/2023	Part Of Plot C And Plot E Great Jackson Street	Full planning permission for the demolition of existing structures and the phased construction of four residential buildings (two at 47 storeys and two at 51 storeys) to	500m southwest	Awaiting decision

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
		Manchester M15 4NP	provide 1,746 homes (Use Class C3), flexible commercial, leisure, food and drink uses (all Use Class E) and / or drinking establishment (Sui Generis), basement car parking, cycle parking, landscaping and public realm, servicing and access arrangements, highways alterations and associated works.		
29	137401/FO/2023	Land Between Upper Brook Street, Kincardine Road And Grosvenor Street Manchester	Erection of three buildings (ground floor + 12,14 and 41 storeys) to creation Purpose Built Student Accommodation (PBSA) (Use Class Sui Generis), comprising 1,100 bedrooms in total and 506sqm of ground floor ancillary uses (cafe/ commercial and convenience store - Use Classes E (a)/(b)/(c)) together with the erection of three buildings (ground floor + 5,7 and 9 storeys) for Science and Innovation uses (Use Class E (g)(i) & (ii)) and 834sqm ground floor community uses (retail/ café) and medical facility (Use Classes E (a)/(b) and (e)), and the provision of new public realm, two new public squares, new access and parking, and associated works following demolition of existing buildings	750m southeast	Awaiting decision
30	126668/FO/2020	Land Bound By Silvercroft Street, Crown Street, And The Mancunian Way Manchester M15 4AX (Crown Street Phase 2,	Full planning permission for the erection of two 52-storey residential buildings (Use Class C3) each incorporating a podium accommodating residential amenity facilities and ground floor and first floor commercial units (Use Classes A1, A2, A3, or D1), private and public basement car parking, landscaping and a public park, servicing and access arrangements, highways improvements, and associated works (Phases A, B, and D as defined on	600m southwest	Under construction

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
		The Blade and Three60)	Drawing Reference: 10292Z1SHPG000PL00 B5D802 and 10292Z1SHPG000PLB1B5D801). Outline planning permission (with all matters reserved) for an educational facility (Use Class D1) (Phase C as defined on Drawing References: 10292Z1SHPG000PL00B5D802 and 10292Z1SHPG000PLB1B5D801)		
31	115871/FO/2017	Former Bauer Millet Site Albion Street Manchester (Viadux)	Erection of a 40 storey building to form 375 residential apartments (Use Class C3a) and the erection of a 14 storey building for form offices (Use Class B1) (31,756 sqm) together with ground floor commercial space (Use Class A1, A3 or A4) (1010 sqm) with associated enclosed service yard, public realm including staircase and lift to connect with viaduct, car and le parking, landscaping and other associated works	190m northwest	Under construction
32	125573/FO/2019	Plot 11 First Street Comprising Land Bound By Hulme Street To The North, Wilmott Street To The East, The Unite Parkway Gate Development And Mancunian Way To The South, And Medlock Street	Construction of four buildings of heights varying from 10 storeys to 45 storeys together comprising Co-living bedspaces (use class sui generis) and associated amenity facilities, with ground floor commercial units (Use classes A3 (Café / Restaurant and D2 (Gym)), private amenity space and public realm comprising hard and soft landscaping, car parking and cycle facilities and other associated works.	160m south	Under construction

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
		To The West Manchester			
33	128804/FO/2020	Barclay House, 35 Whitworth Street West, Manchester, M1 5NG	Erection of a two-storey rooftop extension to form 9 duplex apartments and the conversion of the existing redundant internal car park to create a further 4 duplex apartments at Barclay House, Whitworth Street West, Manchester	30m north	Approved
34	129081/FO/2021	70 Great Bridgewater Street, Manchester, M1 5ES	Partial demolition and reconfiguration of 70 Great Bridgewater Street to create a new office building (Use Class E), including the replacement of building facades, a 2-storey rooftop extension and alterations to the internal layout including the infilling of the central atrium, servicing and cycle parking, access and associated works.	90m northwest	Under Construction
35	129406/FO/2021	Land at Deansgate South, Manchester	Full planning permission for a 28-storey purpose built student accommodation building (Sui Generis)	500m west	Approved at Appeal
36	126648/FO/2020	Water Street, Manchester, M3 4JQ	Full Planning Permission for the erection of 36 storey plus basement level mixed use building comprising co-living units, amenity space and flexible commercial space (Sui Generis), co-work (Use Class B1), landscaping, access and other associated works.	970m northwest	Under Construction
37	131859/FO/2021	50 Fountain Street, Manchester, M2 2AS	Full Planning Permission for the demolition of modern extension to Grade II Listed building, retention and refurbishment original Victorian facade, erection of commercial building (Use Class E) with landscaping, and other associated works.	770m north	Approved

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
38	114664/FO/2016	Land Bounded By Jacksons Row, Bootle Street, Southmill Street & 201 Deansgate Manchester M2 5GU	Partial demolition of existing buildings. Development up to 171.6m AOD comprising residential (Use Class C3), offices (Use Class B1), hotels (Use Class C1), place of worship (Use Class D1) and leisure/food and drink uses (Classes A1, A3, A4, A5 and D2). Creation of public spaces and new public realm, provision of basement car parking, highway alterations, landscaping and associated works.	550m northwest	Under Construction
39	134694/FO/2022	Bridgewater House Great Jackson Street Manchester M15 4WG	Restoration and conversion of the Grade II listed Bridgewater House and redevelopment of car park area to create a ground plus three storey apartment building; overall providing 53 residential units, including landscaping to courtyard, bike storage and associated works.	600m west	Approved
40	129251/FO/2021	98-116 Deansgate And 35-47 King Street West Manchester M3 2GQ	Change of use of upper floors and erection of three storey rooftop extension, including plant level, to Kendal Milne building to provide offices on floors 1-9 (Use Class E), together with change of use of ground, lower ground and basement levels of Kendal Milne building to flexible commercial spaces (Use Class E, F2 and /or Sui Generis (Drinking Establishments) and associated elevational alterations and works; Demolition of adjacent Fraser Building and link bridges and erection of 14 storey office building (Use Class E), including plant level, together with associated amenity space and ground and basement floor flexible commercial units (Use Class E, F2 and / or Sui Generis (Drinking Establishments)) and basement areas for cycle storage and plant; Highways landscaping and	900m northwest	Approved

ID	Planning Ref	Project Name / Address	Description	Distance from Site	Status
			public realm works, engineering and infrastructure works and other associated works.		
41	125799/FO/2019	John Dalton West / John Dalton Tower, Chester Street, Manchester, M1 5GD	Demolition of existing John Dalton West Building and associated structures, and erection of a new 7 storey education building (Use Class D1) for the Faculty of Science and Engineering (comprising teaching and research spaces, academic offices, social learning areas, catering/kitchen facilities and an energy centre), physical connections to and external refurbishment of the John Dalton Tower, hard and soft landscaping works, car and cycle parking and associated works.	250m south	Under construction

Assessment of Effect Interactions

15.21 **Table 15.2** and **15.3** detail those receptor categories where residual effects were identified within **Technical Chapters 7 – 14** for the construction and operational stages of the Proposed Scheme, respectively. **Technical Chapters 7 – 14** have each identified specific sensitive receptors within their assessments, and these have been grouped into common categories in **Table 15.2** and **15.3** for further consideration.

15.22 Where effects are reported as significant in **Technical Chapters 7 – 14**, these are shown in **Table 13.2** and **13.3** as **bold** and shaded grey.

Construction Stage

Table 15.2: Matrix of Effect Interactions (Construction Stage)

Effect	Population and Human Health	Climate	Cultural Heritage	Landscape
Chapter 7: Townscape and Visual				
Townscape effects				Moderate adverse
Visual effects within the ZTV	Moderate adverse[2]			
Chapter 8: Built Heritage				
Changes to the setting and significance of non-designated heritage assets			**Moderate adverse**	
Chapter 9: Climate Change				
Upfront carbon emissions of buildings		Minor adverse		
Chapter 10: Socio-Economics and Human Health				
Employment generated during the construction stage	Minor beneficial			
Chapter 11: Noise and Vibration				
Nuisance and disturbance as a result of noise from construction activities including traffic	**Up to major adverse**			

[2] Moderate adverse for residents, visitors and members of travelling public, and minor for workers.

Effect	Population and Human Health	Climate	Cultural Heritage	Landscape
Nuisance and disturbance as a result of vibration from construction activities	Minor adverse[3]			
Chapter 13: Daylight, Sunlight and Overshadowing[4]				
Reduced daylight amenity	Minor adverse[5]			
Reduced sunlight amenity	Minor adverse[6]			
Potential for Effect Interaction:	**Yes**	**No**	**No**	**No**

15.23 As shown in **Table 15.2**, no residual effects above negligible were reported for **Chapter 12: Wind Microclimate** or **Chapter 14: Flood Risk and Drainage**.

15.24 As per **Table 15.2** potential effect interactions were only identified within the Population and Human Health receptor group.

Population and Human Health

15.25 As set out within **Table 15.2** the residual effects during the construction stage relevant to population and human health receptor group include:

[3] At The Assembly, 1 Cambridge Street only.

[4] Note that construction stage effects were scoped out of **Chapter 13: Daylight, Sunlight and Overshadowing** as they would vary throughout the construction programme and gradually increase to the potential effects identified for the operation of the Proposed Scheme. To ensure a full effect interactions assessment, the operational stage effects have been included in **Table 15.2**.

[5] At 21-35 Whitworth Street West; 84-88 Great Bridgewater Street; The Assembly, 1 Cambridge Street; and Vita House only.

[6] At The Assembly, 1 Cambridge Street and 84-88 Great Bridgewater Street.

- Adverse temporary effects, arising from construction activities, upon the visual amenity of nearby residents, city centre visitors, members of travelling public (and to a lesser degree upon workers) with intervisibility with the Site (**Chapter 7: Townscape and Visual**).

- Beneficial employment generation (construction jobs) with the local labour force arising from construction of the Proposed Scheme (**Chapter 10: Socio-Economics and Human Health**).

- Disturbance to nearby residential properties due to temporary construction noise and vibration associated with general construction activities (**Chapter 11: Noise and Vibration**). The assessment within **Chapter 11: Noise and Vibration** considered three residential receptors, but only concluded above negligible effects at The Assembly, 1 Cambridge Street (both noise and vibration effects); and Vita Student, First Street (noise effects only).

- Reduction in daylight and sunlight availability at surrounding residential receptors. The assessment within **Chapter 13: Daylight, Sunlight and Overshadowing** considered residential receptors concluding above negligible effects at 21 -35 Whitworth Street West (daylight only); 84-88 Great Bridgewater Street (daylight and sunlight); The Assembly, 1 Cambridge Street (daylight and sunlight); Macintosh Mills (daylight only); and Vita House (daylight only).

15.26 With respect to concurrent effect interactions upon nearby residential receptors this could include the interaction of daylight, sunlight, noise and vibration effects, given the focus of these effects on residential receptors. On this basis, the granular definition of which specific receptors have been tested and experience an effect greater than negligible (as set out above) is necessary to ensure clarity on where an effect interaction is occurring.

15.27 It is clear from the above that receptors within Vita House would experience effect interactions with respect to noise and daylight effects; while residents within The Assembly, 1 Cambridge Street would experience effect interactions with respect to noise, vibration, daylight and sunlight effects. Interacting with these adverse effects is the temporary changes to visual amenity identified within **Chapter 7: Townscape and Visual**, which includes residential properties, especially those with intervisibility with the Site, which both The Assembly, 1 Cambridge Street and Vita House would do.

15.28 All of these effects are not experienced in the same way or easily comparable when reaching trying to reach a conclusion. Furthermore, with respect to the daylight and sunlight effects, as noted above, the minor adverse effect would occur at the point of construction where the full massing of the Proposed Scheme is complete, mirroring the operational stage effects which has been used as a proxy of a worst-case construction effect. Therefore, to reach a judgement on the effect interaction it is assumed that the largest most adverse singular effect would

dominant the effect interactions. On this basis, the effect interaction for Vita House and The Assembly, 1 Cambridge Street is expected to be up to major adverse and significant, reflective of the noise effect identified.

15.29 There is the potential the beneficial employment effects on the local labour force, could, potentially, interact with the above discussed adverse effect interactions. In that a resident of the one of the two residential buildings receptors could be within the construction sector where the beneficial employment effect is occurring. Albeit this is less likely for Vita House given that it is a student building and the low likelihood that they would be seeking employment in the construction sector where the beneficial effect is occurring. Nonetheless, even in the eventuality of an effect interaction occurring between the combined adverse effects discussed above, with the beneficial employment effects, the overall effect interaction of these would be governed by the adverse effects occurring and thus not change the conclusion reached above, that a up to major adverse and significant effect interaction could arise.

Operational Stage

Table 15.3: Matrix of Effect Interactions (Operational Stage)

Effect	Population and Human Health	Climate	Cultural Heritage	Landscape	Water
Chapter 7: Townscape and Visual					
Townscape effects				Moderate neutral up to moderate beneficial[7][8]	

[7] The assessment within **Chapter 7: Townscape and Visual** identified a range of effects across all receptors warranting the summarized range within **Table 15.3**.

[8] Negligible townscape effects were identified upon Listed Buildings. As such this effect is not captured within the summary within **Table 15.3.**

Effect	Population and Human Health	Climate	Cultural Heritage	Landscape	Water
Visual effects within the Zone of Theoretical Visibility	Minor neutral up to major beneficial[9][10]				
Chapter 8: Built Heritage					
Changes to the setting and significance of non-designated heritage assets			**Moderate adverse**		
Chapter 9: Climate Change					
Regulated and unregulated carbon emissions generated by buildings		Minor adverse[11]			
Embodied carbon emissions of buildings		Minor adverse[11]			
Chapter 10: Socio-Economics and Human Health					
Provision of PBSA	**Moderate beneficial**				
Chapter 13: Daylight, Sunlight and Overshadowing					
Reduced daylight amenity	Minor adverse[12]				

[9] The assessment within **Chapter 7: Townscape and Visual** identified a range of effects across all receptors warranting the summarized range within **Table 15.3**.

[10] Negligible visual effects were identified upon Viewpoint 7 – Blantyre street (resident and travelling members of public), Viewpoint 10 – Duke Place at Roman Fort (Visitors at the Roman fort of Mamucium and travelling members of public), Viewpoint 11 - St Wilfrids Street at St Nicholas Road (Residents and travelling members of public), and Viewpoint 12 - Bonsall Street at Birchall Way (Travelling members of public). As such these effects are not captured within the summary within **Table 15.3**.

[11] As per **Chapter 9: Climate Change**, this effect occurs at the local scale, and a negligible effect at the regional and national scale was reported, but not included within **Table 15.3** in line with the methodology for the assessment of effect interactions.

[12] At 21-35 Whitworth Street West; 84-88 Great Bridgewater Street; The Assembly, 1 Cambridge Street; and Vita House only.

Effect	Population and Human Health	Climate	Cultural Heritage	Landscape	Water
Reduced sunlight amenity	Minor adverse[13]				
Chapter 14: Flood Risk and Drainage					
Surface water runoff – discharge rate					Minor beneficial
Flood Zones – proposed development within flood zone	Minor to moderate beneficial				
Potential for Effect Interaction:	**YES**	**YES**	**NO**	**NO**	**NO**

15.30 As shown in **Table 15.3**, no residual effects above negligible were reported for **Chapter 11: Noise and Vibration** and **Chapter 12: Wind Microclimate**.

15.31 As per **Table 15.3** potential effect interactions were only identified within the Population and Human Health and Climate receptor groups.

Population and Human Health

15.32 As set out within **Table 15.3** the residual effects during the operation stage relevant to population and human health receptor group include:

- Neutral and beneficial visual effects, due to the completion of the Proposed Scheme and associated public realm, upon the visual amenity of nearby residents, city centre visitors, members of travelling public (and to a lesser degree upon workers) with intervisibility with the Site.
- The beneficial effects upon students requiring accommodation due to the provision of additional PBSA delivered by the Proposed Scheme.
- Reduction in daylight and sunlight availability at surrounding residential receptors. The assessment within **Chapter 13: Daylight, Sunlight and Overshadowing** considered residential receptors concluding above negligible effects at 21 -35 Whitworth Street West

[13] At The Assembly, 1 Cambridge Street and 84-88 Great Bridgewater Street.

(daylight only); 84-88 Great Bridgewater Street (daylight and sunlight); The Assembly, Cambridge Street (daylight and sunlight); Macintosh Mills (daylight only); and Vita House (daylight only).

- Beneficial effects arising from the placement of residential units within the Proposed Scheme outside of the existing flood zone.

15.33 When considering the above effects in more detail it is clear that there are two potential effect interactions, occurring to two different receptor groups. Existing surrounding residential receptors would experience effect interactions with respect to daylight, sunlight and visual amenity. Whilst the future students of the Proposed Scheme will experience and effect interaction with respect to the provision of PBSA and the recognised beneficial flooding effects.

15.34 In terms of the existing surrounding residential receptors, specifically 21 -35 Whitworth Street West (daylight only); 84-88 Great Bridgewater Street (daylight and sunlight); The Assembly, Cambridge Street (daylight and sunlight); Macintosh Mills (daylight only); and Vita Student (daylight only), would experience the identified adverse changes in daylight and/or sunlight alongside the identified neutral or beneficial visual effects from **Chapter 7: Townscape and Visual**. As per the construction stage assessment, it is difficult to evaluate these effects together given the way in which a receptor experiences these effects. Therefore, following the same approach taken for the construction stage effect interactions, it has been considered that the worst-case individual effect would define the effect interaction. In this instance, the adverse effect arising from changes to daylight / sunlight. Therefore, the effect interaction is considered to be minor adverse and not significant.

15.35 In terms of the effect interaction occurring upon the future students of the Proposed Scheme, they would experience the beneficial effects of the provision of student accommodation, as well as the determined beneficial effects in relation to flooding. Given the conclusions reached across each of the effects (**Table 15.4**) there is perceived to be a moderate beneficial and significant effect interaction, given such a conclusion is reached for the provision of PBSA in isolation (i.e., as reported within **Chapter 10: Socio-Economics and Human Health**).

Climate

15.36 The assessment within **Chapter 9: Climate Change** identified two operational stage effects in relation to 'emissions'. The Regulated and unregulated carbon emissions generated by buildings can effectively be considered as the emission occurring from the operation of the building. Whilst the *'Embodied carbon emissions of buildings'* relates to the refurbishment and replacement of building elements through the lifetime of the building. As such, the effect interaction of these two is essentially a 'net' emission from the Proposed Scheme throughout its operational lifetime. The 'combined' emission from these two effects would be 442.3 tCO_2e[14] . Using the methodology set out within **Chapter 9: Climate Change**, this combined emission would still not exceed 25,000 tCO2e per year, which is taken as the threshold of an effect having a

[14] Based on adding the two emissions calculated for each effect, as reported in **Chapter 9: Climate Change**.

medium magnitude of change[15], compared to a small magnitude of change, which is the conclusion reached for the effects in isolation. Therefore, the effect interaction is considered to be minor adverse and not significant.

[15] See **Table 9.6** for criteria for determining magnitude of change.

Assessment of In-Combination Effects

15.37 Approved Projects identified for the assessment of in-combination effects are detailed **Table 15.1** and shown on **Figure 15.1**. The assessment of in-combination effects is set out below.

Townscape and Visual

15.38 With respect to townscape and visual effects at the construction stage, as the majority of the Approved Projects are a distance from the Site and have a degree of intervening urban environment, any in-combination effects during construction are perceived to be localised, with only the more immediate Approved Projects contributing to in-combination effects. Nonetheless, in line with the assessment of the Proposed Scheme in isolation (within **Chapter 7: Townscape and Visual**) construction stage effects on townscape and visual are considered largely to be temporary and reversable (with the exception of the newly created built form and restored façade of the existing building, all of which would be long-term and permanent effects). For townscape effects the Proposed Scheme was determined to give rise to moderate adverse effects, whilst visual effects were deemed to be moderate for residents and minor for other visual receptors. Overall, it is not perceived that the additional Approved Projects would ultimately change these conclusions of level of effect. As such, the in-combination effects are considered to be the same as that reported for the Proposed Scheme in isolation.

15.39 In terms of townscape effects at the operational stage, again the potential for in-combination effects on townscape are considered to be localised and therefore centred on those other Approved Projects located closest to the Site. Nonetheless, as noted above, there is still a degree of separation between the Proposed Scheme and these other immediate Approved Projects. Overall, it is perceived that the nearby Approved Projects in-combination with the Proposed Scheme would contribute positively to townscape, or at worst have a neutral effect, through the provision of new built form and associated development that is within the context of an area of regeneration. On this basis, and taking a conservative approach to the conclusion of in-combination effects, it is considered that in-combination effects with the Approved Projects would be no greater than the Proposed Scheme in isolation and noted within **Chapter 7: Townscape and Visual**.

15.40 With respect to in-combination visual effects at the operational stage, an evaluation of the identified Approved Projects in-combination with the Proposed Scheme has been undertaken informed by the visualisation prepared for the Proposed Scheme, as provided in **Appendix 7.2**. This evaluation is presented in **Table 15.4** below and is focused on if the in-combination effect is significant or not.

Table 15.4: Outputs of in-combination visual appraisal during the operational stage

Approved Project Ref	Potential common receptor (s)	In-combination Appraisal	Is the In-combination Effect identified Significant (Yes/No)
1, 5, 7, 9, 10, 12, 14 – 17, 21 – 23, 26 – 30, 33, 35 – 41.	None	No effect due to absence of common receptor and/or general distance from Proposed Scheme.	No
2	Viewpoints 1, 3	Some views of this 11/14 storey development may be visible alongside the Proposed Scheme, although it will be significantly lower in height. There will be some additional built form to contribute to the cumulative effect of the two projects, but this will be in keeping with the urban character of the area.	No
3	Viewpoints 10, 7, 5, 11, 6	This development is 7 stories high and is therefore lower than many of the adjacent buildings and structures. Therefore, it is unlikely that this development will contribute towards a cumulative visual effect with the Proposed Scheme.	No
4	Viewpoints 8, 2, 10, 7	This development may be visible in the background of some of the views towards the Site from certain viewpoints. However this development sits within several other tall buildings within the Circle Square masterplan and therefore is unlikely to greatly affect the character of the views.	No
6	Viewpoints 5, 6, 11	This development is located close to the Site and therefore it is likely to be seen from some viewpoints alongside the Proposed Scheme. The 13 storey building will be lower than the Proposed Scheme and the character will be in keeping with the surrounding urban area.	No
8	Viewpoints 6, 9, 12	This 26 storey tower is likely to be seen alongside the Proposed Scheme from several viewpoints due to its large height. The two projects will be in keeping with each other and	No

Approved Project Ref	Potential common receptor (s)	In-combination Appraisal	Is the In-combination Effect identified Significant (Yes/No)
		not incongruous to the character of the surrounding area.	
11	Viewpoints 9, 6, 1, 12, 7	This 35 storey development is comparable in scale to the Proposed Scheme. It is likely to be visible from several viewpoints due to the large height. The two projects combined are likely to have a cumulative effect, although due to the city centre location and surrounding large scale developments, this is unlikely to be a significant cumulative effect.	No
13	None	Even though this development is some distance from the Proposed Scheme, its large height mean that it will be able to be seen in conjunction with the Proposed Scheme from some views. The two projects will be in keeping with each other and not incongruous to the character of the surrounding area and therefore will not create a significant cumulative effect.	No
18	Viewpoints 3, 1, 4, 6, 11	This 9 storey building is unlikely to be seen from the majority of viewpoints due to its position within the First Street area, with surrounding tall buildings.	No
19	Viewpoints 1, 4, 3	This development may be seen in conjunction with the Proposed Scheme from some viewpoints, although as it is set amongst other tall buildings within the city centre, the cumulative effects are unlikely to be significant	No
20	Viewpoints 2, 8, 10	Parts of this development including the 55 storey tower will be visible in combination with the Proposed Scheme due to the large height. The two projects combined are likely to have a cumulative effect, although due to the city centre location and surrounding large scale developments, this is unlikely to be a significant cumulative effect.	No
24	Viewpoints 1, 3, 4	Parts of this development including the 38 storey tower will be visible in combination with the Proposed Scheme due to the large height. The two developments combined are likely to have a	No

Approved Project Ref	Potential common receptor (s)	In-combination Appraisal	Is the In-combination Effect identified Significant (Yes/No)
		cumulative effect, although due to the city centre location and surrounding large scale developments, this is unlikely to be a significant cumulative effect.	
25	Viewpoints 6, 2, 5, 4, 8	This development is located close to the Site and therefore it is likely to be seen from some viewpoints alongside the Proposed Scheme. The 14 storey building will be lower than the Proposed Scheme and the character will be in keeping with the surrounding urban area.	No
31	Viewpoints 9, 6, 12	Parts of this development including the 40 storey tower will be visible in combination with the Proposed Scheme due to the large height. The two projects combined are likely to have a cumulative effect, although due to the city centre location and surrounding large scale developments, this is unlikely to be a significant cumulative effect.	No
32	Viewpoints 1, 4	Due to the large height of this development, the towers can be seen above the majority of the surrounding roofscapes. However, the development is some distance from the Proposed Scheme and therefore in the majority of views, the buildings do not appear next to each other. The surrounding vernacular means that it is unlikely to cause a significant cumulative effect with the Proposed Scheme.	No
34	Viewpoints 9, 6, 12	This development involves a 2 storey roof extension to an existing building. As this only constitutes a small change to the existing height and mass of a building, it is unlikely that it will have a cumulative effect in conjunction with the Proposed Scheme.	No

15.41 Overall, in term of in-combination visual effects at the operational stage, even in the presence of an in-combination effect with several Approved Projects, all in-combination effects would not be significant. On this basis, it is considered that in-combination effects would be no greater than the Proposed Scheme in isolation, with respect to level of effect and significance.

Built Heritage

15.42 The assessment within **Chapter 8: Built Heritage** has focused on a single receptor, the Hotspur House non-designated heritage asset, located within the Site and forming part of the Proposed Scheme, through the retention of its façade. In line with the methodology for the assessment of in-combination effects (see '*Assessment Methodology*') for an in-combination effect to occur with the identified Approved Projects, they would need to also effect upon Hotspur House, which it is considered non do.

15.43 Even in the event of another Approved Project having an effect on Hotspur House, which is considered unlikely, the fact that the Proposed Scheme is having a moderate adverse effect during both the construction and operational stage, due to the partial removal of the non-designated heritage asset, it is assumed that the effect of the Proposed Scheme would dominate any in-combination effect. Therefore, any in-combination effect is considered to be no greater than the Proposed Scheme in isolation.

Climate Change

15.44 The climate system is not geographically constrained and as such all projects result in some level of effect on the climate, even where negligible in isolation. Such in-combination effects are therefore inevitable, both with the identified Approved Projects. Furthermore, such effects occur across the entire construction and operational stages and therefore not specific to timescales.

15.45 As full GHG emissions information is not available for the majority of Approved Projects, this effect is not able to be quantified. On this basis, it is considered that the in-combination effect with respect to climate change is greater than identified at the project level.

Socio-Economics and Human Health

15.46 The construction stages of all Approved Projects have the potential to overlap with the Proposed Scheme in terms of timescales (note that this includes projects at a range of stages of development, including under construction, approved but not yet commenced, and awaiting determination). Therefore, in-combination effects with the relevant construction stage receptor (local labour force) are likely.

15.47 All Approved Projects will generate employment opportunities in the construction sector. Based on the elevated number of construction employment that will be generated across the Approved Projects, the combined magnitude of change is anticipated to increase from small to large, and therefore the anticipated beneficial effect (Major) will exceed the level of effect (Minor) considered at the project level. This in-combination effect is considered to be **Significant**, where it was not at the project level in isolation. This effect will be beneficial, temporary and medium-term.

15.48 Approved Projects 9, 10, 20, 24, 25, 29 and 35 will all provide PBSA. The total number of PBSA bedspaces to be provided across the Approved Projects is calculated as 5,498 and will contribute to a qualitative uplift in the supply of PBSA in Manchester (note that this includes projects at a range of stages of development, including under construction, approved but not yet commenced, and awaiting determination). Therefore, in-

combination effects with the relevant operational stage receptor (students requiring accommodation) are likely.

15.49 Based on the elevated number of PBSA bedspaces that will be delivered across the relevant Approved Projects, the combined magnitude of change is anticipated to increase from medium to large, and therefore the anticipated beneficial effect (Major) will exceed the level of effect (Moderate) considered at the project level. This in-combination effect is considered to be **Significant**, as it was at the project level in isolation. This effect will be beneficial, permanent and long-term.

Noise and Vibration

15.50 From a review of the information submitted with the applications for the Approved Projects, especially those located closest to the Proposed Scheme, a common receptor for construction stage effects was only identified with Approved Project 25, which is the Vita House receptor. Assuming construction activities that are occurring at Approved Project 25 are equivalent to the approximate 'worst-case' assessment undertaken for the Proposed Scheme, a high-level assessment has demonstrated that the combined effects could result in construction noise levels up to 2dB higher at Vita House. In the scenario that the both Approved Project 25 and Proposed Scheme are being constructed concurrently, it is considered that there would be a possible second common receptor, not identified within the assessment work submitted for Approved Project 25, namely Macintosh Mills. The high-level assessment identified that the combined effect of Approved Project 25 and the Proposed Scheme could result in construction noise levels up to 1dB higher at Macintosh Mills. Overall, this could result in some activities causing a large magnitude of change in-combination, whilst only a medium magnitude of change for the Proposed Scheme in isolation was identified in **Chapter 11: Noise and Vibration**. On this basis it is considered that an in-combination effect at the construction stage with Approved Project 25 would result in an effect greater than the Proposed Scheme in isolation, and this would be significant.

15.51 Operational stage effects were scoped out of the assessment and therefore it is assumed there will be no significant in-combination operational stage effects.

Wind Microclimate

15.52 Through additional modelling undertaken, which considered the Proposed Scheme in-combination with the relevant Approved Projects (information provided in **Appendix 12.1**), the introduction of the surrounding Approved Projects (especially those located closer to the Site), provides the Site and immediate surrounding area with additional shelter from approaching winds. No significant adverse in-combination effects affecting the suitability of conditions arising from the development of the identified Approved Projects were observed.

15.53 As a result, conditions are not materially changed in terms of suitability for proposed and existing uses from those discussed in **Chapter 12: Wind Microclimate** for the Proposed Scheme in isolation. All in-combination effects on pedestrian safety and comfort are therefore considered negligible.

Daylight, Sunlight, and Overshadowing

15.54 Based on a review of the Approved Projects and their location and usage relative to the Site, no receptor identified within the assessment of effects for the Proposed Scheme are identified as being subject to an effect from all Approved Projects and/or the Approved Projects are sufficient distance from the Proposed Scheme. As such, no in-combination effect is anticipated.

Flood Risk and Drainage

15.55 In line with NPPF and PPG, as well as MCC policy and other national guidance, it is necessary for all developments to not detrimentally effect flood risk and on this basis, it is assumed that is no in-combination effect occurring between the Proposed Scheme and the Approved Projects with respect to flood risk and associated zones.

15.56 The assessment within **Chapter 14: Flood Risk and Drainage** also considered effects upon the local sewer system at the construction stage (arising from the connection of new drainage) and discharge rates to the River Medlock and local sewer network (during the operational stage) adjacent to the Site. With respect to the construction stage effect, this effect is considered to be so isolated and occurs for such a minimal timescale, there is no perceived potential for in-combination effects. With respect to discharge rates, this beneficial effect occurs due to the requirements set out within the Manchester City Council Level 2 Strategic Flood Risk Assessment (see **Appendix 14.1: Flood Risk Assessment** for greater details). On this basis, it is assumed that the other Approved Projects would be required to achieve similar requirements in terms of discharge that could give rise to increased beneficial effects. Nonetheless, it is not clear to what extent such a in-combination effect would equate to when compared to the Proposed Scheme in isolation, especially as the identified beneficial effect is focused on discharge to the River Medlock and the local sewage network, which may not be a common receptors for all Approved Projects. As such, on balance, the in-combination effect is considered to be no better than the Proposed Scheme in isolation.

Summary

15.57 The assessment of cumulative effects considered effect interactions (where more than one effect is experienced by a single receptor) and in-combination effects (where effects on a receptor may combine with those of other projects in the locale).

Effect Interactions

15.58 The assessment of effect interactions identified potential effect interactions at the construction and operational stages for the Population and Human Health receptor category. An additional effect interaction at the operational stage was identified for the Climate receptor category.

15.59 Construction stage effect interactions on Population and Human health centred on a combination of adverse visual changes, noise and vibration from construction activities, and changes to daylight and sunlight on nearby residential receptors, specifically Vita House and The Assembly, 1 Cambridge Street. It was concluded that with all effects interacting it would be the most adverse individual effect that would derive the overall effect interaction. In this instance it was effect from construction noise, which was

reported as up to major adverse and significant in isolation (see **Chapter 11: Noise and Vibration**).

15.60 At the operational stage, the effect interactions on Population and Human Health were split into two types of effect interactions impacting upon local residents and future student occupiers of the Proposed Scheme. The existing surrounding residents would experience effect interactions with respect to beneficial visual changes, alongside adverse changes in daylight and/or sunlight availability. This was concluded to be minor adverse and not significant, as it was judged the worst-case individual effect (that derived from daylight and/or sunlight changes, see **Chapter 13: Daylight, Sunlight and Overshadowing**) would dictate the effect interaction. In terms of future student occupiers and the associated effect interaction, this occurred due to the beneficial effects of the Proposed Scheme giving rise to PBSA in the first place, as well as the deemed beneficial effect that units within the Proposed Scheme would be outside of the existing flood zones. This effect interaction was concluded to be moderate beneficial and significant, given such a conclusion is reached for the provision of PBSA in isolation (see **Chapter 10: Socio-Economics and Human Health**).

15.61 The operational stage effect interactions on the Climate receptor category arises as the assessment within **Chapter 9: Climate Change** identified two operational stage effects in relation to 'emissions'. The effect interactions effectively combined the predicated emission from these effects to identify a 'net' emission at the operational stage. Nonetheless, the combined emissions, when considered against the methodology within **Chapter 9: Climate Change** still would result in a minor adverse and not significant effect, which is the same as the conclusion reach for both effects in isolation.

In-Combination Effects

15.62 The assessment of in-combination effects considered 41 Approved Projects on a technical topic by topic basis (i.e. **Technical Chapters 7 – 14**), albeit each technical topics completed a review of the Approved Projects in the first instance in order to confirm relevance to any potential in-combination effects.

15.63 The assessment of in-combination effects has focus on the identification of in-combination effect and where identified if it would result in a effect greater than the Proposed Scheme in isolation.

15.64 A summary of the evaluation of in-combination effects is provided within **Table 15.5**.

Table 15.5: Summary of In-Combination Effects

Technical Topic	All Relevant Approved Projects
Townscape and Visual	The evaluation of in-combination effects during the construction stage, both in terms of townscape and visual effects, concluded that in-combination effects would be limited and geographically constrained and therefore no worse than the Proposed Scheme in isolation.

Technical Topic	All Relevant Approved Projects
	Operational in-combination townscape effect was judged (conservatively) to be the same as the Proposed Scheme in isolation, as only a number of Approved Projects (the closest to the Site) would contribute positively or neutrally to the effects of the Proposed Scheme. Operational visual effects, informed by visualisations prepared for each viewpoint assessed for the Proposed Scheme, did not identified any notable in-combination effects that would amend the conclusions of the Proposed Scheme in isolation.
Built Heritage	It has been determined that in-combination effects are unlikely given the focus of the assessment for the Proposed Scheme upon Hotspur House only. In any event, were an in-combination effect to occur, it would be no greater than the Proposed Scheme in isolation (moderate adverse and significant) given the direct effects the Proposed Scheme has on Hotspur House itself, which would dominate any in-combination effects.
Climate Change	The evaluation determined that all Approved Projects would contribute to an in-combination effect with the Proposed Scheme, given that the receptor (the climate system) is not geographically constrained. Full GHG emissions information was not available for the majority of Approved Projects, that allowed for this in-combination effect to be quantified, but it was judged that the in-combination effect with respect to climate change would be greater than identified for the Proposed Scheme in isolation, as all Approved Projects will give rise to additional emissions over and above those from the Proposed Scheme.
Socio-Economics and Human Health	All the Approved Projects would generate employment opportunities in the construction sector during the construction stage, alongside those generated by the Proposed Scheme. It was calculated that the combined employment would result in major beneficial effect that would be significant, which is greater than that reported for the Proposed Scheme in isolation (Minor beneficial and not significant). Operational effects assessed focused on the provision of PBSA. As such, in-combination effects would only occur with Approved Projects 9, 10, 20, 24, 25, 29 and 35. It was calculated that the combined provision would result in a major beneficial effect that would be significant, which is greater than that reported for the Proposed

Technical Topic	All Relevant Approved Projects
	Scheme in isolation (Moderate beneficial and significant).
Noise and Vibration	The assessment of the Proposed Scheme focused on construction effects only, and a common receptor was only identified with Approved Project 25. Overall, it was judged that with a concurrent construction stage an in-combination effect would occur at Vita House and Macintosh Mills. The in-combination effect was judged, based on high-level evaluation, to be greater than the Proposed Scheme in isolation and significant.
Wind Microclimate	Modelling of the Proposed Scheme with other Approved Projects did not identify notable differences in wind comfort and safety when compared to the Proposed Scheme in isolation. Therefore, any in-combination effects would remain as that reported for the Proposed Scheme, which was negligible and not significant.
Daylight, Sunlight, and Overshadowing	A review of the Approved Projects by the technical team noted that based on their location and usage relative to the Site, there was either no common receptor with the Proposed Scheme, or the Approved Project was sufficient distance from the Proposed Scheme to give rise to potential in-combination effects. As such, no in-combination effect is anticipated.
Flood Risk and Drainage	Potential in-combination effects were identified to be limited to a single beneficial effect, specifically the effect relating discharge rates to the River Medlock and local sewage network at the operational stage. Albeit it was concluded that the in-combination effect would be no greater than the Proposed Scheme in isolation.

References

[1] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (2020). Planning Practice Guidance – Environmental Impact Assessment. Available at: Environmental Impact Assessment - GOV.UK (www.gov.uk) [Accessed: 25/08/23].

16. Summary

16.1 The purpose of this Chapter is to provide a summary of the outcome of the assessments reported within **Technical Chapters 7 – 14**, focussing on the following key objectives:

- Provide a summary of residual and likely significant effects, the latter of which should inform Manchester City Council's (MCC) decision making process; and
- Provide a summary of the cumulative effects assessment.

16.2 Through delivering these objectives, MCC should have sufficient information on environmental impacts to inform their decision-making process.

16.3 The residual effects defined within this Chapter rely upon the implementation of the mitigation set out within **Volume 3: Environmental Management Plan**. This is critical as the project team have developed detailed mitigation in order to avoid, resolve or off-set impacts.

Summary of Residual and Significant Effects

16.4 Each of the **Technical Chapters 7 – 14** reports the output of the assessment through residual and likely significant effects, inclusive of a summary. All likely residual and significant effects across the ES are summarised for both the construction and operation stages in **Table 16.1** and **Table 16.2**, respectively.

16.5 Where Technical Chapters have identified individual level of effects for specific sensitive receptors for an assessed effect, each level of significance concluded has been stated in **Table 16.1** and **Table 16.2** and the greatest level of impact has been considered when considering the effects as a whole (i.e. to all receptors).

16.6 Adverse effects are highlighted in red and beneficial effects are highlighted in green. Negligible effects are provided in automatic / normal text. The effects identified as 'Significant' are highlighted in **bold** and shaded grey.

Table 16.1: Summary of Residual and Significant Effects During Construction

Likely Significant Effect	Receptor	Residual Effect
Chapter 7: Townscape and Visual		
Effects to visual amenity during construction	City Centre visitors, travelling members of the public	Moderate Adverse
	Workers	Minor Adverse
Effects to townscape receptors	Local townscape features, townscape character	Moderate Adverse
Chapter 8: Built Heritage		
Change to the form, character and setting and significance of a NDHA[1]	Hotspur House (NDHA)	**Moderate Adverse**
Chapter 9: Climate Change		
Upfront carbon emissions of buildings	The atmosphere – local and regional scale	Minor Adverse
	The atmosphere – national scale	Negligible
Chapter 10: Socio-Economics and Human Health		
Employment generated during the construction stage	Local labour force	Minor Beneficial
Chapter 11: Noise and Vibration		
Nuisance and disturbance as a result of noise from construction activities including traffic	The Assembly, 1 Cambridge Street (Some 25m to the east of the Site) Vita House	**Up to Major Adverse**
Nuisance and disturbance as a result of vibration from construction activities	The Assembly, 1 Cambridge Street (Some 45m from the centre of the Site to the east)	Minor Adverse

[1] Non-designated heritage asset.

Likely Significant Effect	Receptor	Residual Effect
Chapter 12: Wind Microclimate		
No construction stage effects scoped in for assessment. The operational stage effects summarised in **Table 16.2** are considered to represent the worst case construction stage effects.		
Chapter 13: Daylight, Sunlight and Overshadowing		
No construction stage effects scoped in for assessment. The operational stage effects summarised in **Table 16.2** are considered to represent the worst case construction stage effects.		
Chapter 14: Flood Risk and Drainage		
Surface water run-off – connection of new drainage system	Public sewer system	Negligible

Table 16.2: Summary of Residual and Significant Effects During Operation

Likely Significant Effect	Receptor	Residual Effect
Chapter 7: Townscape and Visual		
Viewpoint 1 – Whitworth Street West at Oxford Road	City Centre visitors and travelling members of public	Moderate Neutral
Viewpoint 1 – Whitworth Street West at Oxford Road	workers	Minor Neutral
Viewpoint 2 – Jack Rosenthal Street	City Centre visitors	**Major Beneficial**
Viewpoint 2 – Jack Rosenthal Street	workers	Moderate Beneficial
Viewpoint 3 – Gloucester Street at Whitworth Street West	travelling members of public	Moderate Beneficial
Viewpoint 4 – London Road	City Centre visitors and travelling members of public	Minor Neutral
Viewpoint 5 – Manchester Central	City Centre visitors and travelling members of public	Moderate Neutral
	workers	Minor Neutral
Viewpoint 6 – Cambridge Street at Mancunian Way	Residents and travelling members of public	Moderate Neutral
Viewpoint 7 – Blantyre Street	Residents and travelling members of public	Negligible
Viewpoint 8 – Hacienda, Whitworth Street West	Residents	**Major Neutral**
Viewpoint 8 – Hacienda, Whitworth Street West	Travelling members of public	Moderate Neutral
Viewpoint 9 – Cambridge Street at River Street	Residents and travelling members of public	**Major Beneficial**
Viewpoint 10 – Duke Place at Roman Fort	Visitors at the Roman fort of Mamucium and travelling members of public	Negligible
Viewpoint 11 – St Wilfrids Street at St Nicholas Road	Residents and travelling members of public	Negligible

Likely Significant Effect	Receptor	Residual Effect
Viewpoint 12 – Bonsall Street at Birchall Way	Travelling members of public	Negligible
Viewpoint 13 – Chepstow Street	Travelling members of public	Moderate Neutral
Townscape effect on National Cycle Route 6	National Cycle Route 6	Moderate Beneficial
Townscape effect on City Centre Conservation Areas	Conservation Areas	Moderate Neutral
Townscape effect on the setting of listed buildings	Listed Buildings	Negligible
Townscape effects on the Historic Urban Character Assessment of Manchester	Manchester Urban Historic Landscape Characterisation	Moderate Beneficial
Chapter 8: Built Heritage		
Change to the form, character and setting and significance of a NDHA[2]	Hotspur House (NDHA)	**Moderate Adverse**
Chapter 9: Climate Change		
Regulated and unregulated carbon emissions generated by buildings	The atmosphere – local scale	Minor Adverse
	The atmosphere – regional and national scale	Negligible
Embodied carbon emissions of buildings	The atmosphere – local scale	Minor Adverse
	The atmosphere – regional and national scale	Negligible
Chapter 10: Socio-Economics and Human Health		
Provision of PBSA	Students requiring accommodation	**Moderate Beneficial**
Chapter 11: Noise and Vibration		

[2] Non-designated heritage asset.

Likely Significant Effect	Receptor	Residual Effect
No operational effects scoped in for assessment.		
Chapter 12: Wind Microclimate		
Pedestrian Safety	Pedestrians and users of Proposed Scheme and surrounding area	Negligible
Pedestrian Comfort – Proposed Scheme	Pedestrians and users of Proposed Scheme (thoroughfares, building entrances, amenity spaces)	Negligible
Pedestrian Comfort – Surrounding Area	Pedestrians and users of surrounding area (thoroughfares, building entrances, amenity spaces)	Negligible
Chapter 13: Daylight, Sunlight and Overshadowing		
Reduced daylight amenity	21-35 Whitworth Street West 84-88 Great Bridgewater Street The Assembly, 1 Cambridge Street Vita House	Minor Adverse
	Macintosh Mills	Negligible
Reduced sunlight amenity	21-35 Whitworth Street West	Negligible
	The Assembly, 1 Cambridge Street 84 – 88 Great Bridgewater Street	Minor Adverse
Chapter 14: Flood Risk and Drainage		
Surface water runoff – discharge rate	River Medlock	Minor Beneficial
	Public sewer system	Minor Beneficial
Flood Zones – proposed development within flood zone	Proposed buildings	Minor to Moderate Beneficial

16.7 In summary:

- During construction, there are two significant adverse residual effects (for built heritage and noise and vibration) and no significant beneficial effects; and
- During operation there are three significant beneficial effects (for townscape and visual and socio-economics and human health) and one significant adverse effect (for built heritage).

Summary of Cumulative Effects Assessment

16.8 The assessment of cumulative effects considered effect interactions (where more than one effect is experienced by a single receptor) and in-combination effects (where effects on a receptor may combine with those of other projects in the locale).

Effect Interactions

16.9 The assessment of effect interactions identified potential effect interactions at the construction and operational stages for the Population and Human Health receptor category. An additional effect interaction at the operational stage was identified for the Climate receptor category.

16.10 Construction stage effect interactions on Population and Human health centred on a combination of adverse visual changes, noise and vibration from construction activities, and changes to daylight and sunlight on nearby residential receptors, specifically Vita House and The Assembly, 1 Cambridge Street. It was concluded that with all effects interacting it would be the most adverse individual effect that would derive the overall effect interaction. In this instance it was effect from construction noise, which was reported as up to major adverse and significant in isolation (see **Chapter 11: Noise and Vibration**).

16.11 At the operational stage, the effect interactions on Population and Human Health were split into two types of effect interactions impacting upon local residents and future student occupiers of the Proposed Scheme. The existing surrounding residents would experience effect interactions with respect to beneficial visual changes, alongside adverse changes in daylight and/or sunlight availability. This was concluded to be minor adverse and not significant, as it was judged the worst-case individual effect (that derived from daylight and/or sunlight changes, see **Chapter 13: Daylight, Sunlight and Overshadowing**) would dictate the effect interaction. In terms of future student occupiers and the associated effect interaction, this occurred due to the beneficial effects of the Proposed Scheme giving rise to PBSA in the first place, as well as the deemed beneficial effect that units within the Proposed Scheme would be outside of the existing flood zones. This effect interaction was concluded to be moderate beneficial and significant, given such a conclusion is reached for the provision of PBSA in isolation (see **Chapter 10: Socio-Economics and Human Health**).

16.12 The operational stage effect interactions on the Climate receptor category arises as the assessment within **Chapter 9: Climate Change** identified two operational stage effects in relation to 'emissions'. The effect interactions effectively combined the predicated

emission from these effects to identify a 'net' emission at the operational stage. Nonetheless, the combined emissions, when considered against the methodology within **Chapter 9: Climate Change** still would result in a minor adverse and not significant effect, which is the same as the conclusion reach for both effects in isolation.

In-Combination Effects

16.13 The assessment of in-combination effects considered 41 Approved Projects on a technical topic by topic basis (i.e. **Technical Chapters 7 – 14**), albeit each technical topics completed a review of the Approved Projects in the first instance in order to confirm relevance to any potential in-combination effects.

16.14 The assessment of in-combination effects has focus on the identification of in-combination effect and where identified if it would result in a effect greater than the Proposed Scheme in isolation.

16.15 A summary of the evaluation of in-combination effects is provided within **Table 16.3**.

Table 16.3: Summary of In-Combination Effects

Technical Topic	All Relevant Approved Projects
Townscape and Visual	The evaluation of in-combination effects during the construction stage, both in terms of townscape and visual effects, concluded that in-combination effects would be limited and geographically constrained and therefore no worse than the Proposed Scheme in isolation. Operational in-combination townscape effect was judged (conservatively) to be the same as the Proposed Scheme in isolation, as only a number of Approved Projects (the closest to the Site) would contribute positively or neutrally to the effects of the Proposed Scheme. Operational visual effects, informed by visualisations prepared for each viewpoint assessed for the Proposed Scheme, did not identified any notable in-combination effects that would amend the conclusions of the Proposed Scheme in isolation.
Built Heritage	It has been determined that in-combination effects are unlikely given the focus of the assessment for the Proposed Scheme upon Hotspur House only. In any event, were an in-combination effect to occur, it would be no greater than the Proposed Scheme in isolation (moderate adverse and significant) given the direct effects the Proposed Scheme has on Hotspur House itself, which would dominate any in-combination effects.
Climate Change	The evaluation determined that all Approved Projects would contribute to an in-combination effect with the

Technical Topic	All Relevant Approved Projects
	Proposed Scheme, given that the receptor (the climate system) is not geographically constrained. Full GHG emissions information was not available for the majority of Approved Projects, that allowed for this in-combination effect to be quantified, but it was judged that the in-combination effect with respect to climate change would be greater than identified for the Proposed Scheme in isolation, as all Approved Projects will give rise to additional emissions over and above those from the Proposed Scheme.
Socio-Economics and Human Health	All the Approved Projects would generate employment opportunities in the construction sector during the construction stage, alongside those generated by the Proposed Scheme. It was calculated that the combined employment would result in major beneficial effect that would be significant, which is greater than that reported for the Proposed Scheme in isolation (Minor beneficial and not significant). Operational effects assessed focused on the provision of PBSA. As such, in-combination effects would only occur with Approved Projects 9, 10, 20, 24, 25, 29 and 35. It was calculated that the combined provision would result in a major beneficial effect that would be significant, which is greater than that reported for the Proposed Scheme in isolation (Moderate beneficial and significant).
Noise and Vibration	The assessment of the Proposed Scheme focused on construction effects only, and a common receptor was only identified with Approved Project 25. Overall, it was judged that with a concurrent construction stage an in-combination effect would occur at Vita House and Macintosh Mills. The in-combination effect was judged, based on high-level evaluation, to be greater than the Proposed Scheme in isolation and significant.
Wind Microclimate	Modelling of the Proposed Scheme with other Approved Projects did not identify notable differences in wind comfort and safety when compared to the Proposed Scheme in isolation. Therefore, any in-combination effects would remain as that reported for the Proposed Scheme, which was negligible and not significant.
Daylight, Sunlight, and Overshadowing	A review of the Approved Projects by the technical team noted that based on their location and usage relative to the Site, there was either no common receptor with the Proposed Scheme, or the Approved Project was

Technical Topic	All Relevant Approved Projects
	sufficient distance from the Proposed Scheme to give rise to potential in-combination effects. As such, no in-combination effect is anticipated.
Flood Risk and Drainage	Potential in-combination effects were identified to be limited to a single beneficial effect, specifically the effect relating discharge rates to the River Medlock and local sewage network at the operational stage. Albeit it was concluded that the in-combination effect would be no greater than the Proposed Scheme in isolation.

Summary of Mitigation

16.16 All mitigation committed to throughout the ES is included in **Volume 3: Environmental Management Plan**.