



Library Transformation Project Environmental Statement – Volume 1

October 2023

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1. Introduction

- 1.1. This Environmental Statement ('ES') accompanies an application for Full Planning Permission for an educational-led library development off Oxford Road, in Manchester City Centre ("the Site"). The Applicant is Manchester Metropolitan University.
- 1.2. The Site comprises the All Saints Library Building, a seven storey brick building currently used as a library facility for students and staff of Manchester Metropolitan University, and comprising desk spaces, book clusters and meeting rooms. The Site is currently occupied, and it is intended that part of the Site will remain in operation through the five year refurbishment and construction period.
- 1.3. The Site extends to c.0.7 ha. and is bound by a public footpath and All Saints Park to the south, Manchester Metropolitan University Business and Law School to the west, the elevated Mancunian Way directly to the north and Oxford Road to the east.
- 1.4. The Site is shown in **Appendix 1.1**.
- 1.5. The ES sets out the findings of an Environmental Impact Assessment carried out in respect of the Proposed EIA Development.

Requirements for EIA

- 1.6. The EIA process is the mechanism by which development proposals are appraised in terms of their likely environmental effects, in addition to engineering and technical considerations.
- 1.7. The purpose of the EIA is to establish the nature of the Proposed EIA Development and the environment in which it is likely to take place, during both construction and operational phases, so as to identify the likely significant effects on the environment. The assessment compares the existing situation at the start of the work (baseline), with the situation during construction, and when the Proposed EIA Development is operational.
- 1.8. The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the "EIA Regulations") require that any Proposed Development falling within the description of a 'Schedule 2 development' (as defined within the meaning of the EIA Regulations), will be subject to an EIA where such development is likely to have 'significant' effects on the environment by virtue of such factors as its nature, size or location (EIA Regulation Schedule 3).
- 1.9. The Proposed EIA Development is considered to fall under the category of 'urban development projects' (EIA Regulations Schedule 2, 10, (b)) where:
 - The development includes more than 1 hectare of urban development which is not a dwellinghouse development; or
 - The development includes more than 150 dwellings; or
 - The overall area of the development exceeds 5 hectares.
- 1.10. The indicative thresholds and criteria state that:

"In addition to the physical scale of such developments, consideration should be given to the potential increase in traffic, emissions and noise. EIA is unlikely to be required for the redevelopment of land unless the new development is on a significantly greater scale than the previous use, or the types of impact are of a markedly different nature or there is a high level of contamination"
- 1.11. The EIA Site covers an area of approximately 0.7 hectares and the Proposed Development will comprise c. 21,800sqm of educational, library floorspace. The nature and scale of the Proposed EIA Development is larger than the existing scenario, and is consequently of significantly greater scale. For these reasons, an EIA is considered appropriate to test the likely significant effects of the Proposed EIA Development on the surrounding environment. The Applicant has therefore submitted an Environmental Statement (in relation to certain topic areas where there is likely to be a significant effect of the environment) in support of the planning application, the scope of which was formally agreed within a Scoping Opinion from MCC, received October 2023.
- 1.12. In accordance with the EIA Regulations, this ES sets out the following information:

- A description of the development, including in particular (*included in 'EIA Site, Surroundings and Description of Proposals' chapter*) :
 - a) a description of the location of the development;
 - b) a description of the physical characteristics of the whole development, including, where relevant, demolition works, and the land-use requirements during the construction and operational phases;
 - c) a description of the main characteristics of the operational phase of the development; and,
 - d) an estimate, by type and quantity, of expected residues and emissions during the construction and operation phases.
- A description of the reasonable alternatives studied, 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 (*included in 'Alternatives and Design evolution' chapter*).
- 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 (*included in the 'EIA Site, Surroundings and Description of Proposals' and relevant technical chapters*).
- A description of the factors specified in regulation 4(2) likely to be significantly affected by the development (*included in the relevant technical chapters*).
- Where relevant, a description of the likely significant effects of the development on the environment resulting from, inter alia (*included in the relevant technical chapters*):
 - a) the construction and existence of the development, including, where relevant, demolition works;
 - b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;
 - c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;
 - d) the 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.
- A description of the likely significant effects on the factors specified in regulation 4(2) that covers the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development (*included in the relevant technical chapters and the 'type 1 cumulative impacts' chapter*).
- 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 required information and the main uncertainties involved (*included in the relevant technical chapters*).
- 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) (*included in the relevant technical chapters and the 'residual impacts' chapter*).
- 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 (*included in the relevant technical chapters*).
- A non-technical summary of the information (*See Non-Technical Summary*).

- A reference list detailing the sources used for the descriptions and assessments included (*included at the end of each chapter*).

Project Team

- 1.13. This ES has been prepared by Deloitte, with technical input from the Consultants. **Table 1-1** sets out the parties responsible for the technical content within Chapters 5 -8 of this ES. Further details for each technical consultant (including their qualifications) can be found within the introduction of each respective technical chapter of the ES.

Table 1-1 - EIA Technical Team

Expertise	Consultant
EIA Coordination and Town Planning	Deloitte LLP
Architect	Hawkins Brown and Schmidt Hammer Lassen
Construction	AA Projects and MMU
Climate Change	Buro Happold
Townscape and Visual Impact	Planit-IE
Wind Microclimate	Buro Happold

Organisation of the Environmental Statement

- 1.14. This ES comprises 10 chapters and is supported by figures (located at the back of each chapter within Volume 1) and technical appendices (within a separate Volume 2). A Non-Technical Summary ('NTS') of the full ES is provided as a separate standalone document.
- 1.15. Figures have been referenced using the chapter numbers as a prefix followed by the number of the figure within a given chapter. Appendices have been referenced in the same way but due to their size they are contained separately in Volume 2.
- 1.16. **Table 1.2** sets out the structure of the ES¹:

Table 1-2 – ES Structure

Chapter	Chapter Title	Description
Volume 1: Main chapters and supporting figures		
1.	Introduction	Introduction to the ES, EIA requirements, details of project team, ES organisation and availability.
2.	EIA Methodology	Methods used to prepare each chapter, description of ES structure and content, generic significance criteria, scoping and consultation.
3.	EIA Site Description and Proposed Development	EIA Site description and details of the Proposed Development.
4.	Alternatives and Design Evolution	Outline of the main alternatives considered by the Applicant.
5.	Construction Phasing and Methodology	Description of the construction and operational phase of the project and an outline of the construction programme.
6.	Climate Change	Assessment of the effects of the proposals on climate change factors: - Greenhouse Gas Emissions (6a) - Climate Change Risk Assessment (6b)
7.	Townscape and Visual Impact	Assessment of effects relating to townscape and visual impact.
8.	Wind Microclimate	Assessment of effects on the microclimate in terms of wind, including pedestrian comfort levels and safety.

¹Although we have read the Consultants' reports for consistency and provide our observations based on our knowledge and experience, we accept no liability or responsibility for the Consultants' Reports and the technical content within Chapters 5 - 8 of this ES.

Chapter	Chapter Title	Description
9.	Type 1 Cumulative Effects	Assessment of effects and interaction of effects.
10.	Summary of Residual Impacts	Summary of the effects that remain after mitigation.
Volume 2: Technical Appendices		
Non-Technical Summary		

Other Documents

1.17. Together with the ES, the following documents in **Table 1.3** are submitted to MCC in support of the planning application.

Table 1.3: List of documents submitted in support of the Plot 10a and the Plot 10b application.

Document	Author
Planning application form, fees and ownership certificates	Deloitte
Application forms and notices	Deloitte
Accommodation and Drawing Schedules	Hawkins Brown
Site and location plans	Hawkins Brown
Existing and Proposed plans	Hawkins Brown
Design and Access Statement	Hawkins Brown and Schmidt Hammer Lassen
CGI Views	Planit-IE
Statement of Consultation	Deloitte
Heritage Statement	Deloitte
Environmental Standards and Energy Statement	Buro Happold
Transport Statement	Buro Happold
Ground Conditions	Buro Happold
Flood Risk and Drainage Assessment	Buro Happold
Noise and Vibration Acoustic Assessment	Buro Happold
Ventilation Strategy	Buro Happold
Daylight and Sunlight Desktop Assessment, including Solar Glare	Buro Happold
Sustainability Statement	BDP
Sustainable Travel Plan Framework	Manchester Metropolitan University
Waste Management and Servicing Strategy	Manchester Metropolitan University

Document	Author
Management Strategy	Manchester Metropolitan University
Local Labour Agreement – Statement of Intent	Manchester Metropolitan University
TV Reception Survey	G-Tech
Archaeological Confirmation Letter	GMAAS
Ecological Assessment	Tyler Grange
Crime Impact Statement	Greater Manchester Police

Environmental Statement Availability

- 1.18. The ES is available for public viewing on MCC's Public Access website at the following address:
<http://pa.manchester.gov.uk/online-applications/> once the application has been submitted and validated.
- 1.19. The ES may be purchased in volumes, the costs of which are set out below:
- Volume 1: ES Main Text and Figures - £150
 - Volume 2: ES Appendices - £150
 - Volume 3: Non-Technical Summary (NTS) - £15
 - Full Electronic Copy (Volumes 1, 2 and 3) of the ES - £15
- 1.20. For copies of any of the above, please contact the Manchester Planning Team at Deloitte:
- Library Transformation Project
 - Planning Team
 - Deloitte LLP
 - The Hanover Building,
 - Corporation Street
 - Manchester
 - M4 4AH

2. EIA Methodology

Introduction

- 2.1. This Chapter sets out the methodology used to prepare each Chapter of the ES and describes its structure and content. In particular, it sets out the process of identifying and assessing the likely significant effects of the Proposed EIA Development on the environment as defined in Chapter 1 and described in detail in Chapter 4.
- 2.2. It is accompanied by the following technical appendices:
- **Appendix 2.1** – ES Scoping Report
 - **Appendix 2.2** – Committed Developments
 - **Appendix 2.3** – EIA Scoping Opinion

Legislation and Guidance

- 2.3. The ES has been prepared to comply with EIA Regulations, which implement European Council Directive No. 85/337/EEC as amended by Directive 2014/52/EU and entered into force on 17 May 2017.
- 2.4. Reference has also been made to currently available good practice guidance in EIA including:
- Circular 02/99: Environmental Impact Assessment
 - The European Commission’s numerous EIA guidance documents available here: <http://ec.europa.eu/environment/eia/eia-support.html>
 - Guidance on EIA Scoping, European Commission, June 2001.
 - Guidance on Transport Assessment, DCLG and DfT, March 2007.
 - National Planning Practice Guidance – Department for Communities and Local Government (March 2014 and continuously updated as a ‘live’ resource)
 - Reference has been made to the Institute of Environmental Management and Assessment (IEMA) publications, including:
 - IEMA ES Review Criteria
 - IEMA Guidelines for Environmental Impact Assessment (2004)
 - IEMA Special Report into the State of Environmental Impact Assessment Practice in the UK (2011)
 - IEMA Shaping Quality Development (2015)
 - IEMA Delivering Quality Development (2016)
 - IEMA Delivering a Proportionate EIA (2017)
- 2.5. The ES has also had regard to the National Planning Policy Framework 2021 (NPPF). The NPPF sets out the Government’s economic, environmental and social planning policies for England, articulating the Government’s aspiration for sustainable development. The NPPF has been considered where it is relevant to EIA.
- 2.6. As relevant to the ES technical chapter’s scope, methodology and assessment of effects, key local planning policy, material considerations and guidance documents have been considered. These include:
- Manchester City Council Core Strategy (2012)
 - Saved Unitary Development Plan Policies (1995)
 - Draft Emerging Places for Everyone Joint Development Plan Document (Modifications Stage Plan, 2023)
- 2.7. Any additional planning policy or guidance documents considered relevant to specific disciplines have been identified within the relevant technical chapters.

Screening, Scoping and Consultation

- 2.8. An EIA Scoping Opinion Request was issued to MCC on 15 August 2023 (see **Appendix 2.1**). A formal Scoping Opinion was received on 11 October 2013 (see **Appendix 2.3**), which agreed with that set out in the EIA Scoping Request.

Non-Significant Effects

- 2.9. As part of the scoping process, the following disciplines were found to not give rise to likely significant effects on the environment and have been scoped out:
- Arboriculture
 - Noise and Vibration
 - Ground Conditions
 - Flood Risk and Drainage
 - Transport
 - Sunlight, Daylight and Overshadowing
 - Solar Glare
 - Ecology
- 2.10. A detailed explanation for each discipline is contained within the Scoping Report at Appendix 2.1.

Approach to Technical Studies

- 2.11. Various technical studies were commenced at an early stage in the development process. The findings of the baseline environmental studies have played an important role in the design of the Proposed EIA Development by defining the environmental sensitivities, constraints and opportunities associated with the EIA Site.
- 2.12. Design team reviews, attended by members of the project team, were held throughout the pre-application process. These reviews provided a valuable forum for the exchange of information and ensured that the design team was fully aware of the environmental constraints and opportunities and of the interactions between disciplines. Meetings were also held with MCC as the Local Planning Authority as well as pre-application discussions with technical consultees as demonstrated within the Statement of Consultation, EIA Scoping Report and EIA Scoping Opinion.
- 2.13. The technical studies have been undertaken in accordance with current best practice. Specific guidance used is referenced within each of the respective assessment chapters.
- 2.14. The majority of assessments involved consultations with statutory and non-statutory bodies, desk-based research, site inspections and surveys, impact prediction and mitigation.
- 2.15. The assessment and conclusions of the ES are based on the description of the Proposed EIA Development provided in **Chapter 4**.

Structure of Technical Chapters

- 2.16. Each technical chapter of the ES (Chapters 6 to 8) has been set out broadly in line with Table 2.1; any variation from this structure is explained within the chapter.

Table 2.1: Structure of ES Technical Chapters

Technical Chapter Structure	
Introduction	Each of the technical chapters begins with an introduction providing context to the EIA completed.
Policy Context	This section includes a summary of legislation and of national and local policies relevant to the environmental discipline and explains its purpose in the context of the Proposed EIA Development and the ES.

Technical Chapter Structure	
Assessment Methodology and Significance Criteria	This section describes the method or approach employed in the assessment of impacts, the criteria against which the significance of effects has been evaluated, the sources of information used and any technical difficulties encountered. Relevant legislation is also identified.
Assumptions and Limitations	This section describes any assumptions and limitations which have been made that are relevant to the environmental disciplines.
Baseline Conditions	This section describes and evaluates the baseline environmental conditions i.e. the current situation and anticipated changes over time assuming the EIA Site remains unchanged. This is a critical part of the EIA process as it provides a measure against which potential environmental effects can be assessed.
Identification and Evaluation of Key Impacts	This section identifies the likely significant effects on the environment resulting from the Proposed EIA Development. A description of the likely effects of the Proposed EIA Development and an assessment of their predicted significance is provided. The assessment of effect significance has been undertaken using appropriate national and international quality standards. Where no such standards exist, the judgments that underpin the attribution of significance are described. The guidelines, methods and techniques used in the process of determining significance of effects are contained within each of the technical chapters presented.
Mitigation Measures	One of the main aims of the EIA process is to develop suitable mitigation measures to avoid, reduce or compensate for any significant adverse effects of a project. This section of each technical chapter describes the measures which would be implemented to mitigate potential adverse effects. Where possible, enhancement measures have also been proposed.
Cumulative Effects	This section considers the cumulative effects of the Proposed EIA Development identified within the vicinity of the EIA Site. Any likely significant effects on the environment arising in this respect are set out in this section. There are two distinct types of cumulative effects: Type 1 - Cumulative effects are the interactions between effects of the Proposed EIA Development on a single receptor. These are addressed in Chapter 10. Type 2 - Cumulative effects are those that arise from incremental changes caused by other consented or reasonably foreseeable activities ('committed developments') together with the Proposed EIA Development. These are addressed in each technical chapter.
Residual Effects	The residual effects, i.e. the remaining effects of the Proposed EIA Development assuming implementation of the proposed mitigation measures, have been estimated and presented. The methods used to make these estimates are described and proposed methods of treatment for any residual effects have been identified and quantified where possible.

Technical Chapter Structure

Summary

Each technical chapter concludes with a brief summary outlining the potential residual effects of the Proposed EIA Development.

- 2.17. Chapter 5 provides information to allow the construction phase of the Proposed EIA Development to be assessed by the disciplines set out in Chapters 6 to 8.

Assessment and Evaluation of Significant Effects

- 2.18. The assessment of effect significance has been undertaken using appropriate national and international quality standards. Where no such standards exist, the judgments that underpin the attribution of significance are described. The guidelines, methods and techniques used in the process of determining significance of effects are contained within each of the technical chapters presented.

Magnitude

- 2.19. The methodology for determining the scale, or magnitude of effect as set out in **Table 2.2**. Where magnitude of effect is different for any specific discipline, this is explained within the relevant chapter.

Table 2.2: Methodology for Assessing Magnitude

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

Sensitivity

- 2.20. The sensitivity of a receptor is based upon the relative importance of the receptor using the scale in **Table 2.3**.

Table 2.3: Methodology for Assessing Sensitivity

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

Significance

- 2.21. The significance of an environmental effect is determined by the interaction of magnitude and sensitivity, whereby the impacts can be positive or negative. **Table 2.4** below shows how magnitude and sensitivity interact to affect significance.

Table 2.4: Methodology for Assessing Significance

Magnitude	Sensitivity		
	High	Medium	Low
Major	Major *	Major *	Moderate *
Moderate	Major *	Moderate *	Minor
Minor	Moderate *	Minor	Negligible
Negligible	Minor	Negligible	Negligible

- 2.22. The above magnitude and significance criteria have been provided as a guide for technical specialists to assess impact significance. Where discipline specific methodology has been applied that differs from the generic criteria above, this has been clearly explained within the given chapter under the heading of 'Assessment Methodology and Significance Criteria'.
- 2.23. The asterisk denotes sensitivity that is generally significant – those without an asterisk are considered to not have an impact that is classed as significant. Effects that are considered to be significant in EIA terms can vary between disciplines and any discrepancies between technical disciplines will be clearly outlined in any chapters included in the EIA.

Baseline Conditions

- 2.24. Each technical chapter includes a section which describes and evaluates the baseline environmental conditions (i.e. the current situation and anticipated changes over time assuming the EIA Site remains unchanged). Baseline data has been obtained from a variety of sources, including published documents, maps, historical information and EIA Site survey data. Given the nature of the EIA Site and surroundings, each technical chapter (Chapters 6 to 8) includes a clear description of what is assumed as the baseline against which the assessment is being made.
- 2.25. The baseline includes nearby schemes under construction and where relevant will include nearby committed developments, and therefore represent the 'worst case' scenario.
- 2.26. The method used to obtain baseline information, where relevant and possible, has been clearly identified within each technical chapter and agreed in advance with statutory consultees.

Mitigation

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

- 2.30. Mitigation to be implemented during the operational phase will be secured through approved documents, planning conditions and obligations.

Residual Effects

- 2.31. The likely significant effects on the environment, assuming the successful implementation of mitigation measures proposed, have been estimated within each chapter. These are termed 'residual effects'. A summary of these is included at Chapter 9.

Cumulative Effects

- 2.32. The ES considers the potential for likely significant effects on the environment resulting from consented or reasonably foreseeable activities or developments in the area, which could lead to potentially significant cumulative effects in conjunction with the Proposed EIA Development ('Committed Developments').
- 2.33. These include:
- Approved but unimplemented projects;
 - Plans or projects for which an application has been made and which are under consideration by the consenting authorities; and,
 - Certain projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative effects.
- 2.34. A search of MCC's planning applications database and knowledge of the area has identified a number of schemes for which cumulative effects are considered likely. A full list, as of August 2023, is contained at **Appendix 2.2**. These have been formally agreed with Manchester City Council via the EIA Scoping Opinion that was received on 11 October 2023 and no significant planning permissions have been approved since.
- 2.35. Each technical chapter (Chapters 6-8) has assessed the potential for likely significant effects on the environment as a result of the above committed developments, together with the Proposed EIA Development.
- 2.36. In addition, Chapter 10 assesses the Type 1 Cumulative effects.

Assumptions and Limitations

- 2.37. The principal assumptions that have been made and any limitations that have been identified in preparing the ES are set out in each technical chapter. General assumptions include the following:
- All of the principal land uses adjoining the EIA Site remain. Where redevelopment proposals have been granted Planning Permission, the effect of those proposals are considered as part of the Cumulative Impacts;
 - Baseline conditions have been established in 2023 from a variety of sources, including historical data, but due to the dynamic nature of certain aspects of the environment, conditions will change during the Proposed EIA Development;
 - Information received from third parties is complete and up to date;
 - The various stages of the Proposed EIA Development will satisfy minimum environmental standards, consistent with contemporary legislation, practice and knowledge;
 - Assessments are based upon, and conclude, the "worst case" effects that would arise from the application as defined by the description of development set out in Chapter 3 Site Surroundings and Description of the proposals;
 - Construction and demolition methods and phasing will follow the timetable and methods set out in Chapter 5, Construction Management and Phasing.
 - Conditions will be attached to the Planning Permission that will control disturbance during the Proposed EIA Development; and
 - Necessary off-site services infrastructure for the Proposed EIA Development will be provided by statutory undertakers.

Objectivity

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

3. Site, Surroundings and Description of Proposals

- 3.1. This Chapter includes a description of the Site, its surrounding context, a more detailed description of the Proposed Development as well as the Site's suitability for the Proposed Development.

Site Description

- 3.0. The Site lies within the City Centre, and within the Regional Centre as defined by MCC's Core Strategy 2012. The Site boundary extends to c.0.7 hectares.
- 3.1. The Site is bound to the east by Oxford Road, to the north by the Mancunian Way, Manchester Metropolitan University's Faculty of Business and Law to the west, and All Saints Park to the south. A Site Plan is enclosed at **Appendix 1.1** the purposes of identification.
- 3.2. The Site forms part of Manchester Metropolitan University's All Saints' campus, and comprises the All Saints Library Building, a seven storey brick building currently used as a library facility for students and staff of Manchester Metropolitan University, and comprising desk spaces, book clusters and meeting rooms. The Site is currently occupied, and it is intended that part of the Site will remain in operation through the five year refurbishment and construction period.
- 3.3. The building's pedestrian access is currently from All Saints Park to the south of the building. There is no car parking associated to the library building.

Wider Area

- 3.4. The Site lies within the heart of the Oxford Road Corridor, a priority location for higher education and an opportunity to strengthen and diversify the economy by creating high added value growth in sectors such as Creative and Digital, Health, Science and Innovation, and Advanced Materials and Engineering.
- 3.5. Low rise buildings are located to the east, on the opposite side of Oxford Road, which comprise of shops and commercial properties of approximately 2 to 3 storeys in height, and residential properties above. To the south, All Saints Park provides public realm, surrounded by Manchester Metropolitan University Buildings, and St Augustine's Church.
- 3.6. To the west, there are further University buildings, and student accommodation. To the north, the Mancunian Way runs east to west at an elevated level, and to the north of that lies the Manchester Metropolitan University John R Dalton Building and Circle Square.
- 3.7. Within the wider area, there is a broad mix of uses that is characteristic of its location within the City Centre including:
- Educational uses associated with Manchester Metropolitan University and the University of Manchester;
 - Student halls of residence for students at Manchester Universities;
 - Commercial and industrial uses, including music venues and eateries; and
 - Sport, leisure and cultural uses, including Manchester Aquatics Centre.

Site Specific Environmental Designations

Air Quality

- 3.8. The EIA Site is situated in the Greater Manchester Combined Authority Air Quality Management Area (AQMA).

Ecology

- 3.9. The Site has no statutory or non-statutory designation for nature conservation, and no statutory protected Sites lie on the Site or immediately adjacent to the Site boundary. There is one European designated Site within 10km of the development, Rochdale Canal Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC).

However, there are no nationally designated or non-statutory designated Sites within 2km of the Site. The Site is not considered to be functionally linked to any statutory or non-statutory designated ecological or wildlife Site. All designated Sites are considered to be sufficiently distant and not directly connected to the Site as to avoid any adverse impacts from the proposed works.

- 3.10. An Ecological Assessment Report produced by Tyler Grange is submitted in support of the application. This was originally produced in October 2020, and reviewed / updated in February 2023, and a preliminary bat roost assessment undertaken.
- 3.11. The Site is considered to have low bat roosting potential features in the onsite building.

Flood Risk and Drainage

- 3.12. The Site is located in Flood Zone 1.
- 3.13. To ensure that the risk from the proposed combined sewer is not increased, a surface water and foul water drainage strategy has been undertaken in consultation with MCC as Lead Local Flood Authority and United Utilities. The drainage strategy includes measures to reduce existing rates of surface water runoff, including the impact of climate change for the lifetime of the development through the use of Sustainable Drainage System techniques.
- 3.14. These measures will ensure that water quality, flood risk and sewerage infrastructure capacity are not compromised. Further details are provided in the Flood Risk Assessment, which assesses the impact of flooding to and from the site for the lifetime of the development and the Drainage Strategy by Buro Happold which are submitted in support of this planning application.
- 3.15. To minimise the potential environmental effects during construction activities, such as the potential to contaminate local water resources, a Construction Environmental Management Plan (CEPM) will be prepared in accordance with good practice guidance. Additional supporting information where appropriate is included in the accompanying Flood Risk Assessment and Drainage Strategy.

Heritage

- 3.16. There are no Conservation areas within the immediate vicinity of the Site, the nearest being the Whitworth Street Conservation Area c. 350m to the north.
- 3.17. There are a number of listed buildings in the vicinity of the Site. For further details on heritage and the nearby heritage assets, please refer to the Heritage Statement prepared by Deloitte LLP.

Accessibility

- 3.18. The Site is in a highly accessible location by a variety of modes of transport. It is located within easy walking distanced of the city core with all the shops, restaurants, attractions, amenities and facilities that the city centre has to offer.
- 3.19. For further details on transport, please refer to the Transport Assessments and Framework Travel Plans prepared by Buro Happold and MMU.

Planning History

- 3.20. A planning history search for the Site has been undertaken using Manchester City Council's Public Access system. The results of the search have indicated that there have been no relevant Planning Permissions in recent years on the subject Site.
- 3.21. On adjacent sites, of most relevance is the All Saints Park public realm refurbishment and expansion (128485/FO/2020).

The Proposed EIA Development

- 3.22. The description of development for the Proposed Development is:
- 3.23. *"Full Planning Permission for the part demolition and redevelopment, and part reconfiguration and refurbishment of an existing library building, to form a new library (Use Class F1) including a new 13 storey building, external amenity spaces, public realm, access and servicing arrangements and other associated works"*
- 3.24. The term 'Proposed Development' used within this Report refers to all stages of demolition, construction and operation of the Proposed library development.

3.25. **Table 3.2** sets out the application proposals:

Table 3.2 –Application Development Quantum

Quantum	Amount
Site area (inside red line)	6,700 sq. m
Use (Library)	22,099 sq. m GIA (gross internal area)
Use (Terrace)	900 sq. m GEA (gross external area)
Height	63 m, ground + 12 storeys
Parking	No new car or cycle parking proposed.

Layout

- 3.26. The layout has been carefully considered to provide the optimum experience for future occupiers and create a flexible, high-quality space to enable learning, studying and small social spaces.
- 3.27. The layout has also been designed to accommodate areas of amenity, including external terrace at level 5 providing access to fresh air and improve wellbeing.
- 3.28. No car parking is proposed as part of the development.
- 3.29. A full description of the proposed layouts can be found in the Design and Access Statement.

Scale and Massing

- 3.30. The proposed design for the ground plus 12 storey development will contribute to the along Oxford Road, balancing the taller buildings recently constructed at Circle Square to the north.
- 3.31. The Design and Access Statement prepared by Hawkins Brown sets out the detailed development of the design proposals. As part of this a sequence of building forms, heights and layouts were examined and tested against the accommodation and brief requirements. Throughout this process the scale and proportion of the volumes, and also the relationship between each volume were assessed and evaluated. The scale and massing of the buildings were interrogated in depth during pre-application discussions with MCC.
- 3.32. As part of this process, a Townscape and Visual Impact Assessment was undertaken, as detailed in Chapter 7 of the ES. The initial Zone of Visual Influence was used to understand where the emerging scale and massing may be visible from and help to identify key views. From these views a series of massing models and wirelines were used to help to further refine the proposals and ensure the proposed scale and massing was appropriate and responds to the surrounding context.

Appearance and Materiality

- 3.33. The Proposed EIA Development has been carefully crafted to take cues from the existing and emerging surroundings and use these to create contemporary, high-quality architectural design for this part of Manchester City Centre. It has followed best architectural practice and is founded on the concepts of a strong ground floor, with a ribbon rising upwards. This architectural detail was discussed in depth as part of pre-application discussions with MCC to ensure that the proposals will continue to push forward Manchester's ambitions for high-quality and sustainable buildings.

Landscaping Strategy

- 3.34. Planit-IE, award winning landscape architect, are acting as master landscape architect across All Saints Park, incorporating the library proposals into the landscaping masterplan under construction at the park.
- 3.35. Refer to the Planit IE Landscape section within the Design & Access Statement for full details of the Landscape and Public Realm proposals.

Waste and Servicing

- 3.36. A service yard area is provided to the north of the building.
- 3.37. Please refer to the Waste and Servicing Strategy and completed MCC Waste Proforma prepared by MMU for additional information on servicing and access.

Parking

- 3.38. There are no car parking spaces proposed within the Proposed EIA Development, in line with MMU's Sustainable Travel Plan.

Accessibility

- 3.39. The design of the development has been developed with an inclusive approach to allow easy, safe and secure access to all areas of the landscape and building. As part of the process the design team have given due regard to Equality Act, Building Regulations and MCC's Design for Access 2.
- 3.40. Further details of the accessibility of the office building can be found within the Design and Access Statement prepared by Hawkins Brown.

4. Alternatives and Design Evolution

Introduction

- 4.1. Regulation 18(3) and Paragraph 2 of Schedule 4 of the EIA Regulations requires the Applicant to provide an outline of the main alternatives studied and an indication of the main reasons for the choice made, taking into account the environmental effects.
- 4.2. The form of the Proposed Development has been influenced by a range of factors, including location, surrounding land use and input from MCC, Statutory and Non-Statutory Consultees and other stakeholders.
- 4.3. This chapter reviews the principal land use and siting options explored and the reasoning for the selection of the current design for the Proposed Development which forms the subject of assessment within the ES.
- 4.4. This chapter considers the following four options in the context of the existing Development Brief:
- The ‘do nothing’ alternative where the Proposed Development is not progressed.
 - Alternative locations for the Proposed Development.
 - Alternative Uses for the Site.
 - Alternative Scale and Massing for the Proposed Development.

The ‘do nothing’ alternative

- 4.5. The ‘do nothing’ scenario refers to the option of leaving the Site in its current state, as described above in Section 3.
- 4.6. The Site is located within a highly strategic and sustainable location within Manchester City Centre and is therefore not making the most efficient use of land in its existing state. Currently, the Site is comprised of an unattractive library building with limited facilities and sustainability credentials.
- 4.7. The Site is located within the Oxford Road Corridor; “a place where knowledge, business and culture thrive”. It includes two of the UK’s largest universities, a university NHS foundation trust, and a large cluster of digital, technology and life science businesses.
- 4.8. The Proposed Development is therefore highly suitable for this location and will directly support the regeneration ambitions set out by the Oxford Road Corridor framework.
- 4.9. The current building is no longer fit for use. It does not have enough desk space for the number of students who are seeking study and meeting spaces. Additionally, the existing building does not provide a sense of arrival for the University, or the city.
- 4.10. Additionally, doing nothing would not bring about the significant benefits to the University, students, and the wider city and communities.
- 4.11. Therefore, the ‘do nothing’ scenario has been discounted due to the University’s requirement for additional study space, and the requirement to upgrade the sustainability of the building to retain it for future uses.

Consideration of Alternative Locations

- 4.12. The Site is situated within a highly strategic location within the City Centre and is therefore well served by multiple modes of sustainable transportation methods. For instance, the Manchester Oxford Road train station and Deansgate-Castlefield and St Peter’s Square Metrolink stops are both located around a ten minute walk from the Site, providing access to a number of locations throughout Greater Manchester and beyond. The Oxford Road Corridor is thought to be one of the busiest bus routes in Europe.

- 4.13. Fundamentally, the proposed development will result in the enhancement of an existing use, the library, which is ideally located through its physical and functional connections with Manchester Metropolitan University's wider estate. As a high-profile gateway site for the Campus, adjacent to an important public space (All Saints Park), the Site lends itself to an ambitious landmark proposal of this nature. The proposals will offer opportunities for public access and community usage and are ideally therefore located adjacent to Oxford Road which is one of Manchester's principal thoroughfares and a key public transport / active transport corridor. The proposals will contribute positively to Manchester City Council's regeneration strategies with regard to the Oxford Road Corridor.
- 4.14. Therefore, this Chapter does not consider that there are any appropriate alternative sites within the context of the planning application.

Consideration of Alternative Uses for the EIA Site

- 4.15. As mentioned above, the Site is strategically located within the City Centre and close to both universities campuses, making the Site highly suitable for an educational and library use.
- 4.16. The proposals do not involve a change of use, relative to the existing buildings on the site. The proposed use continues to be entirely appropriate within the context of Manchester Metropolitan University's estate and their ongoing estates programme. It is also consistent with Manchester City Council's regeneration strategy for the area.
- 4.17. There is no alternative to academic use that would be considered by the University to be appropriate for the site in this context.

Consideration of Alternative Scale and Massing

- 4.18. Different scale and massing options have been considered for the Proposed Development, the aim of which is to maximise the suitable use of the Site to create a sustainable, viable scheme and minimise any negative impacts on adjacent land uses and the environment, whilst providing public benefits.
- 4.19. The Proposed Development was subject to a design competition open to several architects. Hawkins Browns' scheme reflects the optimum scale and massing that sits comfortably in the cityscape, stepping down in scale from the Circle Square development to the north, into the lower scale of the University campus.
- 4.20. The proposals reflect the massing of the existing building, within a similar footprint at ground level. The massing therefore sits well in the context, with a frontage along All Saints Park and Oxford Road, two main pedestrian thoroughfares.
- 4.21. As stated in Section 3, the scale and massing of the buildings were interrogated in depth during pre-application discussions with MCC and as part of this process a detailed series of massing iterations were presented to ensure that the proposed scale and massing responded to the surrounding context. The scale and massing of the Proposed Development is in line with the principles of the Oxford Road Corridor.
- 4.22. The Design and Access Statement sets out the detailed development of the design proposals. As part of this a sequence of building forms, heights and layouts were examined and tested against the accommodation and brief requirements. Throughout this process the scale and proportion of the volumes, and also the relationship between each volume were assessed and evaluated.

Summary

- 4.23. As required by the EIA Regulations, the main alternatives have been considered with regard to the Proposed Development and, where appropriate, reasons have been provided within the chapter to cover the choices that have been made.
- 4.24. The above has justified the need for regeneration of this part of the City Centre, to meet the demand for more and improved study and meeting spaces for Manchester's growing student population. It has highlighted how the location provides a major opportunity to part refurbish an existing building, make an efficient use of brownfield land, in a highly strategic and accessible location close to the City Centre Core and the Oxford Road Corridor.
- 4.25. The proposed library use is the most appropriate in the context of its strategic location and existing building and responds to identified regeneration priorities and need for economic growth for this part of the City Centre and Manchester as a whole.
- 4.26. The Proposed Development has been influenced by pre-application consultation with key stakeholders including local landowners, residents, businesses, statutory consultees, as well as with MCC. Throughout this design process, environmental constraints and opportunities have been considered from the outset to arrive at the most appropriate

solution for the Proposed Development. On this basis, Regulation 18(3) and Paragraph 2 of Schedule 4 of the EIA Regulations has been addressed.

5. Construction Phasing and Methodology

Introduction

- 5.1. This Chapter of the ES describes the proposed construction programme and key activities that will be undertaken. Detailed consideration of potential impacts during the construction process and any necessary mitigation measures are provided in each relevant chapter of the ES.
- 5.2. The following appendix is included with this Chapter:
- Appendix 5.1 – Site Constraints Plan
- 5.3. The main aim throughout the construction period is to minimise the impact on the surrounding properties, residents, businesses and roadways for the duration of the work. Close collaboration with all project teams of all construction projects in close vicinity to the Library Project will be maintained at all times to achieve this aim.
- 5.4. The following narrative explains this methodology and timescales envisaged at the time of the planning application. More detailed proposals will be developed once contractors are appointed and prior to commencement on site. This will include preparation of detailed plans to incorporate Construction Management, Construction Phase Health and Safety, Environmental Management as well as Site Waste Management, Logistics and Traffic Management.

Construction Programme

- 5.5. The total construction programme will span a period of approximately four years and be delivered in two phases. Phase 1 will be the demolition of the All Saints East Building and construction of the new 12 storey tower and Phase 2 will be the refurbishment of the existing Library.
- 5.6. This is an indicative construction programme and the Applicant highlights that there are multiple risks involved in the development process. The Applicant notes that this programme may ultimately be extended in the event delays caused by sustained periods of poor weather, unexpected ground conditions or other abnormals, volatility in economic markets, political uncertainty, and any future pandemics.
- 5.7. The programme is based upon normal working hours in line with Manchester City Council Guidance of 7.30hrs to 1800hrs Monday to Friday and 0800hrs to 1400hrs on Saturdays.
- 5.8. On Sundays and Bank Holidays no noisy working will generally be planned. On some occasions there are certain operations that may by necessity be required to proceed during these periods, for example tower crane erection and dismantling. These will be infrequent and will be agreed with the local authority in advance, advising local residents and businesses through a series of neighbourly engagements. The frequency of these will vary and respond to demand. Access to the site will be permitted 30 minutes prior to working day commencing with noise being kept to a minimum for the first half hour of each day.
- 5.9. The Applicant acknowledges the close proximity of the neighbouring businesses and residents and as such will endeavour at all times to ensure the working hours are adhered to in order to accordingly protect their residential amenity and continuity of business services.

Construction Methodology

- 5.10. The following is a brief overview of the methodology to be adopted for the new build construction and refurbishment of the Proposed Development. The section also considers general logistics as well as traffic management for the movement of material to the disposal of waste.

Site Logistics

- 5.11. It is envisaged that the temporary site establishment and welfare space will consist of good quality temporary cabins branded with the Contractors logo. The welfare facilities will be suitably sized to suit the anticipated number of operatives. The welfare facilities will be located close to the Site on MMU land.

- 5.12. Material storage will be generally contained within the site boundary with access through the site entrance gates for deliveries.
- 5.13. Any temporary public road or footpath closures associated with the construction phase will be agreed with Manchester City Council highways department and relevant diversion signage put in place.
- 5.14. Access to the site entrances will be controlled by secure metal turnstiles, likely with biometric scanners. This will monitor the Contractors operative's movements and prevent unauthorised public access to the Site. The main gates will be manned by qualified banksmen who will co-ordinate traffic, bank deliveries as well as ensure the road and pavement areas are kept clean. At all other times the gates will be securely locked.
- 5.15. When required by the construction activities, appropriate wheel and vehicle wash facilities will be in place to ensure delivery wagons leave the site clean and tidy with regular cleaning of Oxford Road using road sweepers.
- 5.16. Loading and unloading of material deliveries will occur within the site boundary unless exceptional circumstances require special measures to be instigated.
- 5.17. Waste materials will be placed in skips and these will be removed on a regular basis. Food waste from canteens and eating areas will be contained within a smaller covered skip to prevent vermin.
- 5.18. The Site will employ security guards as appropriate to prevent and discourage nuisance. Regular patrols will take place throughout the shift. As an additional measure, CCTV will be installed to elements of the Site to aid early identification of potential issues.

Construction Works

- 5.19. Construction works generally comprise of the following:
- Creation of piling mat substrate and formation of tower crane base.
 - Pile foundations for the new tower.
 - Bearing pad construction, ring beams and drainage.
 - Installation of tower crane(s).
 - Construction of in-situ concrete frame, concrete stair cores and floors to roof level by concrete pump.
 - Roof coverings.
 - New concrete panel façade panels to the tower and refurbished existing Library including windows.
 - New glazed curtain walling to entrance areas.
 - Installation of internal mechanical and electrical systems including main lifts.
 - Fit out of Library facilities including specialist areas (i.e. Special Collections, etc).
 - Removal of Tower crane.
 - Completion of internal finishes.
 - Phased completion of communal external space and pedestrian routes.
 - Removal of permanent hoardings and temporary gates.
 - Completion of associated public realm works.
 - Phased decant from Site leading to the full opening of the development (following completion of Phase 2).

Infrastructure Works

- 5.20. The works generally comprise of the following:
- Drainage connections will be to the existing combined drainage system which runs along Lower Chatham Street, continuing in a North / North West direction through the site curtilage.
 - A new electrical substation is to be established on the Site.
 - Mains water will be sourced from the existing infrastructure.
 - Telecoms and data will be from the existing University infrastructure.

Traffic Management Plan

- 5.21. It is envisaged that deliveries will arrive via the Lower Chatham Street and around the Business School Building on the existing University service road system. Site egress onto Oxford Road with a turn left policy is to be arranged with Highways.
- 5.22. A full traffic management plan will be developed to address the following issues:

- Integration of traffic management scheme with surrounding construction developments and calming measures.
- Access, egress, drop off and turning areas.
- Temporary and/or permanent alterations to local traffic routes (both vehicular and pedestrian).
- Additions, alterations and positions of any temporary signage, road markings or protection barriers.
- Pedestrian access around site and relevant protection, lighting and signage schemes.
- Temporary suspension / relocation of any parking bays or bus stops.
- Segregation of plant, materials and pedestrians on site and safe access routes between welfare and site areas.
- No provision of car parking, off and on site, and public transport strategy for staff and operatives.
- Loading bays, hoist positions and tower crane areas.
- Any other measures to ensure the safe integration of pedestrians, cyclists and road users both on, off and surrounding the development.

5.23. In preparation of the above document, the Contractors protocol of timed and booked deliveries, off peak deliveries and prefabrication will be incorporated.

Deliveries

5.24. Delivery routes for the major materials and items of plant will be as per the section above, they will access from Boundary Street West, Higher and Lower Chatham Street and then the University service road around the Business School. The Contractor is to endeavour to arrange deliveries outside of peak traffic hours to minimise local disruption and the normal workings of the surrounding properties.

Parking

5.25. As per MMU policy, there will be no visitor and key staff parking within the compound area. Site personnel will be encouraged to utilise the extensive public transport options available to them. Any personnel who have to attend by car will be asked to utilise the multi-storey car parks in the close proximity to the Site (i.e. Circle Square and other available public car parking immediately off Oxford Road).

Health and Safety

- 5.26. The project will be carried out in accordance with the Construction, (Design and Management) Regulations 2015, and all other relevant legislation and guidance.
- 5.27. The Contractors invited to submit Tenders for the project have the appropriately trained management resource and procedures in place to oversee the activities of a complex, multi-storey construction project on a busy city centre University campus.
- 5.28. The Principal Contractor will work closely with the Principal Designer at this early stage of the project and will influence the detailed design to remove construction and residual safety risks.
- 5.29. The Principal Contractor will produce a Construction Phase Health and Safety Plan prior to works commencing on site that will be reviewed and signed off by the client and their Principal Designer. This document will form the basis of the procedure for managing health and safety during the construction phase and will be periodically reviewed as the work progresses.

Construction Materials

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

Site Security and Safety

- 5.31. Protecting the public from risks to their health and safety arising from the construction work is a high priority. Every care will be exercised to prevent risk to members of the public and appropriate action, including dust and noise control and the erection of perimeter fencing to a specified standard, will be taken.
- 5.32. Vandalism and theft of plant, equipment, materials and fuel is possible throughout the duration of the development. The Contractor will take appropriate action, as described in previous sections, to ensure the site is secure at all times from unauthorised access. As described previously, the site will have metal turnstile access systems likely controlled by a biometric access/egress management system. In the event of a lost or stolen data the system can be updated to prevent fraudulent use.

- 5.33. The provision of CCTV would be considered if required to main site points and compound areas to assist in the prevention of unauthorised activities.

Environmental Management

- 5.34. An Environmental Plan will be developed to address and monitor the following issues:

- Applicable environmental legislation.
- Pollution.
- Nuisance (Noise, vibration, dust, emission and light).
- Public relations.

Environmental Legislation

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

Pollution

- 5.36. The Principal Contractor will establish procedures, to ensure the prevention of water and ground pollution, relating to the following risk activities:

- De-watering of the site (if required).
- Earthworks (including piling, spoil movement and removal, and movement of contaminated soils)##.
- Concrete works (including washing out of concrete delivery vehicles and pumps).
- Storage and movement of fuels, oils, chemicals and other such fluids.
- Cleaning (including plant, machinery and wheel washing).

Nuisance (Noise, Vibration and Dust)

Noise and Vibration

- 5.37. The principal concerns relating to the nuisances of noise and vibration come from construction activities such as demolition, excavation, cutting, breaking out and plant movements. Mitigation measures will be considered to include low noise options, noise attenuation techniques and carrying out certain activities during agreed hours of the day.

- 5.38. To minimise the noise, the Principal Contractors will provide the following:

- Any compressors brought on to the Site to be silenced or sound reduced models fitted with acoustic enclosures;
- All pneumatic tools to be fitted with silencers or mufflers where available;
- Care to be taken when erecting or striking scaffolds to avoid impact noise from banging steel. All operatives undertaking such activities to be instructed on the importance of handling the scaffolds to reduce noise to a minimum;
- The majority of deliveries to be programmed to arrive during normal working hours only. Care to be taken when unloading vehicles to minimise noise. Delivery vehicles to be routed so as to minimise disturbance to local residents. Delivery vehicles to be prohibited from waiting within or in the vicinity of the EIA Site with their engines running;
- All plant items to be properly maintained and operated according to manufacturers' recommendations in such a manner as to avoid causing excessive noise;
- Where possible, all plant to be sited so that the noise impact at nearby noise sensitive properties is minimised;
- Local hoarding, screens or barriers to be erected as necessary to shield particularly noisy activities; and,
- Problems concerning noise from construction works can often be avoided by taking a considerate and neighbourly approach to relations with the local residents. Where possible, works should only take place during given periods, e.g. during normal construction hours and not at night.

- 5.39. In order to minimise vibration, the Principal Contractors will provide the following:

- Adoption of low vibration working methods. Consideration should be given to use of the most suitable plant;
- Where processes could potentially give rise to significant levels of vibration, on - site vibration levels should be monitored regularly by a suitably qualified person;

- Where piling is to take place, any obstructions should first be removed;
- The provision of cut-off trenches in order to interrupt the direct transmission path of vibrations; and,
- Application of piling techniques aimed at reducing resistance to penetration e.g. pre-boring for driven piles and adding water to the hole for impact bored piles.

Dust

- 5.40. The principal concerns relating to air quality and emissions from construction activities are in the form of dust and fumes. The degree of dust deposition is usually dependant on the nature of the works. Increased levels of dust are most likely to occur during Site activities related to demolition (of which there are none planned on-site) piling, moving construction traffic and ground works.
- 5.41. To minimise the dust and fumes, the Principal Contractor will provide the following:
- Providing a hard surface where vehicle movements occur;
 - Control measures and dust suppression techniques;
 - Minimising stock piling and positioning in a manner that reduces risk of dust arising through wind action;
 - Measures such as screening and covering;
 - Installation of appropriate wheel and body wash facilities;
 - Keeping of adjacent roads and pavements clean;
 - Ensure plant is turned off and not left running when not in use; and,
 - Selection of electrically powered plant where possible in lieu of diesel or petrol plant.
- 5.42. Best practice mitigation measures are to be implemented during the construction phase of the Proposed Development via the Construction Management Plan (CMP). It is anticipated that the generation of dust and harmful pollutants emissions from construction site activities will be reduced with the correct implementation of these measures. A Dust Management Plan will form part of the CMP to ensure that all recommended mitigation measures will be implemented properly.

Public Relations

- 5.43. The Principal Contractors will ensure that regular contact is made with local residents and community groups to ensure they are kept up to date with general progress on the Site. This is especially important for major work elements such as piling and tower crane erection due to our close proximity to adjacent buildings. The Principal Contractor display a contact number on hoardings which will be operational 24/7.

Waste Management Strategy

- 5.44. In line with the "Site Waste Management Plan Regulations 2008", a site waste management plan (SWMP) will be developed by the principal contractor and agreed with Manchester City Council.

Operational Waste Removal

- 5.45. Waste generated during the construction phase is to be cleared daily to a main holding skip. Each floor plate will have a designated waste area that will see bins located within it that can be emptied at the end of each shift. During high waste activities, such as dry lining, this waste removal may need to occur several times a day via the hoists and as such general operatives will be employed to ensure this will occur. Hazardous waste will be stored and disposed of separately, but main waste will enter a common skip where our supplier will sort at their transfer station before issuing us recycling percentages and data.
- 5.46. To reduce the volume of waste sent to landfill, waste from EIA Site will be segregated at the waste transfer station into the following categories.
- CAT A: Hazardous waste – Paint tins, mastic etc
 - CAT B: Metal
 - CAT C: Timber
 - CAT D: Plasterboard
 - CAT E: General Waste
- 5.47. All carriers of waste will hold a valid waste transfer licence and provide certification to the main contractor for all elements of the process.

Summary

- 5.48. The Construction (Design and Management) Regulations 2015 will apply to this project and all appropriate controls and systems will be in place to comply with the standards of the Regulations and associated guidance.
- 5.49. Every stage of the project will be pre risk assessed and appropriate controls applied, subcontractors will be pre vetted and will be subject to extensive pre contract requirements of information transfer and risk assessment.
- 5.50. A fundamental aspect of the Principal Contractor's role is the development of a Construction Management Plan, which will take account of all known risks, which have been identified at pre-construction stage by the Principal Designer/CDM Consultant, the Design Team and also through site investigations.
- 5.51. The Construction Management Plan will describe arrangements and procedures for managing these key risk areas in more detail, as well as any future risk, and also the resources, including personnel, which will be applied to the scheme, and which will ensure the Health and Safety of all those working on or affected by the project works.
- 5.52. The Principal Contractor will have an on-going process of monitoring health and safety standards throughout its organisation. This is normally done directly (on-site) by the site management team through regular inspections, toolbox talks etc. and also via the risk assessment process both during the completion of risk assessments and then by monitoring the effectiveness of risk control measures, which have been implemented. Site managers will also undertake regular reviews of safety on-site, including any accidents or incidents and any matters raised will be dealt with accordingly.
- 5.53. Health and safety is also incorporated as a fundamental aspect of the overall project review. The Applicants will appoint Principal Contractors that can demonstrate competency in the management and execution of Health and Safety. The Principal Contractor will work closely with the Principal Designers at this early stage of the project and will influence the detailed design to remove construction and residual safety risks.
- 5.54. At the earliest opportunity (prior to commencement of construction operations), the Principal Contractor will enter into dialogue with all relevant parties, including neighbours to ensure there is effective coordination throughout all stages of the build.

6. Climate Change

Part A – Greenhouse Gas Emissions Assessment

Introduction

- 6.0. This chapter of the ES has been prepared by Buro Happold. The assessment of climate change through the ES shall focus on both GHG emissions associated with the Proposed Development (i.e., climate change mitigation) and the effects of climate change on the Proposed Development itself (i.e., climate change resilience and adaptation). As these are two separate but linked issues, this ES chapter is split into the following two parts following the ‘legislation, planning policy and guidance’ section:
- Part A: Greenhouse Gas Emissions. This section follows a traditional EIA approach of assessing the significance of effects, in line with the Institute of Environmental Management and Assessment (IEMA) Guide to Assessing GHG Emissions and Evaluating their Significance 2nd Edition (2022). It assesses the likely greenhouse gas (GHG) impacts and effects of the proposals upon the Site and surrounding area. Also it describes the methods used to assess these impacts and effects, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative effects and the likely residual effects after these methods have been adopted; and
 - Part B: Climate Change Resilience Risk Assessment. In line with the IEMA Guide to Climate Change Resilience and Adaptation 2nd Edition (2020), this section follows a risk assessment approach, rather than a traditional EIA approach of assessing the significance of effects.
- 6.1. This Chapter is accompanied by one technical appendix, Greenhouse Gas Calculation Inputs (Appendix 6-1).
- 6.2. The reviewer of this chapter has an MSc in Climate Change and a BSc in Geography. They have 2 years experience in preparing greenhouse gas assessments for EIA and have completed 11 GHG ES chapters to date.
- 6.3. The author of this chapter has an MSC in Environmental Management, and a BSc in Ecology. They have one year’s experience in preparing greenhouse gas assessments for EIA and have completed 5 GHG ES chapters to date.

Legislative and Policy Context

Legislation

The Climate Change Act 2008 (2050 Target Amendment) (Order 2019)

- 6.4. The Climate Change Act 2008 originally required the UK to reduce carbon emissions by at least 80% by 2050 compared to a 1990 baseline. On 27th June 2019, the UK Government increased the statutory duty of the Secretary of State to at least a 100% reduction in carbon emissions by 2050. Doing so would make the UK a ‘net zero’ emitter.

National Planning Policy

Town and Country Planning (EIA) Regulations 2017

- 6.5. Schedule 4, paragraph 5(f) of the EIA Regulations state that an EIA is to consider the following in relation to climate change:

‘A description of the likely significant effects of the development on the environment resulting from, inter alia... 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’.

National Planning Policy Framework (NPPF) (MHCLG, 2023)

- 6.6. The NPPF states the following at paragraph 153 in relation to GHG emissions:

‘In determining planning applications, local planning authorities should expect new development to:

- *Comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and*

- *Take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.'*

National Planning Practice Guidance (NPPG) (MHCLG, 2023)

6.7. The Climate Change Guidance states the importance of planning to consider climate change, stating the following:

'Effective spatial planning is an important part of a successful response to climate change as it can influence the emission of greenhouse gases. In doing so, local planning authorities should ensure that protecting the local environment is properly considered alongside the broader issues of protecting the global environment. Planning can also help increase resilience to climate change impact through the location, mix and design of development.'

The Building Regulations 2021

6.8. Building Regulations Part L1A and Part L2A set out minimum legal requirements for energy efficiency in residential (Part L1A) and non-residential (Part L2A) building construction. These regulations are typically updated every 3 years with new minimum performance benchmarks set. All buildings in the Proposed Development will have to comply with the relevant version of Part L.

Sub-Regional Planning Policy

Places for Everyone, Joint Development Plan – Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford, Wigan. Main Modifications Stage (GCMA, 2023)

6.9. Although this plan is yet to be adopted, the consultation period has finished, and the NPPF provides guidance on the weight that should be given to emerging policies, stating the following:

'Local planning authorities may give weight to relevant policies in emerging plans according to:

- *the stage and preparation of the emerging plan (the more advanced its preparation, the greater the weight that may be given)'*

6.10. The following policies in the joint development plan are of relevance to GHG emissions:

6.11. Policy JP-S 1 Sustainable Development states the following:

'To help tackle climate change, development should aim to maximise its economic, social and environmental benefits simultaneously, minimise its adverse impacts, utilise sustainable construction techniques and actively seek opportunities to secure net gains across each of the different objectives.

Preference will be given to using previously-developed (brownfield) land and vacant buildings to meet development needs'

6.12. Policy JP-S 2 Carbon and Energy states the following:

'The aim of delivering a carbon neutral Greater Manchester no later than 2038, with a dramatic reduction in greenhouse gas emissions, will be supported through a range of measures including:

1. *Promoting the retrofitting of existing buildings with measures to improve energy efficiency and generate renewable and low carbon energy, heating and cooling*
2. *Promoting the use of life cycle cost and carbon assessment tools to ensure the long term impacts from development can be captured;*
3. *Taking a positive approach to renewable and low carbon energy schemes, particularly schemes that are led by, or meet the needs of local communities;*
4. *Keeping fossil fuels in the ground;*
5. *Planning for a balanced and smart electricity grid by identifying geographical locations which could support energy assets;*
6. *Increasing the range of nature based solutions including carbon sequestration through the restoration of peat-based habitats, woodland management, tree-planting and natural flood management techniques;*
7. *Development of Local Area Energy plans to develop cost effective pathways to achieve carbon targets;*

An expectation that new development will:

Be net zero(31) carbon from 2028 by following the energy hierarchy (with any residual carbon emissions offset), which in order of importance seeks to:

- *Minimise energy demand;*
- *Maximise energy efficiency;*
- *Utilise renewable energy;*
- *Utilise low carbon energy; and*
- *Utilise other energy sources.*

Incorporate adequate electric vehicle charging points to future proof for the likely long-term demand, taking account of the potential maximum energy demand for the site;

Where practicable, prioritise connection to a renewable energy/heating/cooling network in the first instance or a low carbon energy/heating/cooling network that is adaptable to non-fossil fuels at a later date;

Achieve energy demand reductions for residential development in terms of space heat demand; hot water energy demand and the delivery of on-site renewable energy generation.

For renewable energy generation priority should be given to PV installation where technically feasible, alternative technologies will be appropriate where the equivalent generation is evidenced.

A) For non-residential developments, achieve at least BREEAM excellent standard (or equivalent) for the 'Ene 01 – reduction of energy use and carbon emissions' category rising to 'BREEAM outstanding' equivalent for ENE 01 from 2028.

B) Include a detailed energy statement to demonstrate via site relevant evidence how the development has sought to maximize reductions in carbon emissions in line with relevant policy targets, including the minimisation of overheating risks and appropriate measures for post occupancy evaluation. Whole life cycle emissions should be considered where possible.'

6.13. Policy JP-S 7 Resource Efficiency states the following:

'The achievement of a circular economy and a zero-waste economy will play a key role in meeting Greater Manchester's ambition of becoming a leading green city region by 2038. The following measures will help to achieve this:

Using sustainable design and construction techniques to reduce carbon emissions, adapt and future proof to the impact of climate change, reduce and recycle waste and minimise water use.'

Local Planning Policy

Manchester's Local Development Framework. Core Strategy Development Plan Document (MCC, 2012)

6.14. The Core Strategy was adopted in July 2012, and includes the following spatial objectives relating to the reduction of GHG emissions:

- *SO1. Spatial Principles: Provide a framework within which the sustainable development of the city can contribute to halting climate change; and*
- *SO6. Environment: Protect and enhance both the natural and built environment of the city and ensure the sustainable use of natural resources, in order to mitigate and adapt to climate change, support biodiversity and wildlife, improve air, water and land quality, recreational opportunities and provide networks of high-quality green infrastructure, ensuring that the city is inclusive and attractive to residents, workers, investors and visitors.*
- *Policies relevant to GHG emissions are set out below:*

6.15. Policy EC 1 Employment and Economic Growth in Manchester states the following:

'Development proposals should have regard to:

- *Climate change resilience demonstrating how CO₂- emissions will be minimised with an aim of zero carbon emissions, through energy efficiency, renewable energy and contributing to low and zero carbon decentralised energy infrastructure.'*

6.16. Policy C2 District centres states the following:

'New development should deliver improvements to the quality and accessibility of the centre environment. Opportunities should be taken to adopt sustainable building design and practices to assist in adapting to climate change.'

6.17. Policy EN 4 Reducing CO2 Emissions by Enabling Low and Zero Carbon Development states the following

'The Council will seek to reduce fuel poverty and decouple growth in the economy, growth in CO2 emissions, and rising fossil fuel prices, through the following actions:

- All development must follow the principle of the Energy Hierarchy, being designed; to reduce the need for energy through design features that provide passive heating, natural lighting and cooling; to reduce the need for energy through energy efficient features such as improved insulation and glazing; and to meet residual energy requirements through the use of low or zero carbon energy generating technologies.*
- Wherever possible new development and retrofit projects, including energy generation plant, must be located and designed in a manner that allows advantage to be taken of opportunities for low and zero carbon energy supplies;*
- Where possible new development and retrofit projects will be used as a mechanism to help improve energy efficiency and provide low and zero carbon energy supplies to existing buildings;*
- Where appropriate new development and retrofit projects will be required to connect to and/or make contributions to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing/potential decentralised energy schemes; and*
- The use of building materials with low embodied carbon in new development and refurbishment schemes.'*

6.18. Policy EN 6 : Target Framework for CO2 reductions from low or zero carbon energy supplies states the following:

'Applications for residential development of 10 or more units and all other development over 1,000 sqm will be expected as a minimum to meet the target shown in Table 7.1 and Table 7.2, unless this can be shown not to be viable. This should be demonstrated through an energy statement, submitted as part of the Design and Access Statement. Such a statement will be expected to set out the projected regulated energy demand and associated CO2 emissions for all phases of the development.'

'The target framework relates to three broad development locations and their potential for low and zero carbon, decentralised energy. The areas are defined as follows:

- Target 1 Network development areas: Locations where the proximity of new and existing buildings, the mix of uses and density of development provide the right conditions to support district heating (and cooling).*
- Target 2 Electricity intense areas: Locations where the predominant building type has an all electric fit-out such as retail units and leisure complexes.*
- Target 3 Micro-generation areas: Locations where lower densities and a fragmented mix of uses tend to mean that only building scale solutions are practical.'*

Table 6-2 Domestic CO₂ emissions reduction targets (Core Strategy Development Plan, 2012)

Target	% Minimum requirement
Target 1: Network development area	CHP/district heating anchor or connector or where not feasible at least a 15% increase on Part L 2010
Target 2: Electricity intense buildings	+15% increase on Part L 2010
Target 3: Micro generation area	+15% increase on Part L 2010

Table 6-3 Non-domestic CO₂ emissions reduction targets (Core Strategy Development Plan, 2012)

Target	% Minimum requirement
Target 1: Network development area	CHP/district heating anchor or connector or where not feasible at least a 15% increase on Part L 2010
Target 2: Electricity intense buildings	+10% increase on Part L 2010
Target 3: Micro generation area	+15% increase on Part L 2010

'The energy statement will be required to be submitted at the outset of any proposed development (outline application or before). Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO₂ mitigation, subject to the energy statement incorporating evidence such as modelling to demonstrate compliance.'

6.19. Policy EN 8 Adaptation to Climate Change states the following:

'Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO₂ mitigation under Policy EN6, subject to sufficient evidence to quantify their contribution to compliance.'

Manchester City Council Climate Change Action Plan 2020 – 2025

6.20. The Manchester City Council (MCC) Climate Change Action Plan sets out MCC's commitments to tackling climate change from 2020-2025 and builds on previous plans over the last decade.

6.21. It summarises the specific actions which are required to ensure that MCC reduces its direct emissions by at least 50% by 2025 (compared to 2019/20) whilst also playing its full part in supporting and influencing the city to do the same.

6.22. The purpose of the plan is as follows:

"The document sets out MCC's commitments to tackling climate change over the next 5 years and builds on previous action plans over the last decade; and

It covers MCC's plans for adapting to the expected impacts of climate change and supporting and influencing others, including through the implementation of the Manchester Green and Blue Infrastructure Strategy 2015-2025"

6.23. Specific commitments that MCC are making are:

- *'Deliver at least a 50% reduction in carbon emissions from our buildings, energy and transport by 2025 (from circa 30-32,000 tonnes in 2019/20 to circa 15-16,000 tonnes in 2024/25) via a 13% year on year reduction;*
- *Report quarterly on progress against the actions in the plan and provide quantitative reports on data in tonnes of CO₂; and*
- *Become zero carbon by 2038 at the latest (based on the Tyndall Centre for Climate Research definition of zero which is at least a 95% reduction i.e., a reduction of 35,547 tonnes CO₂ from the 2018/19 total which would mean that the Council's direct emissions in 2037/38 would be less than 1,871 tonnes CO₂).'*

6.24. The plan states the following in relation to citywide emissions:

'The Council also recognises the importance of supporting and influencing our residents and organisations to take action to reduce their direct and indirect CO₂ emissions and to adapt to the changing climate.'

Manchester Climate Change Framework 2020 – 2025

6.25. Produced by the Manchester Climate Change Partnership, the Manchester Climate Change Framework 2020-2025 is the city's high-level strategy for tackling climate change. It sets out how Manchester will 'play its full part in limiting the impacts of climate change'.

- 6.26. The objectives and targets include:
- *‘Staying within our carbon budgets – based on recommendations by the Tyndall Centre for Climate change Research in 2020;*
 - *Climate adaptation and resilience; and*
 - *Inclusive, zero carbon and climate resilient economy.’*
- 6.27. Areas for action to meet the objectives and targets include:
- *‘Buildings (existing and new);*
 - *Renewable energy; and*
 - *Green infrastructure and nature-based solutions’*

Guidance Documents

IEMA EIA Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance, 2nd Edition (IEMA, 2022)

- 6.28. This guidance is a revision of the 2017 institute of Environmental Management and Assessment (IEMA) guidance on Assessing Greenhouse Gas Emissions and Evaluating their Significance. It complements IEMA’s latest guidance on Climate Change Resilience and Adaptation (2020) and builds on the Climate Change Mitigation and EIA overarching principles. This guidance states that:
- *‘GHG emissions should be assessed and reported as part of a good practice approach to EIA.’*
- 6.29. The guidance provides the following justification for scoping in a GHG emissions assessment:
- *‘The GHG emissions from all projects will contribute to climate change, the largest interrelated cumulative environmental effect;*
 - *The consequences of a changing climate have the potential to lead to significant environmental effects on all topics in the EIA Directive (e.g. biodiversity, water, land use, air quality); and*
 - *GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit, as such any GHG emissions or reductions from a project might be considered to be significant.’*
- 6.30. One of the major updates in this guidance is that mitigation has taken a much more prominent role within the EIA. It is no longer an element to be considered towards the later stages of the EIA process but should be considered from the outset and throughout the project’s lifetime.

BE EN 15978 Sustainability of Construction Works – Assessment of Environmental Performance and Buildings – Calculation Method (BSI, 2011)

- 6.31. The purpose of this Standard is to provide a consistent framework for the assessment of life cycle GHG emissions associated with new and existing buildings. This follows a modular approach, breaking down the lifecycle of the Proposed Development into the product stage, the construction stage, the in-use stage, the end-of-life stage and elements beyond the building lifecycle.

Royal Institution of Chartered Surveyors (RICS) Whole Life Carbon Assessment for the Built Environment (RICS, 2017)

- 6.32. This guidance aims to harmonise whole life carbon assessment by providing consistency in the interpretation and implementation of the methodology in BS EN 15978 to achieve coherent and comparable results that can be used to benchmark whole life cycle carbon performance of built assets.

UK Green Building Council (UKGBC) Embodied Carbon: Developing a Carbon Brief (UKGBC, 2017)

- 6.33. This guidance helps designers identify basic cost-effective actions to reduce the carbon impact of the materials used in construction projects.

Waste and Resources Action Programme (WRAP) Cutting Embodied Carbon in Construction Projects (WRAP, 2011a)

- 6.34. This guidance helps designers identify basic cost-effective actions to reduce the carbon impact of the materials used in construction projects.

WRAP Procurement Requirements for Carbon Efficiency (WRAP, 2011b)

- 6.35. This guidance is for low-carbon building projects and estates management; to set requirements for 'carbon efficiency' (or low-carbon buildings) when procuring design, construction, refurbishment, and facilities management services for existing and new buildings.

Greater London Authority (GLA) Construction Scope 3 (Embodied) Guidance on Greenhouse Gas Accounting and Reporting (GLA, 2013)

- 6.36. Although the Proposed Development is not in London, this guidance provides information on best practice. This accounting and reporting guidance written for the GLA contains a series of recommendations which aim to improve the understanding and consistency of the accounting and reporting of embodied emissions within the construction sector from cradle-to-grave. This document provides guidance on how to carry out calculations to measure the embodied carbon impact of buildings.

Mayor of London Whole Life-Cycle Carbon Assessment Guidance (GLA, 2022)

- 6.37. Although the Proposed Development is not in London, the guidance provides information on best practice. London Plan Policy SI 2 sets out a requirement for developments to calculate and reduce whole life carbon emissions. Guidance has been published to explain how the assessment of these carbon emissions should be approached and presented.

London Energy Transformation Initiative (LETI) Embodied Carbon Primer (LETI, 2020)

- 6.38. Although the Proposed Development is not in London, the guidance provides information on best practice. The LETI Embodied Carbon Primer offers guidance to those interested in exploring embodied carbon in more detail. There is a lack of knowledge in the built environment industry surrounding embodied carbon reduction strategies and calculations. Therefore, LETI has produced the primer to support project teams to design buildings deliver ambitious embodied carbon reduction.

Assessment Methodology and Significance Criteria

- 6.39. The following section outlines the methodologies applied to identify and assess the potential impacts and likely effects associated with the Proposed Development.
- 6.40. The metric for assessing the climate change impacts of GHG emissions in this assessment is Global Warming Potential (GWP). This is expressed in units of CO₂ equivalent (CO₂e) over 100 years. This allows for the emissions of the seven key GHGs: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF₃) and sulphur hexafluoride (SF₆) expressed in terms of their equivalent global warming potential in mass of CO₂e.

Scope of the Assessment

- 6.41. The following potential effects are scoped into the assessment:
- Whole life embodied carbon relating to construction (product, installation, in-use maintenance, repair, replacement and refurbishment, and end-of-life) over a 60-year study period;
 - Operational energy carbon relating to the total predicted energy use (regulated and unregulated) over a 60-year study period; and
 - Operational annual water demand.

Method of Baseline Collection

- 6.42. The baseline for the Proposed Development is defined as the current GHG emissions arising from activities and infrastructure within the Site boundary, in line with the IEMA GHG Guidance. Baseline emissions from the Site have been estimated as a point of comparison. For the purpose of comparison, in the future baseline scenario, it is assumed that the Site will remain unaltered for the equivalent time of the lifecycle of the Proposed Development (i.e., 60 years after the baseline year).

- 6.43. The site is currently used as a library. The baseline GHG emissions associated with the occupied scenario have been estimated based on the Display Energy Certificate. The Display Energy Certificate provides the building area, and states that the annual energy use is 99.16 kWh/m²/year from electricity and 86.98 kWh/m²/year from other fuels. The Department for Business, Energy and Industrial Strategy (BEIS) Greenhouse Gas Reporting: Conversion Factors 2022 for gas and grid electricity have been applied to these figures in order to provide an estimate of annual GHG emissions from the Site for the assessment year (2023). GHG emissions figures are based on the current building occupancy rates.

Method of Assessment

- 6.44. There is currently no standard methodology for quantifying GHG emissions within the EIA process. The IEMA Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance, 2nd Edition (2022) instead advocates for flexibility and proportionality to suit the development under assessment.
- 6.45. For the purposes of the assessment, the Proposed Development has been split up into lifecycle stages, as per BS EN 15978: 2011 Sustainability of Construction Works – Assessment of Environmental Performance of Buildings – Calculation Method, as shown in **Error! Reference source not found.**
- 6.46. Where emissions cannot be quantified due to lack of available benchmarks, a qualitative assessment on their likely contribution to significance has been made based on professional judgement.
- 6.47. GHG emissions caused by an activity are often categorised into ‘scope 1’, ‘scope 2’ or ‘scope 3’, following the guidance of the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) Greenhouse Gas Protocol suite of guidance documents (WRI and WBCSD, 2014). The ES chapter does not refer to scope 1, 2 and 3 emissions throughout, instead referring to emission by lifecycle stage. However, the following section provides an overview of which scope the assessed emissions fall within.
- 6.48. Scope 1 emissions include direct emissions from owned or controlled sources. With respect to the Proposed Development this may include:
- Emissions from fleet vehicles e.g. Heavy Goods Vehicles (HGV’s).
- 6.49. Scope 2 emissions include indirect emissions from purchased energy. With respect to the Proposed Development this may include:
- Electricity, steam, heat or cooling generated offsite, purchased and consumed by the Proposed Development.
- 6.50. Scope 3 emissions include indirect value chain emissions, resulting from the activities of assets not controlled or owned by the Proposed Development occurring before or after they have control of an asset. With respect to the Proposed Development this may include:
- Upstream emissions related to the purchase of required goods and services; and
 - Downstream emissions related to goods leaving the Proposed Development.

Construction Phase

- 6.51. Based on the criteria set out above and in line with **Error! Reference source not found.**, the assessment of the construction phase takes into account the following sources of GHG emissions:
- A1-A3 Product stage: GHG emissions associated with the material extraction, transportation and manufacturing of construction products. These fall within scope 3 emissions; and
 - A4-A5 Construction process stage: GHG emissions associated with product delivery to Site and the installation process. These mainly fall within scope 1 and scope 2 emissions.
- 6.52. A Whole Life-Cycle Carbon Assessment (WLCA) has been carried out for the Proposed Development. The results of this are used to determine the GHG emissions relating to the construction stage of the Proposed Development.

Operational Phase

- 6.53. Based on the criteria set out above and in line with **Error! Reference source not found.**, the assessment of the operation takes into account the following sources of GHG emissions:
- B1-B5 In-use-stage: This use stage captures GHG emissions associated with the operation of the built asset over its entire lifecycle, from practical completion to the end of its service life. These fall within scope 3 emissions;

- B6 Operational energy: GHG emissions associated with the estimated total operational energy. These fall within scope 2 emissions;
- B7 Operational water: GHG emissions associated with operational water consumption. This falls within scope 2 emissions; and
- C1-C4 End of Life Stage: GHG emissions associated with the demolition and disassembly of the Proposed Development, as well as the exploration of circular economy principles. These mainly fall within scope 1 emissions.

B1-B5 In-use stage

- 6.54. Embodied carbon associated with the operational stage (lifecycle stage B1-B5) has been reported based on the results of the WLCA.

B6 – Operational energy

- 6.55. Energy use intensity per square metre of floor area has been applied to the estimated floor area of the Proposed Development. Electricity consumption intensity is based on values within the Energy Strategy.
- 6.56. The Department for Business, Energy and Industrial Strategy (BEIS) Greenhouse Gas Reporting: Conversion Factors 2022 for grid electricity have then been applied to provide an estimate of annual operational energy GHG emissions associated with the Proposed Development. A summary of the assumptions that have been made when calculating estimated GHG emissions figures can be found in Appendix 6-1.

B7 – Operational water

- 6.57. Estimated occupant density and water consumption has been based on the Building Services Research and Information Association (BSRIA) Rules of Thumb Guidance for Building Services (BSRIA, 2011).
- 6.58. Estimated foul water has been assumed to be equal to water consumption.
- 6.59. The BEIS Greenhouse Gas Reporting: Conversion Factors 2023 states that the carbon factor for water supply in the UK is 0.177 kg CO₂e per m³ of water supplied, and is 0.201 kg CO₂e per m³ of water disposed.
- 6.60. A summary of the assumptions that have been made and benchmarks used when calculating estimated GHG emissions from operational water consumption can be found in Appendix 2-1.

C1-C4 End-of-life

- 6.61. Embodied carbon associated with the end-of-life stage (lifecycle stage C1-C4) have been reported based on the results of the WLCA.

Sources of GHG emissions excluded from the assessment

- 6.62. Based on the criteria set out above, the following sources of GHG emissions have been excluded from the scope of the assessment:
- GHG emissions associated with operational transport: There will be no increase in student population as a result of the proposals, and the modal share and trip generation from and to the Site will be similar to the existing situation. It is therefore expected that the impact of the development on the nearby transport networks will be negligible. MMU has a Travel Plan in place which includes All Saints Library. The emissions associated with operational transport are therefore not considered to be material in quantity to influence the overall significance of effects, and are therefore scoped out;
 - Operational waste: The opportunities for design and construction decisions to significantly influence the reduction of GHG emissions associated with operational waste are low as it is highly dependent on occupant behaviour and waste processing at the regional scale by the relevant authority. The emissions associated with operational waste are not considered to be material in quantity to influence the overall significance of effects, and are therefore scoped out;
 - Carbon sequestration of green infrastructure: GHG emissions associated with carbon sequestration of proposed green infrastructure will be low relative to total GHG emissions over the whole life of the Proposed Development, therefore the offset benefits will not be quantified. The emissions associated with carbon sequestration of green infrastructure are not considered to be material in quantity to influence the overall significance of effects, and are therefore scoped out; and
 - Beyond building lifecycle: GHG emissions associated with beyond building lifecycle stage cannot be guaranteed, for example material and component re-use, therefore potential benefits will not be quantified and taken as an

offset. The emissions associated with the beyond building lifecycle are not considered to be material in quantity to influence the overall significance of effects, and are therefore scoped out.

Significance Criteria

6.63. The assessment of the likely effects as a result of the Proposed Development has taken into account both the construction phase and operational phase. In line with the IEMA (2022) guidance, the sensitivity of the receptor (i.e., the global atmosphere) in relation to GHG emissions is always considered to be 'high'. The criteria for determining the significance of effects are outlined in Table 6-4. The significance level attributed to each effect is based on the best practice guidance from IEMA (2022).

Table 6-4 Criteria for determining significance of effects

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

6.64. Effects can also be described, for example, as:

- Beneficial or adverse;
- Permanent or temporary;
- Short, medium or long term; and
- Significant (major or moderate) or insignificant (minor or negligible).

Limitations and Assumptions

6.65. When calculating GHG emissions associated with the construction and operation of the Proposed Development, outputs of the Carbon Lifecycle Assessment and Energy Assessment have been used. Whilst this has given the best estimate of the scale of GHG emissions associated with the Proposed Development, they will not be completely accurate due to assumptions made which may differ from construction and operational practices. Additionally, where there is uncertainty, the worst-case scenario has been taken. The methods used are considered appropriate for estimating GHG emissions given the information available.

Baseline Conditions

6.66. In line with IEMA GHG Guidance, the current baseline for the Proposed Development is defined as the current GHG emissions arising from activities within the Site boundary for the assessment year (2023).

- 6.67. The Site is currently occupied by All Saints Library, a seven storey brick building, currently used as a library facility for students and staff of Manchester Metropolitan University, and comprising desk spaces, book clusters and meeting rooms. The Site is currently occupied, and it is intended that part of the site will remain in operation through the five year refurbishment and construction period.
- 6.68. BEIS 2022 conversion factors have been applied to the floor area and energy use stated in the Display Energy Certificate for the current All Saints Library. It is estimated that the total GHG emissions for the baseline year (2023) are between 370 and 670 tCO₂e/year.

Future baseline

- 6.69. The future baseline represents the scenario without the Proposed Development and the current land-use of the Site remains in situ over the study period.
- 6.70. **Error! Reference source not found.** shows the estimated annual operational energy GHG emissions for the land uses currently on the Site for a 60-year period from 2023. Relevant BEIS carbon factors have been applied for each year over the 60-year study period. This shows that GHG emissions associated with current land uses on the Site will become less intensive in the future as the electricity grid decarbonises, with the phase out of fossil fuels in favour of more renewable energy sources. Annual GHG emissions reduce to 200 – 370 CO₂e/y in 2050, a reduction from 345 – 620 CO₂e/y in 2023. Beyond 2050, the annual emissions remain between 200 – 370 tCO₂e/y as BEIS projections assume near zero carbon for grid electricity by 2050 before plateauing in their projections to 2100. Since the carbon factor for gas remains constant, and this is assumed to be the dominant energy use in existing building stock for heating and hot water, the majority of the remaining GHG emissions can be attributed to gas consumption. Although it is expected that gas boilers will be replaced with electric heating, it is unknown when this will occur, therefore a worst-case approach has been used.
- 6.71. **Error! Reference source not found.** shows the cumulative operational energy GHG emissions associated with current land uses on the Site over a 60-year period. Total cumulative emissions over the 60-year period are estimated to be between 13,500 and 24,350 tCO₂e.

Identification and Evaluation of Significant Effects

Sensitive receptors

- 6.72. The global atmosphere is the primary sensitive receptor which will be considered in the following assessment.
- 6.73. GHG emissions arising from the construction and operation of the Proposed Development are considered the key impacts, with the principal receptor being atmospheric GHG concentrations. The consequence of GHG emissions associated with the Proposed Development is that atmospheric GHG emissions are pushed closer towards their environmental limit, triggering subsequent effects on the global climate system.
- 6.74. Sensitivity is defined by taking into consideration the value, vulnerability and reversibility of the receptor. With regard to global atmospheric GHG concentrations, sensitivity is considered 'high' based on the following conclusions:
- Value of the resource: the atmosphere and its role in regulating the global climate is of high ecological social and economic value and underpins life on the planet; therefore, is of global critical value;
 - Vulnerability: it is recognised by the Paris Agreement (2015) that the GHG concentrations in the atmosphere are already approaching their environmental limit and the effects of climate change are already evident; and
 - Reversibility of the effect: climate change is considered irreversible, with a delayed effect in any actions or technologies employed to reduce concentrations of GHG emissions already in the atmosphere.

Assessment of effects, mitigation and residual effects

Demolition, construction, and refurbishment phase

- 6.75. This section identifies and assesses the scale and nature of the effects arising from the Proposed Development during the demolition, construction, and refurbishment phase.

Relevant aspects of the Proposed Development

- 6.76. The following commitments to reduce demolition, construction, and refurbishment phase GHG emissions are set out in the Environmental Standards Statement:

Product stage (lifecycle stage A1-A3)

- Minimising embodied carbon of the building through efficient structural and façade design and MEP systems, reuse or recycle;
- A Resource Management Plan will be produced; and
- Sustainable procurement and responsible sourcing will be considered at detailed design and during construction;
Construction stage (lifecycle stage A4-A5)
- Adopt responsible construction management practices, including registration with the Considerate Constructor Scheme and implementation of the Code of Considerate Practice, designed to encourage best practice beyond statutory requirements;
- Monitoring of construction site energy and water consumption; and
- Recording of CO₂ emissions associated with construction site vehicles (deliveries and waste removal)

Embodied carbon associated with the product stage (lifecycle stages A1-A3) and the construction stage process stage (lifecycle stages A4-A5)

6.77. The Whole Life Carbon Statement has assessed the embodied carbon associated with the Proposed Development. Based on this the total GHG emissions associated with the demolition, construction and refurbishment stage of the Proposed Development are 12,157 tCO₂e. Table 6-5 summarises the results of the Whole Life Carbon Statement.

Table 6-5 Embodied carbon associated with the product stage and construction stage for the Proposed Development

	Lifecycle stage emissions tCO ₂ e	
	Product (A1-A3)	Construction (A4-A5)
All Saints Library	10,557	1,600

6.78. Table 6-6 provides a summary of the demolition, construction and refurbishment effects in relation to GHG emissions. This considers embodied carbon associated with the raw material, construction, and delivery and transportation of materials.

6.79. There are commitments in place to reduce embodied carbon during the demolition, construction and refurbishment phase of the proposed development. The sensitivity of the receptor is high, the significance of effects of embodied carbon associated with the product and construction stages of the Proposed Development are of Minor adverse significance. The effects are long term.

Table 6-6 Summary of effects during construction

Receptor	Sensitivity	Description of Effect	Effect significance
The global atmosphere	High	Embodied carbon associated with the product stage (lifecycle stages A1-A3)	Minor adverse
The global atmosphere	High	Embodied carbon associated with the construction process stage (lifecycle stages A4-A5)	Minor adverse

Operational stage

6.80. This section identifies and assesses the scale and nature of effects arising from the Proposed Development during the operational phase.

Relevant aspects of the Proposed Development

6.81. The following commitments to reduce operational phase GHG emissions are set out in the Environmental Standards Statement:

Operational embodied carbon (lifecycle stage B1-B5)

- *The durability and resilience of key finishes and components has been considered to minimise the frequency of replacement.*

Operational energy consumption (lifecycle stage B6)

- Improving the proposed envelope thermal performance over the requirements of Part L;
- Optimise the façade form to reduce unwanted solar gain whilst maximising the potential for daylight;
- Efficient heat recovery within the central ventilation system;
- Air Source Heat Pumps to generate heating and cooling at high efficiencies;
- High efficiency heat recovery devices to harness the energy within exhausted air and recirculate it back into the building to reduce heating and cooling loads;
- Utilisation of highly efficient integral heat pumps to temper air supply from air handling units (AHUs);
- Efficient lighting and lighting controls;
- Energy efficient fans and pumps;
- Metering and monitoring provisions for all systems; and
- Roof mounted PV to generate electricity for use in the building;

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

- The design has been developed such that the reinforcement can be recycled, and the concrete can be crushed and re-used as an aggregate for future mixes;

6.82. The following commitments to reduce operational phase GHG emissions are set out in the Stage 3 Report prepared by the Project Lead:

Operational energy consumption (lifecycle stage B6)

- Embedding passive design principles, including form, orientation to benefit from good daylight, the potential of natural ventilation for the internal spaces from the south façade; and
- Fabric-First Approach along with glazing ratios and fabric performance recommended as per LETI standards.

Operational embodied carbon (lifecycle stage B1-B5)

6.83. Based on the WLC, the total GHG emissions associated with lifecycle stages B1-B5 will be approximately 7,699 tCO₂e.

6.84. There are commitments in place to reduce lifecycle embodied carbon, therefore the potential impact of operational embodied carbon linked to the Proposed Development is Minor adverse (Significant). The effects are permanent and long term.

Operational energy consumption (lifecycle stage B6)

6.85. Based on the committed targets, a value of 140 kWh/m²/year has been applied to provide an estimate of annual operational energy GHG emissions associated with the Proposed Development. A summary of the assumptions that have been made when calculation estimated GHG emissions figures can be found in Appendix 6-1.

6.86. **Error! Reference source not found. Error! Reference source not found.** shows the estimated annual GHG emissions for operational energy associated with the proposed development for a 60-year period from 2030. Relevant BEIS carbon factors have been applied for each year over the 60-year study period. This shows that GHG emissions associated with the Proposed Development will become less intensive in the future as the electricity grid decarbonises with the phase out of fossil fuels in favour of more renewable energy sources. Annual GHG emissions associated with operational energy peak at between 190 and 350 tCO₂e/y in 2029 when the proposed development has been built out.

6.87. **Error! Reference source not found.** shows the cumulative GHG emissions associated with operational energy over the 60-year lifecycle of the proposed development. It is predicted that cumulative GHG emissions associated with operational energy will be between 2,390 and 4,300 tCO₂e over the 60-year lifecycle of the proposed development.

6.88. There are commitments in place to reduce operational GHG emissions. These include using heat pumps, efficient lighting, energy efficient fans and pumps, and PV. The sensitivity of the receptor is high, the effects associated with operational energy consumption (lifecycle stage B6) are Minor adverse (significant). Effects are long term.

Operational water (lifecycle B7)

GHG emissions attributed to water demands for the Proposed Development over the 60-year lifecycle are summarised in

- 6.89. Table 6-7. These have been estimated using maximum, worst case occupancy figures provided by the Project Lead, and BRISA (2011) benchmarks for water consumption and applying appropriate BEIS (2023) conversion factors for water supply and water disposed.

Table 6-7 Summary of GHG emissions associated with water consumption for the 60-year design life of the Proposed Development

Building	Water consumption over 60-year lifecycle (m ³)	GHG emissions associated with water consumption (tCO ₂ e)	GHG emissions associated with foul water disposal (tCO ₂ e)	Total GHG emissions associated with operational water use (tCO ₂ e)
All Saints Library	650,430	115	131	246

- 6.90. There are no commitments in place to reduce operational water consumption. The sensitivity of the receptor is high, the significance of effects are of Major adverse significance. The effects are long term.

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

- 6.91. Based on the WLC, GHG emissions associated with lifecycle stages C1-C4 will be approximately 962 tCO₂e.
- 6.92. There are commitments in place to reduce end-of-life stage GHG emission, therefore the potential impact of the end-of-life stage linked to the Proposed Development is Moderate adverse (Significant). The effects are permanent and long term.

Wider context GHG emissions

- 6.93. According to 2005 to 2020 UK local regional greenhouse gas emissions data provided by the Department for Business, Energy and Industrial Strategy (BEIS), emissions associated with Manchester for 2020 (the most recent available dataset) were 2,186 kt CO₂e. In order to gain a sense of scale of the GHG emissions associated with the proposed development, it may be noted that the proposed development represents approximately 0.016% of Manchester's emissions at the peak of operational emissions in 2029, and approximately 0.00064% during operation post 2050. However, direct comparisons should not be made between these figures because the BEIS GHG emissions figures do not consider 'consumption-based' emissions (i.e. embodied carbon), while the GHG emissions figures for the proposed development do. It is likely that a significant proportion of construction materials will be imported; therefore, it is not a like-for-like comparison. Additionally, due to the global nature of GHG emissions, this point of comparison has not been used to determine significance of effects.

Whole life carbon assessment

- 6.94. This section of the ES Chapter provides a summary of the lifecycle GHG emissions for the Proposed Development in comparison to the future baseline scenario. There is no new assessment of the significance of effects in this section, as each lifecycle stage has already been assessed in the construction effects section or the operational effects section.
- 6.95. The total GHG emissions for these sources over the 60-year design life of the proposed development are between approximately 23,450 and 25,360 tCO₂e, as outlined in Table 6-8. In comparison, if the proposed development were to not go ahead, estimated GHG emissions associated with the future baseline scenario are assumed to be between 13,500 and 24,350 tCO₂e for the lifecycle of the proposed development.

Table 6-8 Whole life carbon summary for the Proposed Development

Emission source	Low scenario tCO ₂ e	High scenario tCO ₂ e
Construction (A1-A5)	12,157	12,157
In use stage (B1-B5)	7,699	7,699
Operational energy (B6)	2,390	4,300
Operational water (B6)	246	246
End of life stage (C1-C4)	962	962
Total	23,454	25,364

Mitigation Measures

6.96. Table 6-9 provides a summary of the supplementary mitigation measures relating to demolition, construction and refurbishment phase GHG emissions associated with the Proposed Development.

Table 6-9 Summary of demolition, construction and refurbishment phase supplementary mitigation measures

Adverse effect	Mitigation measure	Responsibility/Mechanism for implementation	Timing
Demolition and construction stage GHG emissions (lifecycle A1-A3)	Put in place a commitment to reduce lifecycle embodied carbon by 10% compared to the business-as-usual baseline. The business-as-usual baseline is defined as the design of the residential or commercial unit using current standard best practice construction materials and techniques. An appropriate baseline should be defined for the proposed development, taking into consideration industry benchmarks set by LETI and RIBA, and reduction secured through further design refinement. Reduce the demand for materials with a high carbon footprint (such as concrete), especially in the production and transport stages of the lifecycle of the proposed development (e.g. using cement replacement) Explore the use of off-site modular construction to consolidate delivery requirements, and for energy efficient assembly and minimising site installation process.	Developer/contractor	Prior to the commencement of development (other than enabling and associated works), within the relevant phase
Demolition and construction stage GHG emissions (lifecycle A1-A3)	Review opportunities to minimise internal finishes such as dry lining, ceilings and decorative floor screeds / covering where not technically required (e.g. for acoustics or fire protection), opting for fair faced finishes instead.	Architect and Structural Engineer	Prior to the commencement of development (other than enabling and associated works), within the relevant phase
Demolition and construction stage GHG emissions (lifecycle A4-A5)	Implement a travel plan for site staff	Contractor To be included as part of the Construction Management Plan (CMP)	Site enabling works – post appointment of a delivery partner

Adverse effect	Mitigation measure	Responsibility/Mechanism for implementation	Timing
	Temporary electrical supply connection to minimise the use of on-site diesel generators.	Contractor. To be included as part of the Construction Management Plan.	During construction

6.99. Table 6-10 provides a summary of the supplementary mitigation measures relating to demolition, construction and refurbishment phase GHG emissions associated with the Proposed Development.

Table 6-10 Summary of operational phase mitigation measures

Adverse effect	Mitigation measure	Responsibility/Mechanism for implementation	Timing
In use stage (B1-B5) and End of life stage (C1-C4)	Put in place a commitment to reduce lifecycle embodied carbon by 10% compared to the business-as-usual baseline. The business-as-usual baseline is defined as the design of the residential or Commercial unit using current standard best practice construction materials and techniques. An appropriate baseline should be defined for the proposed development, taking into consideration industry benchmarks set by LETI and RIBA, and reduction secured through further design refinement.	Developer/ contractor	Prior to the commencement of development (other than enabling and associated works), within the relevant phase
Operational energy (B6)	Where any electrical equipment (e.g., oven, white goods etc.) is being installed by the house builder, identify unregulated energy loads and demonstrate reduction through specifying energy efficient equipment. Specify a target year for net zero carbon emissions in operation, well ahead of the UK's trajectory to net zero in 2050.	Developer/ contractor	Prior to the commencement of development (other than enabling and associated works), within the relevant phase

Adverse effect	Mitigation measure	Responsibility/Mechanism for implementation	Timing
Operational water (B7)	Specify the use of water meters to measure water consumption. Explore the feasibility of specifying rainwater harvesting in order to reduce potable water consumption. Specify water saving devices, such as low flush toilets and showers to reduce water consumption associated with the proposed development. Grey and/or rain water harvesting to supply non-potable demand within the buildings Specify landscaping that does not require irrigation in order to reduce unregulated water consumption	Developer/ contractor	Prior to the commencement of development (other than enabling and associated works), within the relevant phase
End of life stage (lifecycle stage C1-C4)	Circular economy principles to be considered for the project to identify opportunities to maximise material recovery at the end of life.	Developer/contractor	Prior to the commencement of development (other than enabling and associated works), within the relevant phase

Cumulative Effects

- 6.103. Unlike other environmental effects discussed in the ES that have a direct or indirect effect on the Site and local area, effects from GHG emissions are not localised but contribute to the global atmospheric concentration of greenhouse gasses and consequently contribute to the global climate change effect. Therefore, assessing emissions from the Proposed Development in terms of combined effects with other nearby developments is extraneous and immaterial in terms of localised effects. The Proposed Development should be viewed, rather, in the context of developments and construction projects globally as it contributes to a global climatic effect. As there are GHG emissions associated with almost all new developments globally and that we are approaching a global climate tipping point, it may be stated that cumulative effects are significant.

Part B – Climate Change Resilience Risk Assessment

Introduction

- 6.104. Schedule 4, Clause 5(f) of the Town and Country Planning (EIA) Regulations 2017 notes information should be included in the ES on the likely significant effects of the development on the environment resulting from the vulnerability of the project to climate change.
- 6.105. In line with the IEMA EIA Guide to Climate Change Resilience and Adaptation (IEMA, 2020), there are two key strands to assessing climate change resilience and adaptation issues within EIA, as outlined below:

- The risks of changes in the climate to the project (i.e. the resilience or conversely the vulnerability of a project to future climate changes). The IEMA (2020) guidance states that this is generally best reported in the analysis of alternatives and it is better suited to a risk assessment type process than traditional EIA 'determination of significance'. This climate change resilience risk assessment has therefore been completed for the proposed development and appended to the Environmental Statement; and
- The extent to which climate exacerbates or ameliorates the effects of the project on the environment (i.e. 'in-combination' effects). The IEMA (2020) guidance states that this is best analysed in the existing chapters of the ES and is suited to using traditional significance criteria from the respective chapters. Therefore, this has been included throughout each of the technical chapters and has been completed by each technical specialist.

Methodology and Assessment Criteria

Risk Assessment

- 6.106. This climate change resilience risk assessment has been undertaken in line with the IEMA (2020) guidance. The methodology has been adapted from the C40 Cities Climate Change Risk Assessment Guidance (2018), the Public Infrastructure Engineering Vulnerability Committee (PIEVC) Climate Risk Assessment Methodology (2015) and the Highways England Design Manual for Roads and Bridges Sustainability & Environmental Appraisal. Risk has been assessed based on the probability of an event occurring and severity of consequences as a result of that event occurring.
- 6.107. A baseline risk assessment has been undertaken that assesses the probability and consequence of climatic risks occurring considering current climatic conditions. A second risk assessment has then been undertaken that assess the change in probability and consequence of climatic risks as a result of future climate change.

Probability

- 6.108. Table 6-11 summarises the criteria utilised to determine the likelihood rating for an effect. The project lifetime includes both the construction and operation stages. The project lifetime is considered to be 60 years.

Table 6-11 Criteria used to determine likelihood

Score	Description (probability and frequency occurrence)
1	The event occurs very rarely during the lifetime of the projects (60 years). For example, once every 60 years (1 event).
2	The event occurs limited number of times during the lifetime of the project (60 years). For example, once every 15 years (4 events).
3	The event occurs regularly during the lifetime of the project (60 years) For example, once every 2-5 years (12-30 events).
4	The event occurs frequently during lifetime of the project (60 years). For example, once per year (60 events).
5	The event occurs very frequently during the lifetime of the project (60 years). For example, multiple times per year (more than 60 events).

Consequence

- 6.109. Table 6-12 summarises the criteria used to determine the consequence rating for effects relating to a climate risk. Consequence has been determined based on the extent to which the climate risk may impact on the amenity value and function of the proposed development. The amenity value is the positive element or elements that contribute to the overall character or enjoyment of the proposed development. The function is the extent to which the proposed development meets the purpose or purposes that it is designed to fulfil (i.e. a library).

Table 6-12 Criteria used to determine consequence

Score	Description
1	Very low but measurable effect on site users and the proposed development itself. Slight negative change in amenity value of the proposed development and slight negative change in function.
2	Low but measurable effect on site users and the proposed development itself. Low negative change in amenity value of the proposed development and slight negative change in function.

Score	Description
3	Moderate effect on site users and the proposed development itself. Moderate negative change in amenity value of the proposed development and slight negative change in function.
4	Moderate effect on site users and the proposed development itself. Major negative change in amenity value of the proposed development and low negative change in function.
5	Moderate effect on site users and the proposed development itself. Major negative change in amenity value of the proposed development and moderate negative change in function.
6	Major effect on site users and the proposed development itself. Major negative change in amenity value of the proposed development and major negative change in function.
7	Extreme effect on site users and the proposed development itself. Loss of asset.

Risk rating

6.110. Table 6-13 summarises the matrix used to determine the risk rating, based on probability of the event occurring and the consequences as a result of the event occurring.

Table 6-13 Risk rating determined based on the likelihood and consequence scores

		Probability				
Consequence		1	2	3	4	5
	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	18
	5	5	10	15	20	25
	6	6	12	18	24	30
	7	7	14	21	28	35

	Low risk
	Medium risk
	High risk

Limitations and assumptions

6.111. The main uncertainty regarding the climate change resilience assessment surrounds the climate change projections that the scheme is assessed against. Climate change projections (e.g. UKCP18) are presented using a set of scenarios that capture the relationships between human choices, emissions, concentrations and temperature change. Some scenarios are consistent with continued dependence on fossil fuels, while others are associated with deliberate actions to reduce GHG emissions. Therefore, climate change projections contain inherent uncertainty, reflecting the uncertainty associated with quantifying human activities (including technological change) and their influence on climate.

Legislation and Policy

National legislation and policy

Town and Country Planning (EIA) Regulations 2017 (Stationery Office, 2017)

- 6.112. Schedule 4, Clause 5(f) of the UK EIA Regulations state that the Environmental Statement should include:
- ‘a description of the likely significant effects of the development on the environment resulting from, inter alia... (f) the impact of the project on climate (for example the nature and magnitude of GHG emissions) and the vulnerability of the project to climate change’.*
- 6.113. This climate change risk assessment contributes to identifying the likely significant effects on the development resulting from climate change.

National Planning Policy Framework (NPPF) (MHCLG), 2021

- 6.114. Section 14 of the NPPF 2021 focuses on meeting the challenge of climate change, flooding and coastal change. As part of this, new developments should be planned in ways that:
- ‘Avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure.’*

UK Climate Change Act 2008 (2050 Target Amendment) (Order 2019)

- 6.115. Section 56 requires the UK Government to undertake a Climate Change Risk Assessment (CCRA) on a five-yearly cycle, with the subsequent development of an adaption programme to deliver resilience against these risks. The Act stipulates that the Government must assess ‘the risks for the United Kingdom from the current and predicted impacts of climate change’.

UK Climate Change Risk Assessment (HM Government, 2022)

- 6.116. The third and most recent UK-wide CCRA was published in 2022. The assessment outlines risks in the eight priority risk areas relating to the following topics:
- Risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards (Priority Risk Area 1);
 - Risks to soil health from increased flooding and drought (Priority Risk Area 2);
 - Risks to natural carbon stores and sequestration from multiple hazards, leading to increased emissions (Priority Risk Area 3);
 - Risks to crops, livestock and commercial trees from multiple climate hazards (Priority Risk Area 4);
 - Risks to supply of food, goods and vital services due to climate-related collapse of supply chains and distribution networks (Priority Risk Area 5);
 - Risks to people and the economy from climate-related failure of the power system (Priority Risk Area 6);
 - Risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings (Priority Risk Area 7);
 - Multiple risks to the UK from climate change overseas (Priority Risk Area 8); and
 - Additional More Action Needed Risks.

The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting (Defra, 2018)

- 6.117. The second and most recent National Adaptation Programme sets out government’s response to the second CCRA, showing the actions government is, and will be, taking to address the risks and opportunities posed by a changing climate. This breaks down the likely risks associated with climate change into the same six categories as those set out in the CCRA, which is outlined above.

Regional and local policy

Places for Everyone, Joint Development Plan Document – Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford, Wigan (Greater Manchester, 2021)

6.118. Although this plan is yet to be adopted, the plan has moved through the examination process. The NPPF provides guidance on the weight that should be given to emerging policies, with paragraph 48 stating the following:

‘Local planning authorities may give weight to relevant policies in emerging plans according to:

The stage and preparation of the emerging plan (the more advanced its preparation, the greater the weight that may be given)’

6.119. The following objective in the joint development plan is of relevance to climate change resilience and adaptation:

Objective 8 – Improve the quality of our natural environment and access to green spaces

6.120. ‘We will:

- Enhance special landscapes, green infrastructure, biodiversity and geodiversity;
- Improve access to the natural environment and green spaces including parks;
- Promote the role of green space in climate resilience and reducing flood risk.’

6.121. The following policies in the joint development plan are of relevance to climate change resilience and adaptation:

Policy JP-S4 – Resilience

6.122. ‘Development will be managed so as to increase considerably the capacity of its citizens, communities, businesses and infrastructure to survive, adapt and grow in the face of physical, social, economic and environmental challenges, including climate change. Key measures will include:

1. Ensuring that developments make appropriate provision for response and evacuation in the case of an emergency or disaster;
2. Supporting the retrofitting of existing buildings, infrastructure and places to enhance their resilience;
3. Locating critical infrastructure and vulnerable uses away from locations at a high risk of acute shocks;
4. Providing adaptable buildings and places that can easily respond to changing needs, future climate impacts and new technologies;
5. Designing out opportunities for crime, anti-social behaviour and terrorism;
6. Designing indoor and outdoor environments to provide a reduction and respite from more extreme temperatures and winds associated with climate change and greater urbanisation;
7. Increasing the size, spread, quality and interconnectedness of the green infrastructure network, enabling the city region, its citizens and wildlife to adapt to changing conditions;
8. Taking an integrated catchment-based approach to managing flood risk;
9. Maintaining a very high level of economic diversity across Greater Manchester;
10. Contributing to the delivery of at least 50,000 additional affordable homes up to 2037;
11. Promoting significant enhancements in education, skills and knowledge;
12. Supporting healthier lifestyles and minimising potential negative impacts on health including air pollution; and
13. Carefully controlling the location of hazardous installations and new development that could be adversely affected by them.’

Policy JP-S 7 – Resource efficiency

6.123. ‘The achievement of a circular economy and a zero-waste economy will play a key role in meeting Greater Manchester’s ambition of becoming a leading green city region by 2038. The following measures will help achieve this:

- Promoting significant enhancements in education, skills and knowledge; 12. Supporting healthier lifestyles and minimising potential negative impacts on health including air pollution; and 13. Carefully controlling the location of hazardous installations and new development that could be adversely affected by them.’

Policy JP-S 5 – Flood Risk and the Water Environment

6.124. An integrated catchment based approach will be taken to protect the quantity and quality of water bodies and managing flood risk, by:

1. *'Returning rivers to a more natural state, where practicable, in line with the North West River Basin Management Plan;*
2. *Working with natural processes and adopting a natural flood management approach to slow the speed of water drainage and intercept water pollutants;*
3. *Locating and designing development so as to minimise the impacts of current and future flood risk, including retrofitting or relocating existing developments, infrastructure and places to increase resilience to flooding;*
4. *Expecting developments to manage surface water runoff through sustainable drainage systems and as close to source as possible (unless demonstrably inappropriate) so as to not exceed greenfield run-off rates or alternative rates specified in district local plans, such as those identified for areas with critical drainage issues.*
5. *Ensuring that sustainable drainage systems:*
 - a. *Are designed to provide multifunctional benefits wherever possible, including for water quality, nature conservation and recreation;*
 - b. *Avoid adverse impacts on water quality and any possibility of discharging hazardous substances to ground;*
 - c. *Are delivered in a holistic and integrated manner, including on larger sites split into different phases; and*
 - d. *Are managed and maintained appropriately to ensure their proper functioning over the lifetime of the development.*
6. *Securing the remediation of contaminated land and the careful design of developments to minimise the potential for urban diffuse pollution to affect the water environment;*
7. *Securing further investment in wastewater treatment to reduce the frequency of intermittent discharges of storm sewage; and*
8. *Conserving water and maximising water efficiency in new development.'*

Policy JP-G 2 – Green Infrastructure Network

- 6.125. *'A strategic approach will be taken to the protection, management and enhancement of our Green Infrastructure in order to protect and enhance the ecosystem services which the 'Green Infrastructure Network' provides, including flood management, climate change mitigation and adaptation. Alongside this primary function an enhanced Green Infrastructure network will support wider public health benefits, including promotion of active travel, food growing and recreational opportunities.*
- 6.126. *The protection, management and enhancement of Green Infrastructure will contribute to the development of a Nature Recovery Network for Greater Manchester.'*

Policy JP-G 9 – A Net Enhancement of Biodiversity and Geodiversity

- 6.127. *'Across the plan as a whole, a net enhancement of biodiversity resources will be sought, including by:*
1. *Increasing the quality, quantity, extent and diversity of habitats, particularly priority habitats identified in national or local biodiversity action plans and those that support priority species;*
 2. *Improving connections between habitats, to protect and enhance the provision of corridors, ecological networks (including Nature Recovery Networks) and stepping stones that enable the movement of species, especially as the climate changes;*
 3. *Enhancing the management of existing habitats, including through habitat restoration, avoiding habitat fragmentation and combating invasive species;*
 4. *Protecting sites designated for their nature conservation and/or geological importance, with the highest level of protection given to international and then national designations in accordance with legislation and national policy;*
 5. *Facilitating greater access to nature, particularly within urban areas;*
 6. *Supporting the development and implementation of the Great Manchester Wetlands Nature Recovery Network; and*
 7. *Safeguarding, restoring and sustainably managing our most valuable soil resources, tackling soil degradation/erosion and recovering soil fertility, particularly to ensure protection of peat-based soils and safeguard 'best and most versatile' agricultural land.*
- 6.128. *Development will be expected to follow the mitigation hierarchy of:*
- *Avoiding harm to biodiversity, particularly where it is irreplaceable, and including consideration of alternative sites where appropriate, then*
 - *Mitigating (within the local area) any harm to biodiversity, then*
 - *Compensating (within the local area) for any remaining harm to biodiversity*

- Avoid fragmenting or severing connectivity between habitats;
- Achieve a net gain in biodiversity
- Make appropriate provision for long-term management of habitats and geological features connected to the development; and
- Provide robust evidence in accordance with relevant government and other guidance, including field surveys wherever development of 'best and most versatile' agricultural land is proposed or to establish the status of the land within the Agricultural Land Classification system.

6.129. *Whilst off-site habitat enhancement and creation required as part of the mitigation hierarchy (or to achieve a measurable net gain in biodiversity of no less than 10%) should be local to the site regard should be had to supporting strategic biodiversity priorities and initiatives.'*

Manchester's local Development Framework. Core Strategy Development Plan Document

6.130. The Core Strategy was adopted by Manchester City Council on 11th July 2012. It is the key document in Manchester's Local Development Framework and covers a period of 15 years from 2012 to 2017.

6.131. The following policies and strategic objectives (SO) are relevant to climate change resilience and adaptation:

Policy JP-S 4 – Resilience

6.132. *"Development will be managed so as to increase considerably the capacity of its citizens, communities, businesses and infrastructure to survive, adapt and grow in the face of physical, social, economic and environmental challenges, including climate change. Key measures will include:*

- *Ensuring that developments make appropriate provision for the response and evacuation in the case of an emergency or disaster;*
- *Providing adaptable buildings and places that can easily respond to changing needs, future climate impacts and new technologies;*
- *Designing indoor and outdoor environments to provide a reduction and respite from more extreme temperatures and winds associated with climate change and greater urbanisation;*
- *Increasing the size, spread, quality and interconnectedness of the green infrastructure network, enabling the city region, its citizens and wildlife to adapt to changing conditions;*
- *Taking an integrated catchment-based approach to managing flood risk."*

Policy JP-S 5 – Flood Risk and the Water Environment

6.133. *"An integrated catchment based approach will be taken to protect the quantity and quality of water bodies and managing flood risk by:*

- *Locating and designing development so as to minimise the impacts of current and future flood risk, including retrofitting or relocating existing developments, infrastructure and places to increase resilience to flooding"*

Policy JP-G 2 – Green Infrastructure Network

6.134. *"A strategic approach will be taken to the protection, management and enhancement of our Green Infrastructure in order to protect and enhance the ecosystem services which the 'Green Infrastructure Network' provides, including flood management, climate change mitigation and adaptation"*

6.135. The Core Strategy was adopted in July 2012, and includes the following Spatial Objectives (SO) and Policies relevant to climate change resilience and adaptation:

SO 1: Spatial Principles

6.136. *"Provide a framework within which the sustainable development of the City can contribute to halting climate change.*

6.137. *Within the context of mitigation and adaptation to climate change, the framework will guide the scale and distribution of economic, housing, transport, environmental, health, education and other service and infrastructure development across the City."*

SO 6: Environment

6.138. *"Protect and enhance both the natural and built environment of the City and ensure the sustainable use of natural resources, in order to mitigate and adapt to climate change, support biodiversity and wildlife, improve air, water and*

land quality, recreational opportunities and provide networks of high quality green infrastructure, ensuring that the City is inclusive and attractive to residents, workers, investors and visitors. “

Policy EC 1: Employment and Economic Growth in Manchester

6.139. *“Development proposals should have regard to:*

- Climate change resilience demonstrating how CO2 emissions will be minimised with an aim of zero carbon emissions, through energy efficiency, renewable energy and contributing to low and zero carbon decentralised energy infrastructure;*
- Ensuring design makes the best possible use of a site or building in terms of efficient use of space, enhancing the sense of place of the wider area and minimising detrimental impacts on adjacent uses, considers the needs of users/employees of a site/building for access via walking, cycling and public transport and reduction of opportunities for crime by applying current best practice in security design;*
- Flood risk through the Manchester- Salford- Trafford Strategic Flood Risk Assessment (SFRA).”*

Policy C 2: District centres

6.140. *“New development should deliver improvements to the quality and accessibility of the centre environment. Opportunities should be taken to adopt sustainable building design and practises to assist in adapting to climate change.”*

Policy EN 6: Target Framework for CO2 reductions from low or zero carbon energy supplies

6.141. *“Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO2 mitigation, subject to the energy statement incorporating evidence such as modelling to demonstrate compliance. “*

Policy EN 8: Adaptation to Climate Change

6.142. *“All new development will be expected to be adaptable to climate change in terms of the design, layout, siting and function of both buildings and associated external spaces. In achieving developments which are adaptable to climate change developers should have regard to the following, although this is not an exhaustive list:*

- Minimisation of flood risk by appropriate siting, drainage, and treatment of surface areas to ensure rain water permeability*
- Reduction in urban heat island effect through the use of Green Infrastructure such as green roofs, green walls, increased tree cover and waterways*
- The need to control overheating of buildings through passive design*
- The opportunity to provide linked and diverse green space to enhance natural habitats which will assist species adaptation*

6.143. *Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO2 mitigation under Policy EN6, subject to sufficient evidence to quantify their contribution to compliance.”*

Policy EN 9: Green Infrastructure

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

6.145. *Key features of Manchester’s green infrastructure will include:*

- The continued development of a network of green spaces, water bodies, canals, paths and cycleways, with priority given to those parts of the City where there is an identified existing lack of open space. The Council will seek to protect existing street trees and promote new planting, particularly where this can enhance green links in the urban area.*
- The continued maintenance and management of the Rivers Mersey and Irwell and their tributaries, for example the River Irk, River Medlock, Chorlton Platt Gore, Gatley Brook, Moston Brook and adjoining land, with regard to their multiple functions including recreation, flood management, and biodiversity.*

- *The provision of new, and improvements to the quality and accessibility of existing green infrastructure assets, to mitigate for any loss of green infrastructure as a result of development such as the Metrolink extension programme.*
- *The encouragement of green roofs, green walls, tree planting and other forms of green infrastructure to allow for the adaption to climate change in heavily urbanised areas.*

6.146. *New green infrastructure provision should be an exemplar of best practice and innovation in terms of both its design and management."*

Policy EN 14: Flood risk

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

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

6.149. *All new development should minimise surface water run-off, including through Sustainable Drainage Systems (SUDS) and the appropriate use of Green Infrastructure. Developers should have regard to the surface water run-off rates in the SFRA User Guide. In CDAs, evidence to justify the surface water run-off approach / rates will be required.*

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

Policy PA 1: Developer Contributions

6.151. *"Where needs arise as a result of development, the Council will seek to secure planning obligations in line with Circular 5/2005, Community Infrastructure Levy regulations or successor regulations/guidance. Through such obligations, the Council may seek contributions for the following with priority assessed on a site by site basis:*

- *Provision of Green Infrastructure including open space*
- *Protection or enhancement of environmental value*
- *Climate change mitigation / adaptation"*

Manchester City Council Climate Change Action Plan 2020-2025

6.152. Purpose of the plan is as follows:

- *"The document sets out MCC's commitments to tackling climate change over the next 5 years and builds on previous action plans over the last decade*
- *It covers MCC's plans for adapting to the expected impacts of climate change and supporting and influencing others, including through the implementation of the Manchester Green and Blue Infrastructure Strategy 2015-2025"*

6.153. Recommended targets and objectives of the plan are as follows:

- *To adapt the city's buildings, infrastructure and natural environment to the changing climate and to increase the climate resilience of our residents and organisations.*
- *To improve the health and wellbeing of everyone in Manchester through actions that also contribute to our objectives for CO2 reduction and adaptation and resilience, with particular focus on those most in need.*
- *To ensure that Manchester establishes an inclusive, zero carbon and climate resilient economy where everyone can benefit from playing an active role in decarbonising and adapting the city to the changing climate."*
- *"We recognise that limiting CO2 emissions is not enough. Depending on how successful the world is at reducing emissions, global temperatures by 2100 are likely to rise by between 1.5°C and 4°C above pre-industrial levels. As such, we need to accept that some level of change is inevitable. Climate change is happening now and we need to assess the risks to our communities in order to reduce their vulnerability to these changes. Adopting appropriate mitigation measures will be essential if we are to create resilient communities of the future in Manchester."*

- 6.154. The plan states the following in relation to adaptation to climate change:
- *“Despite the increased international efforts to tackle climate change, we recognise that the world’s climate is already changing and that adaptation is required to protect the city’s people. We are committed to ensuring that climate change adaptation, including green and blue infrastructure, is included in new developments and across Council owned buildings and land.*
 - *Further work needs to be done at a local level through ward plans and neighbourhoods to adapt to make communities more resilient to climate change. This will form part of the Council’s work through Neighbourhoods Teams, Highways and also through the development of improved communication information and guidance.”*
- 6.155. The plan states the following in relation to citywide emissions:
- *“The Council also recognises the importance of supporting and influencing our residents and organisations to take action to reduce their direct and indirect CO2 emissions and to adapt to the changing climate.”*
- 6.156. It is stated that the following is included in the 2020-2025 Action Plan:
- *“This action plan details the activity that we will undertake over the next five years but also includes activities that will need to be developed and investigated further in order to ensure that we are on the right path to being zero carbon by 2038. The actions include activities to deliver a reduction in emissions from energy, transport and consumption (mitigation) but also adaptation and promoting investment in nature based solutions and green infrastructure.”*

Manchester Climate Change Framework 2020-2025

- 6.157. The Manchester Climate Change Framework 2020-25 is the city’s high-level strategy for tackling climate change. It sets out how Manchester will ‘play its full part in limiting the impacts of climate change’, a commitment in the Our Manchester Strategy 2016-25.
- 6.158. The framework sets the following objectives and targets:
- *Staying within our carbon budgets – based on recommendations by the Tyndall Centre for Climate change Research in 2020*
 - *Climate adaptation and resilience*
 - *Health and wellbeing*
 - *Inclusive, zero carbon and climate resilient economy*
- 6.159. The frameworks sets the following areas for action to meet the objectives and targets:
- *Buildings (existing and new)*
 - *Green infrastructure and nature-based solutions*

Manchester Green and Blue Infrastructure Strategy 2015-2025

- 6.160. Green and blue infrastructure can provide multiple social economic and environmental benefits.
- 6.161. Actions of the strategy include the following:
- *Investment in river valleys and canals to restore biodiversity value and flood resilience;*
 - *Embed green infrastructure as part of residential and city centre developments; and*
 - *Smaller scale green infrastructure in Central Manchester such as tree planting and community greening have the potential for increasing an areas climate resilience.*

Manchester City Council Climate Emergency Declaration (2019)

- 6.162. Manchester City Council declared a Climate Emergency on 10th July 2019. The council meeting minutes read as follows:
- ‘This Council notes:*
- *The serious risks to Manchester’s people, of climate change/global heating affecting economic, social and environmental well-being, supply chains – including food security, financial systems and local weather, among many others.*

- That in 2008 the 'Principles of Tackling Climate Change in Manchester' were agreed as a call to action to engage people from all walks of life in climate change action and, build support for a new way of thinking about climate change.
- That Manchester leads the way, with an agreed Paris compliant carbon budget set in December 2018 and an acceleration of the target for becoming a zero-carbon city by 12 years, setting 2038 as the new target for the city, based on research from the world-renowned Tyndall Centre for Climate Change.
- The recent and welcome upsurge of action by the young people of Manchester, exemplifying the radical traditions of which Manchester is proud.

6.163. This Council agrees (or to the extent that the below concern executive functions, recommends to the Executive) to:

- Declare a Climate Emergency.
- Continue working with partners across Manchester and GMCA to deliver the 2038 target, and determine if an earlier target can be possible, through a transparent and open review. Become carbon neutral by the earliest possible date.
- Encourage involvement in all wards by April 2020 through meetings as part of the Our Manchester strategy, to identify residents and partners who want to be actively involved in achieving the target, with provision for those who cannot attend. Ensure ward plans contain specific, measurable, achievable steps.
- Review all policies, processes and procedures to ensure the council can become carbon neutral. Present an action plan by March 2020 detailing how the city can stay within its carbon budget. Report back regularly to the NESC. Review the corporate plan.
- Work with the Tyndall Centre to review the actual emissions from aviation. Investigate the best way to include aviation in our overall carbon reduction programme in the long term.
- Make climate breakdown and the environment, an integral part of activity throughout the Council, including all decision making, ensuring key decisions take into account the impact on achieving the zero-carbon target and including an environmental impact assessment in all relevant committee reports.
- Ensure that everyone in the council receives carbon literacy training by the end of 2020. Make attendance easier by varying times and length of sessions.
- Encourage all staff on council business to use the lowest carbon, appropriate, travel. Investigate measures to ensure future procurement is carbon neutral. Increase the percentage of social value with an additional environmental element.
- Work with suppliers to green their supply chains, and support local production.
- Work with training providers to ensure Manchester residents can take on green jobs.
- Investigate and introduce measures to help reach domestic zero carbon levels including addressing fuel poverty and retrofitting existing homes.
- Investigate ways to ensure that future local plans place a mandatory requirement for all new development to be net zero carbon by the earliest possible date.
- Push GMCA to decarbonise public transport, heat and energy as early as possible.
- Through our role on GMPF, encourage divestment in fossil fuels as early as possible.
- Call on the government to:
 - a. provide powers and resources to make the zero-carbon target possible including funding for big capital projects
 - b. accelerate the reduction of carbon emissions from aviation
 - c. accelerate the decarbonisation of the electricity grid, funding low carbon energy generation
 - d. ensure that the UK prosperity fund focuses on enable the transition to a low carbon economy.'

Guidance documents

IEMA EIA Guide to: Climate Change Resilience and Adaptation (IEMA, 2020)

6.164. This document acts as a revision to the IEMA guidance on Climate Resilience and Adaptation in EIA (2015) and reflects lessons learnt from emerging practice. It provides a framework for the effective consideration of climate change resilience and adaptation in the EIA process.

ISO 14090:2019 Adaptation to Climate Change – Principles, Requirements and Guidelines (BSI, 2019)

6.165. The main purpose of this standard is to provide organisations and projects with a consistent, structured and pragmatic approach to prevent or minimise the harm that climate change could cause and also to take advantage of opportunities.

C40 Cities Climate Change Risk Assessment Guidance (C40 Cities, 2017)

- 6.166. This document aims to provide a concise, easy-to-read guidance, to help cities to develop a climate risk assessment report. It provides the methodology and components of the assessment, as well as providing a comprehensive list of possible effects relating to climate change.

Current Baseline Conditions

- 6.167. Table 6-14 provides a summary the current baseline climatic conditions, taken from Woodford (Greater Manchester) weather station, to the south east of the proposed development. The data provides average historic average climatic conditions for 1991-2020, which is assumed to be representative of the baseline year of the assessment (i.e. 2023). The monthly mean minimum/maximum temperatures are calculated from the average of the daily maximum and daily minimum temperatures for each month. The warmest month on average was July and the coolest month on average was February. The wettest month on average was December and the driest month on average was March. The sunniest month on average was June and the least sunny month on average was January.

Table 6-14 Summary of historic average climatic conditions for 1991-2020 taken from the Woodford (Greater Manchester) Met Office monitoring stations

Month	Mean daily maximum temperature (degrees C)	Mean daily minimum temperature (degrees C)	Days of frost (days)	Sunshine (hours)	Rainfall (mm)
January	7.11	1.07	8.82	45.09	77.00
February	7.92	1.4	8.44	76.06	60.48
March	10.13	2.42	5.53	103.86	52.53
April	13.01	4.13	2.4	151.19	55.81
May	16.25	7.05	0.28	179.27	56.21
June	18.93	9.55	0	179.53	64.61
July	20.66	11.81	0	157.07	80.19
August	20.24	11.64	0	144.97	79.73
September	17.56	9.51	0.07	137.66	76.09
October	13.84	6.78	1.01	94.7	91.69
November	9.96	3.35	4.11	62.62	77.08
December	7.47	1.15	9.29	53.08	96.98

Identification And Evaluation Of Baseline Risks

In order to provide a baseline, risks relating to the proposed development have been assessed against current baseline weather patterns (i.e. those set out in section 1.4 of this report).

Table 6-15 provides a list of potential risks, as adapted from the C40 Cities Climate Change Risk Assessment Guidance (C40 Cities, 2017). The inclusion of certain risks in the assessment is based on availability of data and relevance of the risk to the proposed development. Probability and consequence ratings have been given to these risks, thereby generating a risk rating based on Table 6-13. The probability and consequence ratings outlined in

6.168. Table 6-15 are pre-mitigation.

Table 6-15 Climate change risks based on C40 Cities Climate Change Risk Assessment Guidance

Risk	Is it relevant for the proposed development?	Probability rating (1-5)	Likely consequences of climate risk occurring	Consequence rating (1-7)	Risk rating
Rainstorm	Yes	5	Damage and degradation of building materials through wetting and impact from rainfall. Discomfort for users of the proposed development.	1	5
Monsoon	No	N/A	N/A	N/A	N/A
Heavy snow	Yes	3	Damage to building materials (e.g. roofs). Discomfort and potential injury to users of the proposed development.	2	6
Fog	Yes	5	Increased risk of accidents as a result of impaired vision.	1	5
Hail	Yes	4	Discomfort for users of the proposed development.	1	4
Severe wind	Yes	3	Damage to building materials. Discomfort and potential injury to users of the proposed development.	2	6
Tornado	No	N/A	N/A	N/A	N/A
Hurricane	No	N/A	N/A	N/A	N/A
Extra tropical storm	Yes	3	Damage to building materials. Discomfort and potential injury to users of the proposed development.	4	12
Tropical storm	No	N/A	N/A	N/A	N/A
Storm surge	No	N/A	N/A	N/A	N/A
Lightning	Yes	4	Potential damage to building materials. Injury to users of the proposed development unlikely but possible.	1	4
Extreme winter conditions	Yes	4	Damage to building materials (e.g. pipes bursting). Discomfort and potential injury to users of the proposed development.	3	12
Cold wave	Yes	4	Damage to building materials (e.g. pipes bursting). Discomfort and potential injury to users of the proposed development.	3	12

Risk	Is it relevant for the proposed development?	Probability rating (1-5)	Likely consequences of climate risk occurring	Consequence rating (1-7)	Risk rating
Extreme cold days	Yes	4	Damage to building materials (e.g. pipes bursting). Discomfort and potential injury to users of the proposed development.	3	12
Heat waves	Yes	3	Damage and degradation to building materials. Extended period of overheating in building affects comfort and health of occupants.	5	15
Extreme hot days	Yes	4	Damage and degradation to building materials. Intense overheating in building affects comfort and health of occupants.	4	16
Drought	Yes	3	Potential damage to building foundations in areas with clay soils. Health of flora and fauna on the site affected.	4	12
Forest fire	No	N/A	N/A	N/A	N/A
Land fire	No	N/A	N/A	N/A	N/A
Flash/surface flood	Yes	2	Damage to buildings and contents. Potential injury to users of the proposed development.	6	12
River/tidal flood	Yes	1	Damage to buildings and contents. Potential injury to users of the proposed development.	6	6
Groundwater flood	Yes	2	Damage to buildings and contents. Potential injury to users of the proposed development.	6	12
Permanent inundation	No	N/A	N/A	N/A	N/A
Salt water intrusion	No	N/A	N/A	N/A	N/A
Ocean acidification	No	N/A	N/A	N/A	N/A
Landslide	No	N/A	N/A	N/A	N/A
Avalanche	No	N/A	N/A	N/A	N/A
Rock fall	No	N/A	N/A	N/A	N/A
Subsidence	Yes	1	Damage to building materials. Potential injury to users of the proposed development.	6	6
Water-borne disease	Yes	1	Potential illness to users of the proposed development.	3	3
Vector borne disease	Yes	1	Potential illness to users of the proposed development.	4	4

Risk	Is it relevant for the proposed development?	Probability rating (1-5)	Likely consequences of climate risk occurring	Consequence rating (1-7)	Risk rating
Airborne disease	Yes	1	Potential illness to users of the proposed development.	3	3
Insect infestation	Yes	1	Potential illness to users of the proposed development.	3	3

Likely Effects of Climate Change

6.169. The UK Climate Projections 2018 (UKCP18) (Met Office, 2018) provide the most up-to-date assessment of how the climate of the UK may change over the 21st century. UKCP18 uses Representative Concentration Pathways (RCPs). These are named according to the concentration of greenhouse gas modelled to occur in the atmosphere in 2100. There are four RCPs available in the UKCP18 climate projections: RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5. In line with the IEMA (2020) guidance, RCP 8.5 has been used, which represents the most conservative, highest-impact scenario. Table 6 summarises the projected summer and winter mean temperature and precipitation changes up to the 2090s for RCP 8.5.

Season	Variable	Time Period	Period Change At		
			10 th percentile	50 th percentile	90 th percentile
Winter	Mean temperature (°C)	2020 – 2039	-1 to 0	0 to 1	1 to 2
		2040 – 2059	0 to 1	1 to 2	2 to 3
		2060 – 2079	0 to 1	2 to 3	4 to 5
		2080 – 2099	1 to 2	3 to 4	5 to 6
	Mean precipitation change (%)	2020 – 2039	-10 to 0	0 to 10	10 to 20
		2040 – 2059	-10 to 0	0 to 10	10 to 20
		2060 – 2079	-10 to 0	10 to 20	20 to 30
		2080 – 2099	0 to 10	10 to 20	30 to 40
	Mean daily maximum temp change compared to 1981-2000	2020 – 2039	-1 to 0	0 to 1	1 to 2
		2040 – 2059	0 to 1	1 to 2	2 to 3
		2060 – 2079	0 to 1	2 to 3	4 to 5
		2080 – 2099	1 to 2	3 to 4	5 to 6
	Mean daily minimum temp change compared to 1981-2000	2020 – 2039	-1 to 0	0 to 1	1 to 2
		2040 – 2059	0 to 1	1 to 2	2 to 3
		2060 – 2079	0 to 1	2 to 3	4 to 5
		2080 – 2099	1 to 2	3 to 4	5 to 6
Summer	Mean temperature (°C)	2020 – 2039	0 to 1	1 to 2	1 to 2
		2040 – 2059	0 to 1	1 to 2	3 to 4
		2060 – 2079	0 to 1	3 to 4	5 to 6
		2080 – 2099	1 to 2	4 to 5	7 to 8
	Mean precipitation change (%)	2020 – 2039	-30 to -20	-10 to 0	10 to 20
		2040 – 2059	-40 to -30	-20 to -10	0 to 10
		2060 – 2079	-60 to -50	-30 to -20	-10 to 0
		2080 – 2099	-70 to -60	-40 to -30	-10 to 0
	Mean daily maximum temp change compared to 1981-2000	2020 – 2039	0 to 1	1 to 2	2 to 3
		2040 – 2059	0 to 1	2 to 3	4 to 5
		2060 – 2079	0 to 1	3 to 4	6 to 7
		2080 – 2099	1 to 2	5 to 6	8+
	Mean daily minimum temp change	2020 – 2039	0 to 1	0 to 1	1 to 2
		2040 – 2059	0 to 1	1 to 2	2 to 3
		2060 – 2079	1 to 2	2 to 3	4 to 5

	compared to 1981-2000	2080 – 2099	1 to 2	4 to 5	5 to 6
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- 6.170. According to UKCP18 data, over land the projected general trends of climate changes in the 21st century are similar to UKCP09, with a move towards warmer, wetter winters and hotter, drier summers. However, natural variations mean that some cold winters, some dry winters, some cool summers and some wet summers will still occur.

Temperature

- 6.171. UKCP18 projections show that there is more warming in the summer than in the winter.

Precipitation

- 6.172. Rainfall patterns across the UK are not uniform and vary on seasonal and regional scales and will continue to vary in the future. While UKCP18 projections show a clear shift to higher probability levels of dry summers, they also suggest that the likelihood of individual wet summers reduces only slightly. The risk of heavy rainfall events is likely to increase.

Sea level rise

- 6.173. According to UKCP18 projections, global sea level has risen over the 20th century and will continue to rise over the coming centuries. The amount of sea level rise depends on the location around the UK and increases with higher emissions scenarios. Sea level rise over the coming centuries may affect tidal characteristics substantially (including tidal range).

Snow

- 6.174. According to UKCP18 projections, for the period 2061-2080, under a high emissions scenario (RCP8.5), the regional (12km) and local (2.2km) projections show a decrease in both falling and lying snow across the UK relative to the 1981-2000 baseline.

Wind

- 6.175. There are no compelling trends in storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. UKCP18 projections over the UK show an increase in near surface wind speeds over the UK for the second half of the 21st century for the winter season when more significant effects of wind are experienced. This is accompanied by an increase in frequency of winter storms over the UK. However, the increase in wind speeds is modest compared to interannual variability.
- 6.176. Winds associated with major storm events can be some of the most damaging and disruptive events for the UK with implications for property, power networks, road and rail transport and aviation.

Identification and evaluation of risks with climate change

- 6.177. Table 6-16 provides a summary of how the identified climate risks are likely to change in the future as a result of climate change. Probability and consequence ratings have been given to these risks, thereby generating a risk rating based on Table 3. The probability and consequence ratings outlined in Table 6-16 are pre-mitigation.

Table 6-16 Climate change risks based on C40 Cities Climate Change Risk Assessment Guidance

Risk	Baseline risk rating	Change in probability as a result of climate change	Probability rating (1-5)	Consequence rating (1-7)	Risk rating with climate change	Mitigation needed?
Rainstorm	5	The frequency of precipitation is likely to decrease, particularly in the summer However, the risk of heavy rainfall events is likely to increase.	5	1	5	No
Heavy snow	6	The frequency of heavy snow events is likely to decrease.	2	2	4	No

Risk	Baseline risk rating	Change in probability as a result of climate change	Probability rating (1-5)	Consequence rating (1-7)	Risk rating with climate change	Mitigation needed?
Fog	5	It is unknown how climate change will affect the frequency of fog.	5	1	5	No
Hail	4	The frequency of hailstorms is likely to increase.	5	1	5	No
Severe wind	6	The frequency of severe wind and storms is likely to remain similar.	3	2	6	No
Extra tropical storm	12	The frequency of severe wind and storms is likely to remain similar.	3	4	12	Yes
Lightning	4	The frequency of lightning storms is likely to remain similar.	4	1	4	No
Extreme winter conditions	12	The frequency of extreme winter conditions is likely to decrease.	2	3	6	No
Cold wave	12	The frequency of cold waves is likely to decrease.	2	3	6	No
Extreme cold days	12	The frequency of extreme cold days is likely to decrease.	2	3	6	No
Heat waves	15	The frequency of heat waves is likely to increase.	4	5	20	Yes
Extreme hot days	16	The frequency of extreme hot days is likely to increase.	5	4	20	Yes
Drought	12	The frequency of drought is likely to increase.	4	4	16	Yes
Flash/surface flood	12	The frequency of flash/surface flooding is likely to increase.	3	6	18	Yes
River/tidal flood	6	The frequency of river/tidal flooding is likely to increase.	2	6	12	Yes
Groundwater flood	12	The frequency of groundwater flooding is likely to remain at a similar level.	2	6	12	Yes
Subsidence	6	The frequency of subsidence is likely to remain low.	1	6	6	No
Water-borne disease	3	The frequency of water-borne disease is likely to increase but remain low.	2	3	6	No
Vector borne disease	4	The frequency of vector-borne disease is likely to increase but remain low.	2	4	8	No

Risk	Baseline risk rating	Change in probability as a result of climate change	Probability rating (1-5)	Consequence rating (1-7)	Risk rating with climate change	Mitigation needed?
Air-borne disease	3	The frequency of air-borne disease is likely to increase but remain low.	2	3	6	No
Insect infestation	3	The frequency of insect infestation is likely to increase but remain low.	2	3	6	No

Increasing the resilience of the proposed development to climate change

6.178. Table 6-17 summaries the mitigation measures that have been put in place for the proposed development that will increase resilience to the likely effects resulting from climate change. These particularly focus on the effects that scored highly in the risk assessment in Table 6-16.

Table 6-17 Climate change resilience measures

Risk	Mitigation measure
Extreme tropical storm	The structural design of the buildings to be resilient to high wind. A wind microclimate assessment should be undertaken for the proposed development. A Drainage Strategy has been developed for the proposed development that considers the effects of climate change.
Heat waves Extreme hot days	Demonstrate compliance with overheating criteria in TM59: Design methodology for the assessment of overheating risk in homes for all housing typologies. 2050 weather files should be used at a minimum. The landscaping strategy is to included trees to provide shade during hot periods, thereby improving external comfort. Where possible, lighter colours should be used on buildings and hard landscaping to reduce the albedo of surfaces. High-quality double glazing will be present across the constructions, again achieving U-Values surpassing the mandatory standards required by Part L. Additionally, low-emissivity film could be applied to provide a reduction in solar gains which will reduce risk of overheating during summer months. Integration of healthy daylight, façade designed to create a balanced daylight penetration and solar protection. Design of the development will include solar shading. Passive design principles are being embedded in the design.
Drought	The landscaping strategy is to include drought resilient planting that isn't reliant on irrigation. Buildings should be fitted with low flow sanitaryware to reduce water consumption. Where possible, grey and rainwater harvesting should be utilised.

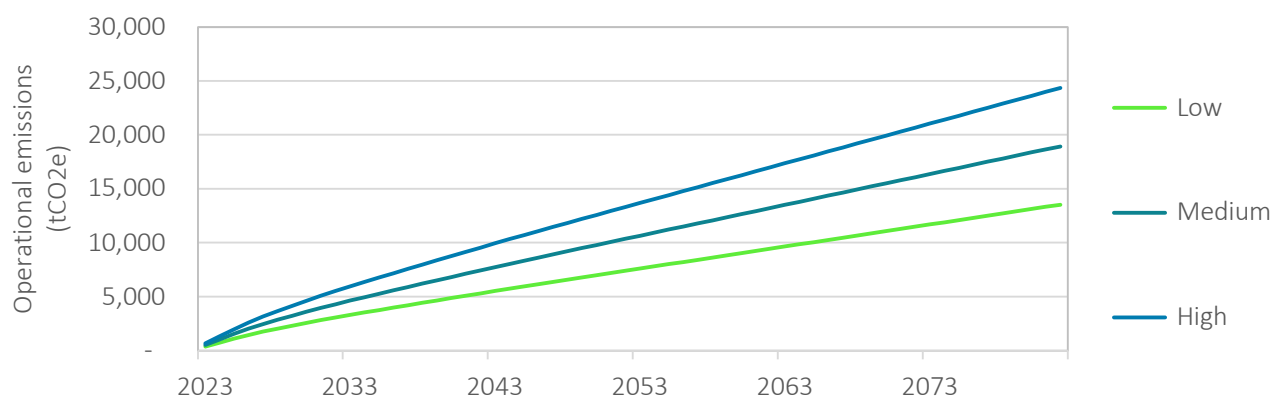
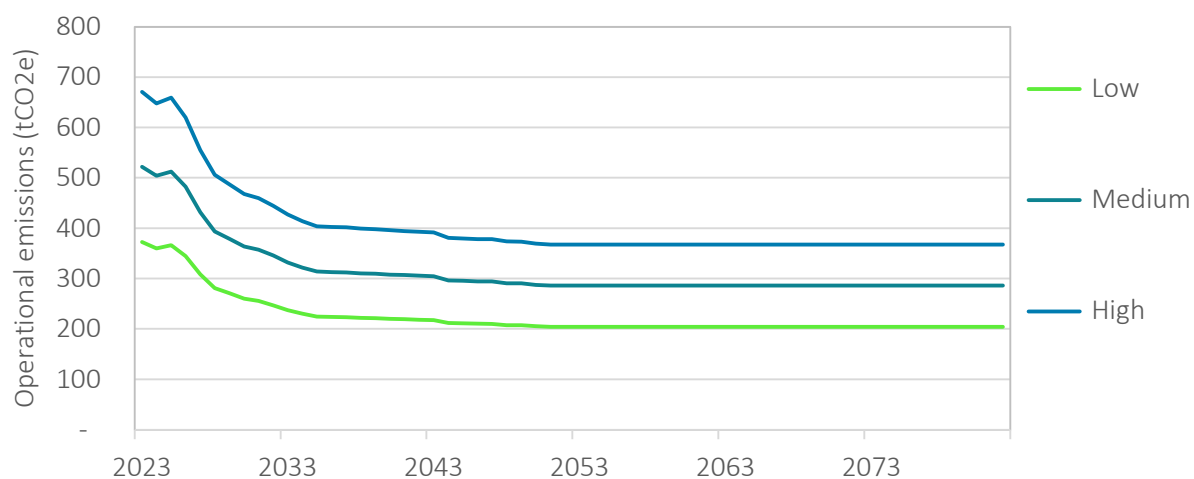
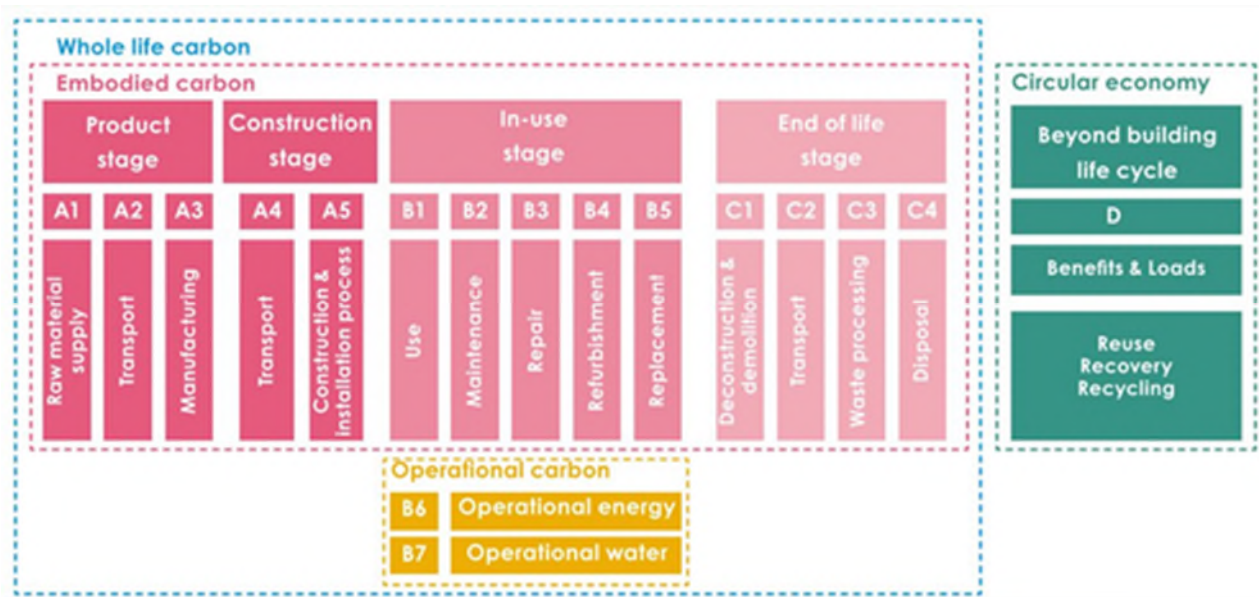
Risk	Mitigation measure
Flash/surface flood River/tidal flood Groundwater flood	A Flood Risk Assessment (FRA) has been undertaken as part of the planning application in line with national and local policy. This concludes the proposed development is at low risk of flooding from all sources and represents no risk of flooding to adjacent areas. The Drainage Strategy has been designed for a 1 in 100 year storm with 30% increase for climate change. The strategy proposes onsite below ground attenuation of surface water run-off to achieve a restricted maximum flow discharge rate providing betterment to existing conditions.
Water-borne disease Vector-borne disease Airborne disease	Appropriate ventilation strategy will be captured within the design. Consideration of insects and rodents in the waste management strategy is a standard consideration within the design.
All risks	Since the effects of climate change are dynamic and constantly changing, an adaptive management approach is recommended.

Reference List

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

- Atkins (2010) Masterplanning Tool;
- British Standards Institution (BSI) (2011) BS EN 15978:2011 Sustainability of Construction Works – Assessment of Environmental Performance of Buildings – Calculation Method;
- British Standards Institution (BSI) (2019) ISO 14090:2019 Adaptation to Climate Change – Principles, Requirements and Guidance;
- Building Research Establishment (BRE) (2009) The Green Guide to Specification, 4th Edition;
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- C40 Cities (2017) Climate Change Risk Assessment Guidance;
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7. Townscape and Visual Impact

Introduction

- 7.0. This Chapter of the ES has been prepared by Planit-IE Ltd and assesses the likely Townscape and Visual impacts of the proposals upon the site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.
- 7.1. This Chapter is accompanied by four technical appendices: Townscape Baseline and Assessment table **Appendix 7.1**, Visual Baseline and Assessment table **Appendix 7.2**, Figures **Appendix 7.3** and, Views and Photomontages **Appendix 7.4**.
- 7.2. The author of this chapter:
- John Willerton
 - BA(Hons), Chartered Member of the Landscape Institute CMLI
 - John has over 25 years of consultancy experience working as a Landscape Architect and Urban Designer, and over 15 years experience authoring Townscape and Visual Impact Assessments, including assessments for a number of high-profile schemes within Manchester. He leads the Planit TVIA team and has extensive experience of delivering robust GLVIA compliant assessments for both public sector and private clients, at a range of scales from individual tall buildings within urban contexts through to large, complex residential development in suburban/ rural area.

Legislative and Policy Context

International Legislation and Policy

- 7.3. The European Landscape Convention (ELC, 2000) provides a foundation for closer co-operation on landscape issues across Europe and was ratified in the UK on the 21 November 2006, and became binding on 1 March 2007. The convention identifies the need to recognise landscape in law, to develop and promote landscape policies dedicated to the protection, management and creation of landscapes, and to establish procedures for the participation of the general public and other stakeholders in the evolution and implementation of landscape policies. It also encourages the integration of landscape into all relevant areas of policy, including cultural, economic and social policies.
- 7.4. The ELC defines landscape as '*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*'. It recognises that landscape has important cultural, ecological, environmental and social dimensions and is a key element of achieving sustainable development. In this context the use of the word 'landscape' is more appropriately termed 'townscape' though the constituent factors remain consistent.

National Planning Policy

- 7.5. The National Planning Policy Framework was updated in September 2023 and sets out the government's planning policies for England and how these are expected to be applied.
- 7.6. The purpose of the planning system is to contribute to the achievement of sustainable development through three overarching objectives:
- An economic objective - to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
 - A social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and,
 - An environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources

prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

- 7.7. The environmental objective is of particular relevance to the purpose of townscape and visual impact assessment.
- 7.8. Section 12 of the NPPF deals with the requirements of good design. The overarching principle is set out in paragraph 126, which states, “the creation of high-quality buildings and places is fundamental to what the planning and development process should achieve. Good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities.”
- 7.9. Paragraph 130 of the NPPF sets out a number of principles of good design. In order to accord with these principles, it should be ensured that new developments:
- will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;
 - are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;
 - are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);
 - establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;
 - optimise the potential of the Site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks; and,
 - create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users; and where crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion and resilience.
- 7.10. Section 16 of the NPPF concerns conserving and enhancing the historic environment. Paragraph 189 states that heritage assets are, “an irreplaceable resource, and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations”.
- 7.11. Whilst the Site is not located in a Conservation Area and does not contain listed buildings, heritage is an intrinsic part of townscape assessment and potential views from Conservation Areas and the context around listed buildings and parks have been considered as part of the assessment. There is also an overarching desirability set out within the NPPF for new development to contribute positively to local character and distinctiveness.

Guidance

- 7.12. The following guidance has been used in the assessment:
- Guidelines for Landscape & Visual Impact Assessment, 3rd Edition, 2013;
 - Landscape Institute Technical Guidance Note 06/19 ‘Visual Representation of Development Proposals’ (Landscape Institute, 2019);
 - Planning Practice Guidance; and
 - IEMA Environmental Impact Assessment Guide to Shaping Quality Development, 2015.
 - Historic England Advice Note 4 Tall Buildings.

Local Planning Policy

Manchester’s Local Development Framework, Core Strategy Development Plan Document (2012)

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

Policy EN1 Design Principles and Strategic Character Areas

- 7.14. All development in Manchester will be expected to follow the seven principles of urban design, as identified in national planning guidance and listed above and have regard to the strategic character area in which the development is located. Opportunities for good design to enhance the overall image of the City should be fully realised, particularly on major radial and orbital road and rail routes.
- 7.15. The City Centre contains a rich legacy, which reflects its urban evolution to the current day and includes listed buildings, conservation areas, archaeological remains and an historic street pattern. Its core area presents a

particularly dense environment that accommodates a wide and closely integrated range of uses including commercial, civic and residential activities.

7.16. Historic England Advice Note 4 Tall Buildings:

- Developers will be expected to consider the City's heritage and continue the rich pattern of activity in the core area.
- While there will be opportunities to create landmark buildings, developments should also contribute positively to the experience of all at street level.
- Wherever possible the opportunity should be realised to enhance existing and provide new areas of meaningful open space, and the maintenance and improvement of the City's permeability should be considered in all proposals.

Policy EN3 Heritage

- 7.17. "Throughout the City, the Council will encourage development that complements and takes advantage of the distinct historic and heritage features of its districts and neighbourhoods, including those of City Centre."
- 7.18. New developments must be designed so as to support the Council in preserving or, where possible, enhancing the historic environment, the character, setting and accessibility of areas and buildings of acknowledged importance, including scheduled ancient monuments, listed buildings, registered parks and gardens, conservation areas and archaeological remains.
- 7.19. Proposals which enable the re-use of heritage assets will be encouraged where they are considered consistent with the significance of the heritage asset.

Policy CC9 Design and Heritage

- 7.20. Development in Manchester City Centre should preserve or enhance the heritage assets that have been identified, including listed buildings, conservation areas and scheduled ancient monuments.

Policy EN9 Green Infrastructure

- 7.21. New development will be expected to maintain existing green infrastructure in terms of its quantity, quality and multiple function. Where the opportunity arises and in accordance with current Green Infrastructure Strategies the Council will encourage developers to enhance the quality and quantity of green infrastructure, improve the performance of its functions and create and improve linkages to and between areas of green infrastructure. Where the benefits of a proposed development are considered to outweigh the loss of an existing element of green infrastructure, the developer will be required to demonstrate how this loss will be mitigated in terms of quantity, quality, function and future management.
- 7.22. The Council will seek to protect existing street trees and promote new planting, particularly where this can enhance green links in the urban area.
- 7.23. The provision of new, and improvements to the quality and accessibility of existing green infrastructure assets, to mitigate for any loss of green infrastructure.

Policy DM1 Development Management

- 7.24. All new developments should follow the 'Development Principles' and accord with the design guidance set out in the Supplementary Planning Documents. The key principle of relevance to this assessment is defined as follows:
- Appropriate siting, layout, scale, form, massing, materials and detail. Impact on the surrounding areas in terms of the design, scale and appearance of the proposed development. Development should have regard to the character of the surrounding area.

Guide to Development in Manchester SPD (2007)

- 7.25. In accordance with the Guide to Development in Manchester SPD, development in Manchester will be expected to follow the seven design principles set out below:
- Character: a place with its own identity.
 - Continuity and enclosure: a place where public and private places are clearly distinguished.
 - Quality of the public realm: a place with attractive, and successful outdoor areas.
 - Ease of movement: a place that is easy to get to and move through.
 - Legibility: a place that has a clear image and is easy to understand.
 - Adaptability: a place that can change easily.

- Diversity: a place with variety and choice.

Place making and Design

- 7.26. In accordance with NPPF development in Manchester will be expected to follow the seven design principles set out below:
- Character: a place with its own identity.
 - Continuity and enclosure: a place where public and private places are clearly distinguished.
 - Quality of the public realm: a place with attractive, and successful outdoor areas.
 - Ease of movement: a place that is easy to get to and move through.
 - Legibility: a place that has a clear image and is easy to understand.
 - Adaptability: a place that can change easily.
 - Diversity: a place with variety and choice.
- 7.27. The protection and enhancement of local environmental quality, however, involves understanding and respecting the character and distinctiveness of place and townscape. A Character Study was prepared which considered Manchester's historical development and topography and identified eleven strategic character areas. New development in Manchester will be expected to take into consideration its location within the specific character areas and reinforce the sense of place and local distinctiveness of the City. This is considered an important element in increasing the sense of local ownership of and respect for a neighbourhood.

Design Principles and Strategic Character Areas

- 7.28. All development in Manchester will be expected to follow the seven principles of urban design, as identified in national planning guidance and listed above, and have regard to the specific strategic character area in which the development is located. Opportunities for good design to enhance the overall image of the City should be fully realised, particularly on major radial and orbital road and rail routes. Design and Access Statements submitted with proposals for new development must clearly detail how the proposed development addresses the design principles, reinforces and enhances the local character of that part of the City and supports the achievement of the Core Strategy Strategic Objectives.
- 7.29. The most significant Strategic Character Area affected by the Proposed Development is the Oxford Road Corridor Character Area. This is a significant area of proposed growth and economic focus for Manchester City Council and covers a wide and diverse part of the city and approach to it. The extent and nature of the impact of the Proposed Development on this zone is described in more detail later in this chapter.

Heritage

- 7.30. Throughout the City, the Council will encourage development that complements and takes advantage of the distinct historic and heritage features of its districts and neighbourhoods, including those of the City Centre.
- 7.31. New developments must be designed so as to support the Council in preserving or, where possible, enhancing the historic environment, the character, setting and accessibility of areas and buildings of acknowledged importance, including scheduled ancient monuments, listed buildings, registered parks and gardens, conservation areas and archaeological remains.
- 7.32. Proposals which enable the re-use of heritage assets will be encouraged where they are considered consistent with the significance of the heritage asset.
- 7.33. Heritage impacts are discussed and evaluated in more detail in the Heritage Statement submitted in support of the application.

Assessment Methodology and Significance Criteria

- 7.34. This assessment has been carried out with reference to the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, 2013 (referred to hereafter as "the Guidelines") by Planit-IE Ltd, a registered practice of the Landscape Institute with considerable experience in landscape and visual assessment.
- 7.35. A three-stage assessment process has been adopted. Firstly, the nature of receptors (sensitivity) has been assessed, and secondly, the nature of effects (magnitude) likely to result from the proposed development has been assessed. From this, the overall significance of the identified effects on receptors have been assessed.
- 7.36. The methodology is collated into a tabulated format where possible to provide structure for a consistent and methodical approach. Criteria and justifications are recorded in **Appendix 7.1** and **7.2** for transparency. The overall

assessment of significance has regard to paragraph 5.56, page 92 (significance of landscape effects) and paragraph 6.44, page 116 (significance of visual effects) of the Guidelines.

- 7.37. The study area for this assessment is illustrated in **Figure 7.3.1 in Appendix 7.3**. The assessment has considered the Proposed Development within the wider city context.
- 7.38. Desk based studies were carried out to collate and map baseline townscape information and carry out a review of policy and guidance to inform the assessment.
- 7.39. Potential viewpoints were initially identified through a process of desktop and on-site survey before being checked on site. Viewpoints were excluded where there was likely to be no significant impact beyond that which was already identified within the selected views.
- 7.40. Photographs for the selected viewpoints were taken by a professional photographer on the 26th of July 2023. The visualisations were produced by Virtual Planit, a professional visualisation studio with extensive experience in the production of photomontages. The photography and visualisations were both produced to accord with best practice, in accordance with the Landscape Institute technical guidance note, “Visual Representation of Development Proposals”, September 2019.
- 7.41. In order to provide the most comprehensive, rounded and objective view of the Townscape and Visual Impacts of the Proposed Development, assessed effects have been agreed following round-table review by a team of individual assessors.

Criteria for Determining Sensitivity of Townscape Receptors

- 7.42. Townscapes may be valued at community, local, national level or above. Existing Townscape designations have been taken as the starting point for this assessment, as shown in **Table 7.1** below. However, the value attached to undesignated townscapes also needs to be assessed and this is considered in **Table 7.2**.
- 7.43. **Table 7.1** sets out the relative importance of generic townscape designations and descriptions.

Table 7.1: Criteria for assessing the value of Designated Townscapes

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

- 7.44. Whilst the assessment of value is partly based on the Planning Policy importance of the townscape, other criteria used to assess townscape value in more detail, including that of undesignated townscape, are set out in **Table 7.2** below. The criteria are taken from the Planning Practice Guidance that supports the National Planning Policy Framework.

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

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

Attribute	Criteria
Attractive spaces	Consideration of streetscapes, townscapes, buildings and elements within them all, microclimates and views should all be considered. This is also affected by the way a townscape is perceived using the senses and the effect of transient elements such as the presence of human activity and resulting tranquillity or vibrancy.
Promotes ease of movement	All users should be able to move safely, conveniently and efficiently to and within a place, appropriate number of legible routes to and through it, good connections with each other and other destinations.

- 7.45. An overall assessment of value has been made for each townscape receptors (refer to **Appendix 7.1**), based on an overview of the assessments made using each of the above criteria, in terms of high, medium and low value. The assessment of the value of a non-designated townscape is based on professional judgement.

Table 7.3: Value of Non-Designated Townscapes

Value	Description
High	Sites, features or areas that display the relevant criteria above to a 'high' extent.
Medium	Sites, features or areas that display the relevant criteria above to a 'medium' extent.
Low	Sites, features or areas that display the relevant criteria above to a 'low' or 'negligible' extent.

Baseline Susceptibility of Townscape Receptors to Change

- 7.46. Susceptibility to change is the ability of a townscape receptor to accommodate the specific proposed development without undue negative consequences.
- 7.47. The susceptibility of townscape receptors to change has been assessed using the criteria set out in **Table 7.4** with reference to the baseline conditions.

Table 7.4: Townscape Receptor Susceptibility to Change

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

Overall Sensitivity of Townscape Receptors

- 7.48. The assessment of receptor sensitivity combines judgements on the susceptibility of the receptor to the specific type of development proposed and the value attributed to that receptor, as detailed within **Appendix 7.1**.

Predicted Townscape and Visual Impact Criteria

- 7.49. The predicted townscape and visual impacts of the proposed development are set out in **Appendix 7.1** and **Appendix 7.2** respectively.

Size and Scale of Effects

- 7.50. The size and/or scale of effects relates to the scale of physical changes in the townscape and the scale of the visible change in views, such as the loss or addition of features. This is broadly rated along the following scale:
- No Change – change will not be perceptible.
 - Negligible – change will be just discernible.
 - Minor – a small change will be perceptible.
 - Moderate – change will be clearly noticeable.
 - Major – total change will occur.

Geographical Extent of Effects

- 7.51. The geographical extent of effects relates to:

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

Duration/ Reversibility

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

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

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

Magnitude of Townscape Effects

7.54. The magnitude of a townscape effect is assessed in terms of its size or scale, the geographical extent of the area influenced by that effect, its duration and degree of reversibility and the impact these are likely to have on the baseline character of the townscape element.

7.55. The magnitude of change in the townscape takes into consideration the following factors:

- the extent/proportion of townscape elements lost or added;
- the contribution of that element to townscape character and the degree to which aesthetic/perceptual aspects are altered; and,
- whether the effect is likely to change the key characteristics of the townscape, which are critical to its distinctive character.

7.56. Magnitude of townscape effects has been assessed using the criteria identified in **Table 7.5**, with reference to the baseline conditions.

Table 7.5: Magnitude of Townscape Effects

Category	Criteria
Major adverse townscape effect	The proposals will result in a total change in the key characteristics of townscape character; will introduce elements totally uncharacteristic to the attributes of the receiving townscape; and/or will result in a substantial or total loss, alteration or addition of key elements/features/characteristics.
Moderate adverse townscape effect	The proposals will result in a partial change in the key characteristics of townscape character; will introduce elements partially uncharacteristic to the attributes of the receiving townscape; and/or will result in partial loss, alteration or addition of key elements/features/characteristics.
Minor adverse townscape effect	The proposals will result in a small change in the key characteristics of townscape character; will introduce elements that are not uncharacteristic to the attributes of the receiving townscape; and/or will result in a minor loss, alteration or addition of elements/features/characteristics.
Negligible adverse townscape effect	The proposals will result in a just discernible change to townscape character/elements/features/characteristics.
Negligible townscape benefit	The proposals will result in a just discernible improvement to the townscape character/elements/features/characteristics.
Minor townscape benefit	The proposals will achieve a degree of fit with the townscape character/elements/features/characteristics and go some way towards improving the condition or character of the townscape.

Category	Criteria
Moderate townscape benefit	The proposals will achieve a good fit with the townscape character/elements/features/characteristics or would noticeably improve the condition or character of the townscape.
Major townscape benefit	The proposals will totally accord with the townscape character/elements/features/characteristics, or would restore, recreate or permanently benefit the condition or character of the townscape.
No Change	The proposals will not cause any change to the townscape character/ elements/ features/ characteristics.

Magnitude of Visual Effects

- 7.57. The magnitude of a visual effect is assessed in terms of its size or scale, the geographical extent of the area influenced by that effect, its duration and degree of reversibility and the impact these are likely to have on the baseline character of the view.
- 7.58. The magnitude of change in the view relates to the degree of contrast or integration likely to result from the proposed development and is influenced by the relative time over which a view is experienced and whether it is a full, partial or glimpsed view.
- 7.59. The criteria identified in **Table 7.6** are used to assess the magnitude of visual effects, based on the degree of change to the view or composition.

Table 7.6: Visual Effects - Magnitude

Category	Criteria
Major adverse or beneficial visual effect	The proposals will cause a dominant or complete change or contrast to the view, resulting from the loss or addition of substantial features in the view and will substantially alter the appreciation of the view.
Moderate adverse or beneficial visual effect	The proposals will cause a clearly noticeable change or contrast to the view, which would have some effect on the composition, resulting from the loss or addition of features in the view and will noticeably alter the appreciation of the view.
Minor adverse or beneficial visual effect	The proposals will cause a perceptible change or contrast to the view, but which would not materially affect the composition or the appreciation of the view.
Negligible adverse or beneficial visual effect	The proposals will cause a barely perceptible change or contrast to the view, which would not affect the composition or the appreciation of the view.
No change	The proposals will cause no change to the view.

Nature of Effects

- 7.60. The nature of effects may be positive or negative (beneficial or adverse), or neutral. Neutral effects recognise that there will be a change to the receptors, however this change is in keeping with the existing characteristics of the receptor.
- 7.61. Effects may also be direct or indirect. Direct effects are those that result directly from a development itself, whereas indirect effects may arise as a consequential change resulting from development.

Significance of Effects

- 7.62. The scale shown in **Table 7.7** is used to guide the assessment of the significance of both townscape and visual effects, from a combination of the assessment of receptor sensitivity and the magnitude of effects:

Table 7.7: Assessment of Townscape or Visual Significance

	Magnitude of Effect			
Sensitivity of Receptor	Major Effect	Moderate Effect	Minor Effect	Negligible Effect
High	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate - Minor Adverse/Beneficial	Negligible

Moderate	Major - Moderate Adverse/Beneficial	Moderate - Minor Adverse/Beneficial	Minor Adverse/Beneficial	Negligible
Low	Moderate - Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor- Negligible	Negligible

- 7.63. The nature of effects may be positive or negative (beneficial or adverse) or neutral. Neutral effects recognise that there will be a change to the receptors, however this change is in keeping with the existing characteristics of the receptor. The table has regard to guidance in the Guidelines for Landscape and Visual Impact Assessment, Third Edition, 2013, at paragraph 5.56, page 92 (significance of landscape effects) and paragraph 6.44, page 116 (significance of visual effects).
- 7.64. For the purpose of the Townscape and Visual Impact Assessment, **major to moderate significance effects** are considered to be significant in the meaning of EIA Regulations (2011). This acknowledges the degree of change that it taking place within the wider townscape and the Proposed Schemes overall fit within delivering the aspirations of the City through adopted policy for growth and enhancement of the Oxford Road Corridor and the Universities through its Estate Strategy.

Limitations and Assumptions

- 7.65. The methodology described within this assessment provides a robust and transparent process for assessment of townscape and visual effects. Production of verified photomontage views provides a high level of detail and technical accuracy. The TVIA process is based on the GLVIA guidelines, and the assessment has been presented in a tabular format in Appendices 7.1 and 7.2. The assessment is carried out by a team of assessors to provide scrutiny where professional judgement is relied upon.
- 7.66. Verified views have been produced to provide a high level of confidence in the assessment of effects resulting from the Proposed Development.
- 7.67. Due to the timing of the application, the photography and assessment has been carried out during the summer months of 2023 when the trees are in leaf. The potential screening effects of trees has been taken into account during the assessment of visual impact, in order to ensure assessment of 'worst case' scenario, in accordance with the Guidelines.
- 7.68. The cumulative visual assessment does give a clear indication which of the key viewpoints and townscape receptors are likely to be impacted on by committed development.
- 7.69. Acknowledging the limitations and assumptions, predicted effects are assessed against the criteria set out below in order to attribute a level of confidence to the assessment:
- High – The predicted effect is either certain, or very likely to occur, based on reliable information or previous experience.
 - Medium – The predicted effect and its level are best estimates, based on on-site and desktop study.
 - Low – The predicted effect and its level are best estimates, based on given knowledge and experience. More information may be needed to improve the level of confidence.

Baseline Conditions

Site Location

- 7.70. The Site is located within the City Centre, and within the Regional Centre as defined by MCC's Core Strategy 2012. The Site boundary extends to c.0.7 hectares. It lies within the eastern cluster of Manchester Metropolitan University's estate located on the Oxford Road corridor.
- 7.71. The Site lies to the south of the City Centre, in an area that is seeing major regeneration with a number of new developments underway or recently finished, such as in Circle Square, First Street, Great Jackson Street to the west and Mayfield Park to the east. It is bound by the Mancunian Way to the north, Oxford Road to the east, All Saints Park to the south and Manchester Metropolitan University's Faculty of Business and Law to the west.

- 7.72. The Site comprises the joined Sir Kenneth Green Library and All Saints buildings currently used as a library facility for the students and staff of Manchester Metropolitan University. It also includes parts of public space surrounding the building on Oxford Road and towards the All Saints Park, as well as a rectangular area located under the Mancunian Way viaduct protruding towards the John R. Dalton Building.
- 7.73. There is a broad mix of uses that is characteristic of its location within the Regional Centre, including education, residential, commercial, industrial together with sport and leisure.
- 7.74. There are no Conservation areas within the immediate vicinity of the Site, the nearest being the Whitworth Street Conservation Area c. 350m to the north. There are several listed buildings in the vicinity of the Site, most notably those surrounding All Saints Park to the west and south.
- 7.75. Pedestrian access is currently from All Saints Park to the south of the building. There is no public access to the building from Oxford Road. No car parking is associated with the library building.
- 7.76. The Site forms a key site along the Oxford Road Corridor, a priority location for higher education and an opportunity to strengthen and diversify the economy by creating high added value growth in sectors such as Creative and Digital, Health, Science and Innovation, and Advanced Materials and Engineering.
- 7.77. Currently the Site represents one of the strategic investment requirements according to 'Manchester Metropolitan University Estate Strategy 2017-2027'. Strategic investment in an expanded library and students commons, which seeks to increase capacity and quality of study and to create an intellectual hub for the University.

Historical Development

- 7.78. The historical development of the Site through the twentieth century is recorded in **Figure 7.2** in **Appendix 7.3**.
- 7.79. Figures 7.2.1. to 7.2.4. show a series of historical maps of the Site and surrounding area from 1909 to 2000, which illustrate the development of the Site and change of the urban fabric over time. The Site has always sat within a tight urban grain and experienced very little change, being mainly dominated by buildings associated with the textile industry to the north, and an extensive area of workers housing to the south arranged in a tight gridiron pattern. Oxford Road and Cavendish Street formed the main movement corridors within the area, crossing at the south-east corner of All Saints Park.
- 7.80. The Site contained a school building sat within a residential block and facing the Church located in All Saints Park. Having been a focus for housing, education, entertainment, commerce, public services and worship, the area later became the home of Manchester Metropolitan University.
- 7.81. In the 1960s the area underwent considerable change which was initiated by the development of the A57 Mancunian Way, which now forms the northern boundary of the Site and encircles the heart of the City Centre. The construction of Mancunian Way resulted in removal of many of the fine grain buildings to make way for the elevated ring road. This era saw an extensive programme of slum clearance in Manchester and whole communities across the square and nearby Hulme were removed and rehoused.
- 7.82. In the second half of 20th century the area changed considerably. A number of larger-footprint buildings were added to the area to accommodate the growing University campus, with vast areas dedicated to surface car parking and amenity green spaces between buildings.
- 7.83. Today, the original tight grid pattern is still partially visible in the urban fabric, however currently it is dominated by various large-footprint buildings of the University campus. Car parking has been rationalised and therefore the major open areas within the grain are occupied by parks and green spaces with enhanced biodiversity.

Townscape Character

- 7.84. Townscape character areas are presented in **Figure 7.4** in **Appendix 7.3**
- 7.85. The Site lies within Manchester City Centre, as defined by Manchester Core Strategy 2012-2017. The City Centre is defined as the area inside the Inner Relief Route and extends to the south to encompass the Oxford Road Corridor and includes several distinct areas.
- 7.86. The area where the Site is located is defined as 'The Corridor' and contains major educational and medical institutions located alongside a linear route (Oxford Road) in a variety of large-scale buildings. Underlying this are remnants of the historic past such as the grid iron street pattern dating principally from the 19th Century. The area contains a network of open spaces often resulting from more recent developments and is busy especially with public transport and pedestrian movement through much of the 24-hour day with patterns of movement linking areas to both sides of Oxford Road. The Corridor represents the only area where the levels of activity, range of uses and scale of built form associated with the City Centre extend beyond the Mancunian Way.

- 7.87. The Strategy states that new development needs to reflect the significant scale and form expected from major City institutions, and opportunities will exist for more innovative and contemporary built forms which have regard to the historic context. In addition, a balance between built form and open space which allows for easy movement through and across the area will be required within new development.
- 7.88. The Corridor is considered a suitable location for new office, research and development, light industrial, general industrial, education and health developments.
- 7.89. The Site in its current form does not contribute to achieving the objectives for 'The Corridor', as set out within the Core Strategy. The existing library is an older building (built 1972) and therefore does not display highest standard in terms of appearance and function, and is not activating the surrounding public space, which in itself is of poor quality.

Urban Grain

- 7.90. Urban grain on the Site and in the surrounding area is shown in **Figure 7.5 of Appendix 7.3**.
- 7.91. The wider study area presents predominantly a fairly coarse urban grain to the north reflecting the location directly adjacent to the city centre. The ring road (Mancunian Way), which encapsulates the city centre area forms a significant north-south barrier between the centre and its surroundings. The grounds of Manchester Metropolitan University campus stretch out beyond Mancunian Way to the south of the city centre and whilst in keeping with the city centre character, its medium to large-footprint buildings are in contrast with the finer grain of the surrounding residential areas. The main north-south and east-west movement corridors form a grid pattern and therefore the urban grain has a relatively regular character.
- 7.92. The grain is punctuated by occasional green open spaces, the most significant of them being the All Saints Park located in front of the MMU Library building.
- 7.93. The grain on the site is in keeping with the dense medium-sized grain of the city centre. It adjoins the neighbouring Faculty of Business and Law building and represents a typical grain of a university campus building.

Building Heights

- 7.94. Building heights on the Site and in the surrounding area are shown in **Figure 7.7 in Appendix 7.3**
- 7.95. The building heights within the area are characterised by a mix of heights with development ranging from 2 floors, which represent the lower density residential houses and some of the commercial buildings along Oxford Road, to 30+ floors of the Circle Square tower, which is characteristic of the city centre. The building heights within the city centre to the north and along the Oxford Road Corridor to the south are generally substantial, reflecting their location within the Manchester City Centre Townscape Character Area, as defined within the Core Strategy. Building heights generally step up towards the city centre core to the north of the Mancunian Way.

Movement & Linkages

- 7.96. Key movement routes surrounding the Site are shown in **Figure 7.8 in Appendix 7.3**.
- 7.97. The Site is bound by two major movement corridors, The A57 Mancunian Way and Oxford Road, both of which also present significant barriers to pedestrian connectivity within the wider area due to the width of the road corridor.
- 7.98. Oxford Road integrates a cycle link from St. Peter's Square to the north of Oxford Road, to Fallowfield in the south. There is also a busy 'beeway' running through the area along Cavendish and Grosvenor Street, linking the Site to the wider cycle network.
- 7.99. To the north of the Site there is Oxford Road train station, which is a major transport node within the area connecting the campus with wider surroundings. The central location close to the city centre, leisure attractions and university campuses results in a large amount of footfall in this area.
- 7.100. The building's pedestrian access is currently from All Saints Park to the south of the building. There is no public access to the building from Oxford Road. No car parking is associated with the library building.

Environmental Designations and Public Open Space

- 7.101. Environmental Designations and Public Open Space within the Site and surrounding area are shown in **Figure 7.7 of Appendix**.
- 7.102. There is no green space and no environmental designation covering the Site. There is a row of five mature trees along the edge of the Site edge that adjoins Oxford Road. In front of the existing library building facing All Saints Park is a landscaped strip with hedging that generally does not contribute to the overall quality of the public space.

- 7.103. Directly adjacent to the Site lies All Saints Park, originally opened in 1820 as a burial ground for All Saints Church. In 1935 it was turned into a public park and playground. Currently it serves as a public park and is being redeveloped as a part of Manchester Metropolitan University's wider 10-year estate strategy to improve the landscaping, create a new flexible space and pedestrianise surrounding streets. There are several other green open spaces in the study area, mainly Symphony Park within Circle Square development to the north, University Green to the south and Gartside Gardens to the south-east of the Site.

Site Character

- 7.104. Site Character is shown in **Figure 7.9** in **Appendix 7.3**.
- 7.105. The Site is currently occupied by the existing modernist building of All Saints Library, which was built in 1978 and is characterised by its distinct red brick colour in keeping with the adjacent historic buildings enclosing All Saints Park and along Oxford Road, as well as horizontal ribbon windows. Due to its substantial massing, stepped form and red colour, it forms a relatively prominent feature when seen from the Oxford Road corridor, however the surge of recent development has introduced a new and taller height datum in the area, especially towards the city centre in the north of the study area.
- 7.106. The existing development currently has a poor relationship with Oxford Road and fails to activate this part of a busy corridor.
- 7.107. Another prominent feature of the Site is a row of tall mature trees which provide a thick canopy when in leaf, potentially providing ecological benefit and a buffer to the busy Oxford Road corridor, which generally lacks the presence of mature trees.
- 7.108. Part of the Site stretches underneath the bridge accommodating the Mancunian Way. This area is currently fenced off and occupied by surface cycle parking facility belonging to the Manchester Metropolitan University.

Identification and Evaluation of Significant Effects

Potential Construction Phase Effects

- 7.109. The Construction Management and Phasing Plan provides an initial summary of Construction Phase Effects. The likely significant effects are assessed in more detail in **Appendices 7.1** and **7.2**.
- 7.110. Sources of townscape and visual construction effects include:
- Site setup and site compound (visual effects).
 - Site/boundary fencing (visual effects).
 - Highways alterations, site access and deliveries (movement and linkages – townscape).
 - Site clearance, removal and disposal of existing hard landscape as defined within the proposals (landscape and visual effects).
 - Contractor parking, plant and equipment (visual effects).
 - Works associated with service diversions and removal/ capping of redundant services (visual effects).
 - Ground Works including site demolition, levelling & preparation (townscape character, urban grain, topography – townscape effects, and visual effects).
 - Earthworks (incl. formation of retaining walls and piled foundations etc.) (topography – townscape effects, and visual effects).
 - Works associated with construction of the library building (visual effects).
 - Public Realm and associated landscaping works (townscape and visual effects).

Potential Townscape Effects

- 7.111. The components of the townscape which may potentially be affected by the Proposed Development are known as the townscape receptors. These include the characteristics and character of the townscape, and the character and quality (or special qualities) of designated areas.
- 7.112. Likely townscape effects have been identified with reference to interactions between the Proposed Development and townscape receptors. The likely significant effects (highlighted below) are assessed in more detail in **Appendix 7.1**.

Table 7.8: Potential Townscape Effects

Townscape Element	Construction	Operation
Townscape Character	Direct effect/city-wide extent of effect.	Direct effect/city-wide extent of effect.
Urban Grain	Direct effect/local extent of effect.	Direct effect/local extent of effect.
Building Heights	Direct effect/city-wide extent of effect.	Direct effect/city-wide extent of effect.
Movement and Linkages	Direct effect/site extent of effect.	Direct effect/local extent of effect.
Environmental Designations and Public Open Space	Direct effect/local extent of effect.	Direct effect/local extent of effect.
Site Character	Direct effect/site extent of effect.	Direct effect/site extent of effect.

Potential Visual Effects

7.113. Likely visual effects have been identified with reference to interactions between the Proposed Development and visual receptors. The potential significant effects (highlighted below) are assessed in more detail in **Appendix 7.2**.

Table 7.9: Potential Visual Receptors

Viewpoint Location and No.	Construction	Operation
Viewpoint 1: View from corner of Oxford Road/ Grosvenor Street Junction looking north over All Saints Park. Within setting of Grade II listed former Grosvenor Picture Palace and former Town Hall.	Views of construction activities behind the trees in All Saints Park.	Clear change in the view. Open view of the Proposed Development.
Viewpoint 2: View from pedestrian footpath within All Saints Park looking north to Site. Within setting of Grade II listed Ormond, Righton & Grosvenor Buildings.	Views of construction works behind the trees in All Saints Park.	Clear change in the view. The library building will appear above existing treeline.
Viewpoint 3: View from footway on eastern side of Oxford Road adjacent to bus stops and public entrance plaza to St. Peter's House and University Green.	Partial views of the construction screened by existing buildings.	The Proposed Development will be a new landmark building within the view, on what is a key approach route.
Viewpoint 4: View from footway on eastern side of Oxford Road looking south – adjacent to Manchester Technology Centre and Circle Square entrances.	Partial views of construction works behind Mancunian Way and existing building.	Clear change in the view with new landmark building.
Viewpoint 5: View from footway on junction of Oxford Road/ Whitworth Street looking south – adjacent to Grade II* listed former Refure Assurance Company Offices & Grade II listed Palace Theatre.	Partial views of construction works in the distance.	Partial change to view - additional tall building element visible in background.
Viewpoint 6: View from footway adjacent to Cambridge Street Junction & Mancunian Way looking east to Site.	Partial views of the construction works behind the Mancunian Way viaduct.	Partial change to view – the tower of library building will appear behind the Mancunian Way viaduct.
Viewpoint 7: View from pedestrian walkway in Gartside Park adjacent to western entrance point and seating – looking east to Site.	Partial views of construction works largely screened by existing townscape.	Partial change to view - additional tall building element visible in background.
Viewpoint 8: View from pedestrian walkway/ green verge adjacent to Mancroft Walk looking west to Site.	Partial views of construction works beyond existing trees.	Partial change to view - additional tall building element visible in background.

Mitigation Measures

7.114. 'Embedded mitigation' is a form of mitigation that has been incorporated into the design of the development through an iterative design process, effectively 'designing out' potential townscape and visual effects.

Construction Phase – Embedded Mitigation

7.115. The following mitigation measures with relevance to townscape and views that are included in the 'Draft Construction Management and Phasing Plan' and are described in brief below:

Table 7.10: Summary of Embedded Construction Mitigation Measures

Mitigation Measures	Effects
A full traffic management plan will be developed to address; access, egress & drop off, temporary/ permanent alterations to local traffic routes, signage, pedestrian access, parking and bus stops, segregation of plant, materials and pedestrians, loading bays & crane positions. The Contractor is to endeavour to arrange deliveries outside of peak traffic hours. As per MMU policy, there will be no visitor and key staff parking within the compound area.	Minimise disruption to local road network and reduce transportation distances.
Material storage will be generally contained within the site boundary with access through the site entrance gates for deliveries. The main gates will be manned by qualified banksmen who will co-ordinate traffic, bank deliveries as well as ensure the road and pavement areas are kept clean. When required by the construction activities, appropriate wheel and vehicle wash facilities will be in place to ensure delivery wagons leave the site clean and tidy with regular cleaning of Oxford Road using road sweepers.	Promoting public transport to reduce the vehicular movement associated with the works.
Construction techniques and the associated plant and equipment selected to minimise noise and vibration intrusions on surrounding areas. On Sundays and Bank Holidays no noisy working will generally be planned	Minimise noise and vibration intrusions on surrounding areas.
Site operating hours will adhere with Manchester City Council's (MCC) 'Environmental Protection Information for Developers':	Minimise disruption to surrounding areas.
Dust & noise control & the erection of perimeter fencing to a specified standard, will be taken.	To prevent risk to members of the public.
More detailed proposals will be developed once contractors are appointed and prior to commencement on site. This will include preparation of detailed plans to incorporate Construction Management, Construction Phase Health and Safety, Environmental Management as well as Site Waste Management, Logistics and Traffic Management.	The main aim throughout the construction period is to minimise the impact on the surrounding properties, residents, businesses and roadways for the duration of the work.

Operational Phase – Embedded Mitigation

- 7.116. Forms of mitigation embedded within the operational phase are described in detail in the Design and Access Statement that accompanies this application. The Proposed Development has been developed in accordance with good design principles which avoids, reduces or offsets potential effects on the townscape and views. The key principles relevant to the purposes of this report are summarised below.

Built form and Massing

- 7.117. The design establishes a building form that presents as 'tower and tail'. The tower forms a local and city-wide landmark whilst the tail grounds the building and gives definition and active frontage to the park and Mancunian Way edges.
- 7.118. The tower features bold geometric slices of clear glazed slots, carefully placed to reveal internal activity and to correlate with spaces of enlarged and eccentric volume. The cuts frame views from within the building to growth areas punctuated with the city's towers to the west, the Etihad stadium and Eastlands development area to the east, the city's commercial heart to the north and the continuation of the University corridor to the south.
- 7.119. The design act as a beacon to the city, a unique and sculptural form to the south of the city core and a significant landmark on Oxford Road and the Mancunian Way.

Materiality

- 7.120. The re-use of a good amount of the existing structure as well as the careful design of new elements; punched windows instead of acres of curtain walling, facades that are detailed to respond to their orientation with deep-set reveals to the south and an interior that is made from materials that are warm, welcoming and sustainable point to a building of true innovation. The building has strength and solidity in its form and at the same time, a lightness in its material quality – the solid planes of the building that climb like ribbons along, up and over the form are covered in an array of glazed circular lenses.
- 7.121. The façade works in its context, responding to the setting of listed buildings such as St Augustine's Church and the new Arts & Humanities building as well as the park, itself with significant history, a lush, seasonally changing environment.
- 7.122. The form is covered in an array of glazed circular lenses. The circular emblem points to a symbolic unity and balance. Each lens features a coloured reveal with a carefully selected palette of glowing heat and scarlet blushes that speak to the city.

Use

- 7.123. The new MMU library must evolve as a flexible building that cleverly blends the physical and the digital. Both experiences valid and with people and the quality of their experience at their heart.
- 7.124. The new MMU library should present an inclusive and accessible environment, working for all users – commuter students, international students, ethnic minorities, students who face digital poverty, researchers, and the public plus many more. As well as redeveloping the existing Library, the scheme has the potential to contribute to all Strategic Values of a ‘student-centred’, ‘people-led’, ‘future-focused’, inclusive and Man Met identity and creation of a gateway building to the Manchester Metropolitan University’s All Saints Campus.
- 7.125. To the north edge and spilling under the Mancunian Way, an opportunity to rationalise back of house operations and reinvent this space with a fresh and youthful programme relating to the building.

Landscape

- 7.126. The key objectives of the landscape proposals at ground floor are to:
- Create a sense of place and enhanced experience for students, staff and visitors which is cohesive with the surrounding campus streets and spaces.
 - Take into consideration the surrounding public realm works and proposals including the space outside the MMU business school, and the All Saints Park improvements due to complete in spring 2024. The existing yorkstone setts with feature banding will be extended down the south of the library to merge with the older yorkstone slabs along Oxford Road. This will replace the existing clay pavements to create a consistent main thoroughfare. Ground floor street furniture has been selected to reflect the style and materials used on the wider MMU campus.
 - Improve pedestrian circulation and car-free spaces around the library and consider new and existing routes around the Site. North of library will be primarily a service area with functional durable surfacing. The bin store has been relocated to improve servicing access.
 - Create opportunities to sit, relax and meet outdoors, and create a cohesive public realm by considering the wider street furniture proposals.
 - Retain and manage existing on-site trees to create a welcoming new entrance to the library.
 - Maintain all facilities management and maintenance access requirements around the library and to the northern service area.
 - Soft landscaping at ground floor includes species selected for their low maintenance, biodiversity and seasonal value and include native species. They will also be in keeping with planting across the wider campus.
 - Removal of the existing steps and ramps at the library entrance to improve accessibility and permeability between the library and the external landscape.
- 7.127. The ‘green’ of the park is extended to the threshold of the library allowing it to ‘claim’ the space – creating a library in a park. Substantial green spaces are brought into the design – creating a park in the library.
- 7.128. The design opens up a north-south connection through the existing building that allows for an ‘Art walk’ connection to the John Dalton Campus.
- 7.129. Light, Space, Green. The internal spaces are filled with natural light and connected both visually and physically to green landscape.

Supplementary Mitigation and Enhancement

- 7.130. Given the nature of the iterative design process leading to the extent of embedded mitigation into the design, the requirement for supplementary mitigation is limited. The mitigation measures described below are focussed on ensuring that the management and maintenance of the Proposed Development limits any further adverse townscape and visual effects.
- 7.131. The implementation of good site management, maintenance and housekeeping would ensure that the temporary deterioration to townscape character and visual amenity during the construction phase would be kept to a practical minimum. Despite these better practice measures, there would still remain inevitable adverse effects during construction works.
- 7.132. An operational management strategy will be submitted with the application to provide further mitigation and maintenance once the site is operational.

Cumulative Effects

- 7.133. The assessment of the Proposed Development has been supplemented by a cumulative assessment of committed developments in order to understand if any further potential significant environmental effects are likely to arise. Cumulative effects are defined as impacts that result from additional changes to the townscape or visual amenity caused by the Proposed Development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.
- 7.134. A total of 3 cumulative schemes have been identified as set out below:
- 137 Oxford Road - erection of a single Erection of a single storey roof extension to create one x four bedroom apartment.
 - Circle Square Buildings 1A & 1B – No detail/ not submitted.
 - Cambridge Circus - No detail/ not submitted.
- 7.135. 137 Oxford Road is the only scheme that has an approved planning permission and as such can be formally assessed within this report.
- 7.136. In relation to townscape receptors, the scheme will slightly increase the existing height datum and townscape character of this section of Oxford Road. This change, however will be too small to alter the assessed overall baseline position for these receptors.
- 7.137. With regards to visual receptors, the building is partially visible in View 1 to the right-hand side of the view. The proposed scheme will lead to improvements to the existing building façade and its interface with the street. The increased roof height of the proposal will be visible at the top of the view, and lead to a slight enclosing of the view. The overall view character and composition will however remain unchanged from the assessed baseline condition.
- 7.138. There are therefore not predicted to be any potential for cumulative townscape or visual effects in conjunction with the Proposed Development.

In-Combination Climate Change Impact (ICCI) Assessment

- 7.139. The UKCP18 climate projection data for the north-west England under RCP8.5 have been reviewed in the context of this TVIA assessment. The only means through which climate change projections are considered to potentially effect the outcomes of this TVIA is through potential adverse impacts on existing and proposed site vegetation e.g. due to additional stresses from hotter and drier summers and wetter winters. However, given the relatively modest proposed planting (mainly new planting beneath retained mature trees on Oxford Road and a single new tree to the corner of All Saints Park), providing little visual screening role within the scheme, and the potential for these to include climate resilient species, it is not anticipated that climate change trends will affect the outcomes of the assessment and an ICCI assessment has therefore not been undertaken.

Residual Effects

Summary

- 7.140. The results of the townscape and visual assessment are set out in full within **Appendices 7.1 and 7.2**.
- 7.141. A summary of all residual effects is set out in **Table 7.11** below, with effects assessed as significant highlighted in bold. For the purpose of the Townscape and Visual Impact Assessment, **major to moderate significance effects** are considered to be significant in the meaning of EIA Regulations (2011). This acknowledges the degree of change that it is taking place within the wider townscape and the Proposed Schemes overall fit within delivering the aspirations of the City through adopted policy for growth and enhancement of the Oxford Road Corridor and the Universities through its Estate Strategy.
- 7.142. A total of 6 townscape receptors and 8 visual receptors were identified and considered as part of this assessment.

Townscape Effects

- 7.143. There was one moderately significant townscape effect during the construction and operational phase on Site Character. During construction this effect will be adverse due to a loss of the key Site characteristics through the demolition of the existing building and the impact of construction works on the setting and enjoyment of the public park and spaces immediately around it. During operation the effect will be beneficial where the Proposed Scheme will completely transform the site to a high-quality new university faculty building, local level landmark with an enhanced public realm to its edges.

- 7.144. The remaining townscape receptors are all assessed as experiencing minor effects at construction and operational stage, which reflect the relatively small scale of change that will be experienced in the wider townscape areas due to the compact nature and position of the Site adjacent to the Mancunian Way. All townscape receptors were assessed as having beneficial effects in the operational stage.

Visual Effects

- 7.145. One moderately significant adverse visual effect was assessed during the construction period (view 4). This was due to the openness of views to the site, the proximity of construction works within the view, and the prominence of these elements to views along the wider Oxford Road Corridor. The remaining views were assessed as minor adverse or not significant. Whilst construction works would still be visible, they would be less prominent/ or partially screened by intervening buildings or vegetation.
- 7.146. During the operational stage no views were assessed as having adverse effects. Three views (views 1,2 & 4) were assessed as having moderately significant beneficial effects due to the prominence of the new building in the views, where architectural detail and composition could be appreciated. All remaining views were assessed as having minor beneficial and not significant effects.
- 7.147. It is noted that due to the timing of the application and assessment, views and baseline photography was undertaken during July 2023 where trees were in full leaf and offering the maximum potential screening to both construction activities and the proposed new building. This does not represent the 'worse case' scenario that is required within the GLVIA guidelines. Where this had the potential to affect the assessed effects and significance it was noted in the assessment tables. It was not considered however, that the reduction in the canopy would have caused the assessed significance of the views to have changed for any of the receptors.

Reference List

- 7.148. This ES Chapter has been prepared by reference to the following:
- Department for Communities and Local Government (2012), National Planning Policy Framework, London, DCLG.
 - 1.2 Institute of Environmental Management & Assessment (IEMA), 2015. IEMA Environmental Impact Assessment Guide to Shaping Quality Development.
 - 1.3 Landscape Institute, IEMA, 2013. Guidelines for Landscape & Visual Impact Assessment, 3rd Edition, Oxon, Routledge.
 - 1.4 Landscape Institute, 2019. Visual Representation of Development Proposals, Landscape Institute Technical Guidance Note 06/11, London, Landscape Institute.
 - 1.5 Environmental Impact Assessment EU Directive and UK Regulations, (85/337/EEC).
 - 1.6 The Town and Country Planning (Environmental Impact Assessment.)

8. Wind Microclimate

Introduction

- 8.0. This Chapter of the ES has been prepared by BuroHappold and assesses the likely wind microclimate impacts of the proposals upon the Site and surrounding area. This Chapter also describes the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce, or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.
- 8.1. This Chapter is accompanied by one technical appendix, Committed Developments (Appendix 2.2).
- 8.2. The author of this chapter has seven years of experience in analyzing wind pedestrian comfort CFD and wind tunnel studies for EIA developments, ES, planning and design advice purposes in more than twenty projects.

Legislative and Policy Context

National Planning Policy

- 8.3. There are no national codes of practice or legislative policies relating to the assessment of environmental wind flows in the built environment.
- 8.4. The UK wide National Planning Policy Framework (NPPF) came into force in March 2012, and was updated in September 2023. There are no national planning policies directly relating to wind microclimate issues; however, the benefits of a high quality built environment are emphasised in the NPPF. An example of this is presented in paragraph 127: "...using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit...".
- 8.5. The impact of environmental wind on pedestrian spaces and the subsequent suitability of these spaces for planned usage are described by the Lawson Comfort Criteria (LCC), which are recognised by Local Planning Authorities (LPAs) as a suitable benchmark for wind assessments. LCC has been applied in the wind assessment of the Proposed Development.

Regional Planning Policy

- 8.6. There is no specific national or regional legislation or policy guidance for the assessment of the local wind microclimate impact that a new development has on the comfort and safety of users.

Local Planning Policy

- 8.7. Several local authorities provide planning guidance for tall buildings, recommending that a microclimate assessment be performed. The definition of tall buildings within these documents varies, but typically includes any buildings which are significantly higher than their neighbours. Reference on how the Manchester City Council (MCC) aims to avoid potential adverse effects of tall buildings can be found in Manchester's Local Development Framework, Core Strategy Development Plan Document, July 2012.
- 8.8. Policy EN2 states that "Tall buildings are defined as buildings which are substantially taller than their neighbourhoods and/or which significantly change the skyline", and "By their very size tall buildings can have a significant impact on the local environment and its micro-climate. It is therefore expected that this impact be modelled and that submissions for tall buildings also include appropriate measures to create an attractive, pedestrian friendly local environment".
- 8.9. Furthermore, Objective 6 (Environment) states in paragraph 12.6 that development in Manchester will be expected to follow seven design principles, including "Quality of the public realm: a place with attractive, and successful outdoor areas".
- 8.10. This report considers the above as part of the assessments carried out, by considering the massing impact on the local conditions that may be experienced by users of the external areas around and within the site. Due to its size, location and nearby building heights the Proposed Development is not considered a tall building. However, the SRF masterplan includes tall buildings. The wind microclimate assessment has been undertaken to ensure that all areas of the proposed public realm are comfortable and safe for pedestrians to use, particularly given the Proposed Development's proximity to several tall buildings outside the red line.

Assessment Methodology and Significance Criteria

Methodology

- 8.11. The wind study includes a direct comparison between the baseline conditions and those created by the Proposed Development for the wind occurrences based on the Wind statistical data translated to the site. The Chapter describes the quantitative assessment of the likely wind environment, and the qualitative judgements that are made in order to identify areas of potential concern. This analysis included an assessment of the relative forms, layouts and massing of the existing Site and the Proposed Development, as well as landscaping and topography.
- 8.12. Impacts of the likely wind conditions are judged based on the Computational Fluid Dynamics (CFD) modelling results and BuroHappold's extensive experience of wind assessments, full-scale testing, CFD and wind tunnel modelling of similar developments.
- 8.13. The assessment is supported by CFD modelling of the full range of wind speeds and directions for the two configurations (which have been agreed with the Local Planning Authority through the EIA Scoping Process), as follows:

Tested scenarios

- 8.14. Two scenarios have been tested within this assessment. These scenarios are as follows:

Current Baseline Scenario 1: Existing site in existing surroundings

- Existing Site: current All Saints Library Building
- Existing Surroundings: surroundings buildings, including also the adjacent southeast MMU Business School, the MMU Science and Engineering Building (LPA Planning Ref. 125799/FO/2019), All Saints Park (LPA Planning Ref. 128485/FO/2020) and 3 Circle Square (LPA Planning Ref. 134288/FO/2022); as well as the adjacent All Saints Park, surrounding infrastructure and terrain

Proposed Scenario 2: Proposed development in existing surroundings

- Proposed Development: new library building with outdoor terraces
 - Existing Surroundings: surroundings buildings, including also the adjacent southeast MMU Business School, the MMU Science and Engineering Building (LPA Planning Ref. 125799/FO/2019), All Saints Park (LPA Planning Ref. 128485/FO/2020) and 3 Circle Square (LPA Planning Ref. 134288/FO/2022); as well as the adjacent All Saints Park, surrounding infrastructure and terrain.
- 8.15. Appendix 1.1 includes the application redline boundaries of the cases listed above.
- 8.16. Wind microclimate comfort strongly depends on an individual's activity and so has therefore been defined separately for each activity in terms of an average (mean) wind speed exceeded for a certain percentage of the year.
- 8.17. The pedestrian comfort criteria have been developed around the Beaufort scale (Lawson 2001), extending its applicability to environments in and around buildings.
- 8.18. The assessment has been undertaken to investigate the likely pedestrian conditions in and around the Proposed Development when it is subject to wind from different directions. An assessment of the appropriateness of different parts of the Site for their intended use has also been made.

Design criteria (standards)

Lawson Comfort Assessment

- 8.19. The Lawson assessment has included a direct comparison between the baseline conditions (existing) and the Proposed Development. A quantitative assessment of the likely wind environment has been carried out, with any areas of potential concern identified.
- 8.20. A comfort map was created to illustrate the assessment results. This map includes a direct correlation between the calculated wind speeds by the CFD simulations and the wind frequency data near the Site for the last 10 years. It provides a complete picture of the likely wind conditions related to certain activities, indicating when suitable conditions can be achieved for carrying out such activities or if distress is likely to be experienced. The maps cover the whole Site on a plane 1.5 m above ground level, where wind speeds are measured.

- 8.21. The thresholds used to determine the effect for a given activity are specified for Unacceptable, Tolerable, and Acceptable. An example of the thresholds is given in Table 8-1 for “Perceived response to wind for a pedestrian” (as per the Lawson Criteria) which would be Unacceptable. The definitions for these thresholds are summarised below:
- Unacceptable, unpleasant conditions for the given activity, which should not normally be allowed to occur;
 - Tolerable, conditions that would be describe as ‘windy’ but which would be tolerated for the given activity; and
 - Acceptable, conditions that will elicit no adverse comment about wind conditions.
- 8.22. It is considered that effects that breach the “Unacceptable” threshold could be significant and it is these effects that are considered further within this assessment, in terms of the activity occurring in the area identified, and requirement for mitigation. The Lawson criteria (Lawson 2001) are used to assess the wind speeds for different activities. The criteria that have been used to assess the unacceptable threshold for different activities as well as the distress criteria are listed in Table 8-1.

Table 8-1 Lawson Comfort Criteria thresholds for unacceptable levels of wind speed

Lawson Comfort Criteria Classification	Use of Space	Maximum acceptable combination of wind speed and occurrence		
		Beaufort Scale	(m/s)	Allowable occurrence
Safety (Distress)	General public	B7	15	0.025%
Uncomfortable	General public	B6	14.1	0.01%
10	Pedestrian Business Walking	B5	10.95	6%
9	Pedestrian Walking around Buildings	B5	10.95	2%
8, 7	Pedestrian Walk through	B4	8.25	4%
6	Entrances/ Standing	B3	5.6	6%
5	Sitting	B3	5.6	3%

Table 8—2 The Beaufort scale for wind on land

Beaufort Force	Hourly-average wind speed (m/s)	Description of wind	Noticeable wind effect
B0	< 0.45	Calm	Smoke rises vertically
B1	0.45 - 1.55	Light air	Direction shown by smoke drift but not by vanes
B2	1.55 - 3.35	Gentle breeze	Wind felt on face; leaves rustle; wind vane moves
B3	3.35 - 5.60	Light breeze	Leaves & twigs in motion; wind extends a flag
B4	5.60 - 8.25	Moderate breeze	Raises dust and loose paper; small branches move
B5	8.25 – 10.95	Fresh breeze	Small trees, in leaf, sway
B6	10.95 - 14.10	Strong breeze	Large branches begin to move; telephone wires whistle
B7	14.10 - 17.20	Near gale	Whole trees in motion
B8	17.20 - 20.80	Gale	Twigs break off; personal progress impeded
B9	20.80 - 24.35	Strong gale	Slight structural damage; chimney pots removed
B10	24.35 - 28.40	Storm	Trees uprooted; considerable structural damage
B11	28.40 - 32.40	Violent storm	Damage is widespread; unusual in the U.K
B12	> 32.40	Hurricane	Countryside is devastated; only occurs in tropical countries

- 8.23. Uncomfortable conditions are experienced at wind speeds above Beaufort B6. Additional mitigation for these areas will be of benefit and will improve comfort conditions. Wind speeds above Beaufort B7 indicate that conditions are not suitable for pedestrian activities to be carried out safely, and therefore mitigation will be required in these cases in order to bring conditions to within safe limits.

Receptor Sensitivity

- 8.24. Sensitive receptors in respect of wind microclimate are the pedestrians using the site and the occupants of the Proposed Development and surrounding buildings. Their sensitivity and the magnitude of any change will determine the significance of impact. Sensitivity to wind is dependent upon the activity undertaken, in line with the LCC, as presented in Table 8—3.

Table 8—3 Urban pedestrian activities for sensitivity evaluation, in order of increasing sensitivity

Receptor Sensitivity	Activity
Negligible	Areas with non-pedestrian activities
Low	Pedestrian walkthrough, roads and car parks
Moderate	Entrance doors, pedestrian standing, walkthrough
High	Sitting, entrance doors

Effect Significance

- 8.25. The impact on sensitive receptors (i.e. pedestrians) is split into the categories below.
- 8.26. A major impact is one that impacts the safety of the receptors, i.e. that breaches the safety criteria described in Table 8—1, and is considered to be of major significance for the purposes of this assessment. These types of impacts will require detailed and careful mitigation.
- 8.27. Moderate and minor impacts are not considered to cause significant effects. However, in order to reduce the impacts further and improve the comfort of receptors, mitigation measures to reduce the effects from moderate (uncomfortable) to minor (tolerable/negligible) have been specified as appropriate.
- 8.28. The assessment of significance refers to the LCC as set out in Table 8-1. To determine the significance of the impact of the Proposed Development on the wind environment, comparison can be made with the conditions on the existing site. However, because the pedestrian use of a site can change markedly pre- and post-development, it is considered that assessment based upon the suitability of the site for the desired pedestrian use is the most informative and relevant.
- 8.29. The criteria used to assess the nature of the wind impacts are as follows:
- Adverse – detrimental or negative impacts to an environmental resource or receptor compared with the baseline or the intended use of the site; or
 - Beneficial – advantageous or positive impact to an environmental resource or receptor compared with the baseline or the intended use of the site.

Table 8—4 Significance Criteria

Significance	Description
Major	Any impact that affects safety (or distress)
Moderate	Any impact affecting pedestrian comfort where conditions change from suitable for existing activities to unsuitable for proposed activities is to be considered moderate, and vice versa for positive impacts
Minor	Conditions that are marginal with respect to the criteria or criteria are met during key seasons only
Negligible	No or minimal impact on conditions that are likely to be experienced

Limitations and Assumptions

- 8.30. This section defines the different aspects of this type of study the CFD approach follow and the assumptions and limitation of the study. Consideration is given to the characteristics of the local area to facilitate assessment. A wind frequency analysis of the site is carried out and from this analysis all wind directions are analysed. The results of this assessment are then available to assist the overall design process.

Computational Fluid Dynamics (CFD) Modelling Assumptions

Approach

- 8.31. The physical layout of the site as described was analysed using a 3D CFD model. CFD modelling involves the solution of the fundamental equations of fluid motion using numerical techniques. The region of interest is divided into numerous small volumes, or cells, and equations are solved within each cell. Values of the variables that are solved in the model are determined in each cell and so a comprehensive assessment of velocity variation within the calculation domain is obtained. To improve the resolution of the results, the computational cell size has been reduced in the areas of most interest. This ensures that large gradients of velocity at street level are modelled accurately.

Model Extents and Detail

- 8.32. The drawings and models are described in detail within this section. For buildings outside the development boundary, a 3D context model was acquired from Zmapping, this has been simplified and updated to match footprints and building heights from aerial survey data. The proposed buildings have been modelled accordingly to the information provided and mentioned in the baseline Section. These buildings have been merged with the Zmapping information and simplified accordingly for CFD modelling purposes.
- 8.33. The CFD model is contained within one single domain. This domain includes the Proposed Development and the surrounding buildings and features, around which the wind environment is analysed. Surrounding buildings and terrain were included in the model up to a radius of 400m from the centre of the domain. A total simulation domain of radius 800m was modelled. This distance is appropriate as it explicitly contains all buildings and structures surrounding the Proposed Development that are likely to affect the wind flows around it.
- 8.34. The typical edge length of the computational cells in this domain is approximately 1 to 3m, with greater cell sizes at points further from the development buildings. A refined layer of cells exists adjacent to the ground, to allow for an accurate prediction of pedestrian level wind speeds. The total number of computational cells is approximately 9 million for this study. Roughness has been applied in the outer region beyond the modelled buildings, to account for the presence of buildings and terrain features.

Atmospheric Boundary Layer

- 8.35. The upwind boundaries of the CFD model were prescribed with an atmospheric velocity and turbulence profile corresponding to natural winds. The atmospheric velocity profile was modelled using a log-law, based on communications with ANSYS (i.e. the developers of the CFX CFD software used). This log-law is also described in reference [3].
- 8.36. The downwind and upper boundaries were represented as pressure opening boundaries. These are representative of the atmosphere surrounding the proposed development. They allow air to be entrained into the model domain or air to flow out of the domain.
- 8.37. For each wind direction, a single, steady-state RANS (Reynolds Averaged Navier-Stokes) calculation was undertaken using the commercial ANSYS CFX software. Turbulence was modelled using an SST model, with a production limiter used to ensure realistic flow predictions close to stagnation points. This method allows for the assessment of mean wind speeds for the development.

Wind Data Analysis

- 8.38. For analysis of wind behaviour, it is necessary to know the relevant wind data for the case. Velocity fluctuation and directional variance are hard to measure accurately.
- 8.39. Both the wind speed frequency and its direction are required for this assessment. This data is commonly presented in the form of wind speed and wind frequency distribution diagrams (wind roses). Data is usually provided for average hourly wind speeds at 10m above ground level. This data is monitored and recorded from meteorological stations all over England and reported by the Met Office.
- 8.40. Good quality, long-term weather data is available from Manchester Airport. The wind data from Manchester Airport was translated to meteorological standard terrain (open country) and then to the proposed site. The method used was the method set out in "The Designer's guide to wind loading of building structures, Part 1" (1985), N.J. Cook. This allows for the sheltering effect of neighbouring terrain but does not allow for channelling of wind, for instance due to rivers and valleys. This effect is not expected to dominate conditions here. The resultant wind rose is included in the figures supporting this report.

Direction Frequency

- 8.41. Figure 8- and Figure 8- show the annual and seasonal directional velocity distribution for the proposed site, once the wind has been translated from Manchester Airport. This shows the direction the wind is blowing from, with long bars representing frequent winds and wider bars representing stronger winds.
- 8.42. The wind speed for the site can be established for both comfort and safety analysis based on a frequency of occurrence as indicated in Table 8-1.
- 8.43. As can be seen from Figure 8-1 and Figure 8-2, the prevailing wind across Manchester is from the south and southwest, with some lesser contribution from all other directions. During the spring and winter there are some contributions from the northeast.
- 8.44. Wind speeds are generally highest in the winter with the seasonal pattern showing a very similar range of wind directions for winter, spring and autumn. Summer has southerly and westerly prevailing winds with the highest speeds from the south and southwest.

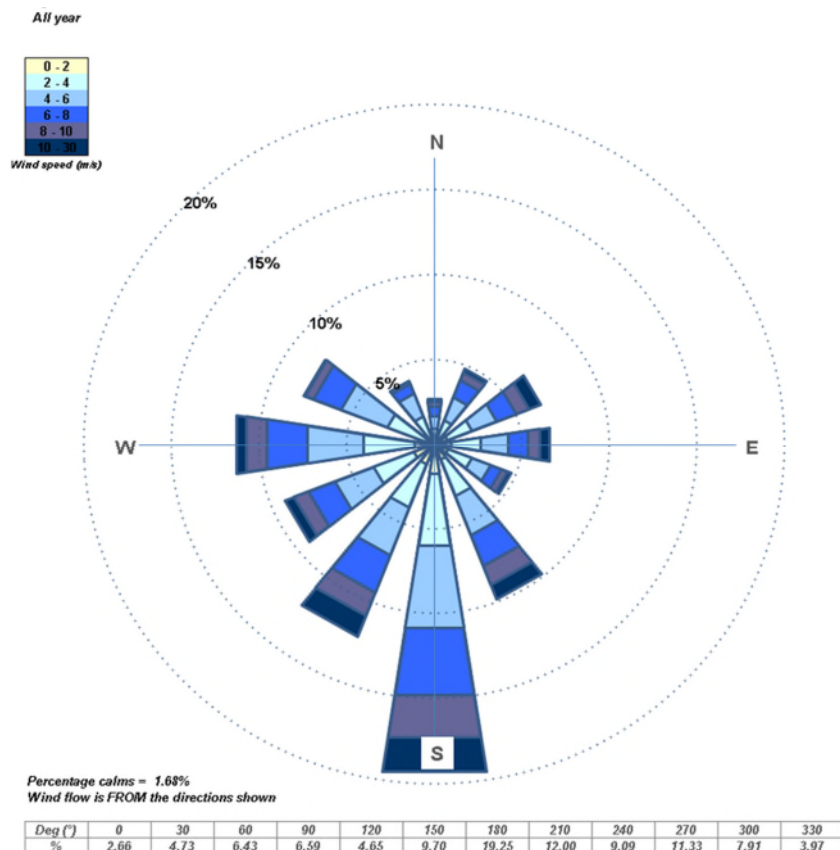


Figure 8-1 Annual wind rose for the development site

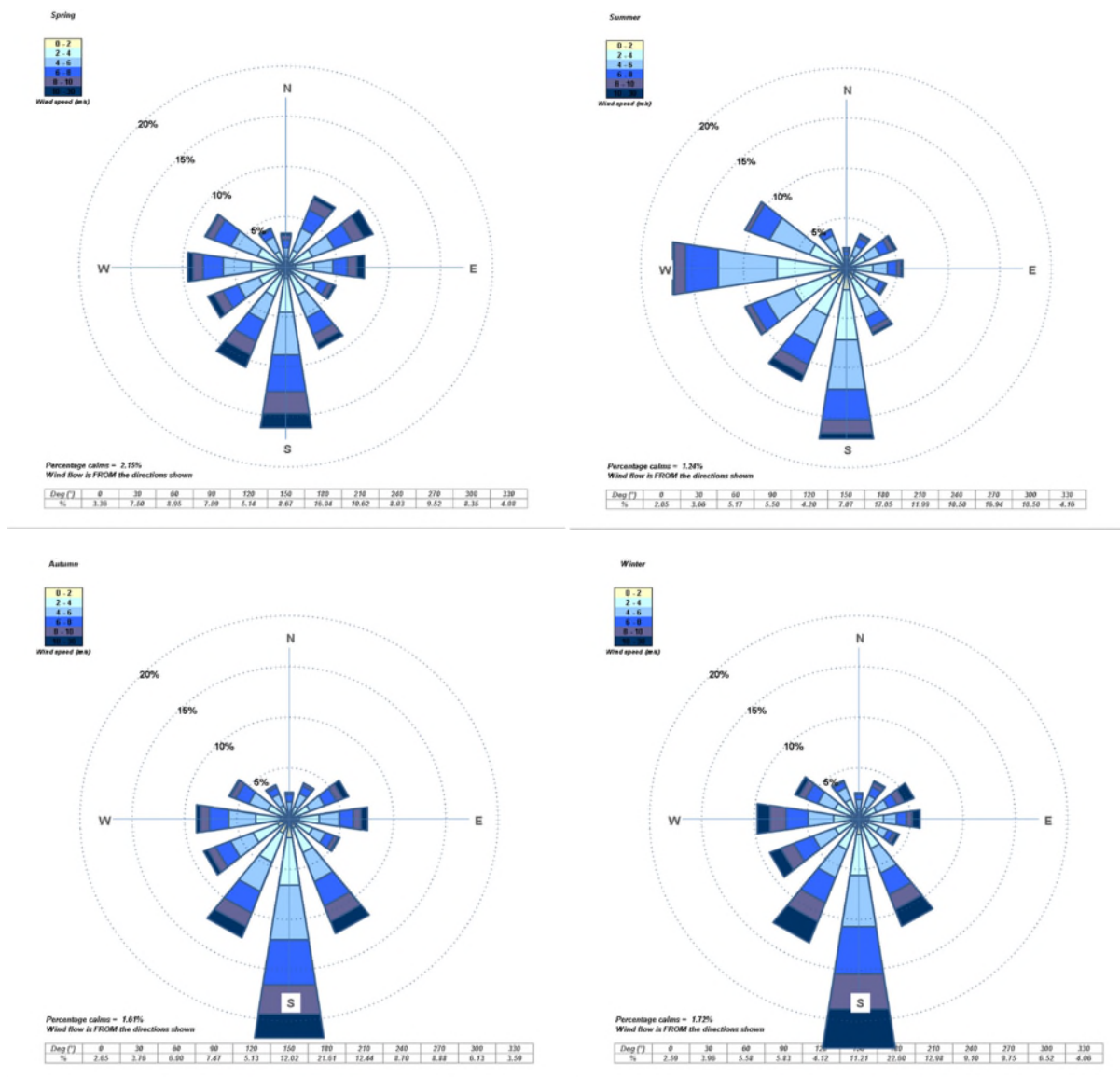


Figure 8-2 Seasonal wind roses for the development site

Limitations

- 8.45. Future surrounding buildings are based on information available and current planning Permissions, as summarised in Appendix 2.2. If these buildings are amended in the future, the effects could alter for the cumulative scenario. However, any future changes will need to be subject to an appropriate wind assessment as part of any amendment planning application for each relevant scheme.

Baseline Conditions Geometry

- 8.46. The site location is shown in 8-3 and images of the modelled geometry in the CFD model are shown in Figure 8-5 (Configuration 1) and Figure 8-6 (Configuration 2).
- 8.47. The site is bound to the east by Oxford Road, to the north by the Mancunian Way, Manchester Metropolitan University's Faculty of Business and Law to the west, and All Saints Park to the south.



Figure 8-3 Site location

- 8.48. The existing site comprises the All Saints Library Building, a seven storey brick building, currently used as a library facility for students and staff of Manchester Metropolitan University.
- 8.49. The existing immediate surroundings comprise low rise buildings of approximately 2 to 3 storeys in height to the east, on the opposite side of Oxford Road. To the south, All Saints Park provides public realm, surrounded by Manchester Metropolitan University Buildings, and St Augustine's Church. To the west, there are further University buildings, and student accommodation. To the north, Mancunian Way runs east to west, and to the north of that, the Manchester Metropolitan University John R Dalton Building and Circle Square.



Figure 8-4 Site location and surrounding buildings

- 8.50. A quantitative assessment of the likely wind environment has been performed via CFD simulations, based on Revit model provided by the design team labelled: 1044B-HBA-ZZ-ZZ-M3-A-001_P06.rvt and the surrounding buildings generated by Zmapping provider.

- 8.51. This section studies the comfort and safety of pedestrians in the baseline condition, i.e. the existing site within existing surroundings. The modelled geometry for the baseline scenario is shown below in Figure 8-5 Modelled Baseline geometry, existing site in existing surroundings, which includes the following:
- Existing Site: current All Saints Library Building
 - Existing Surroundings: surroundings buildings, including also the adjacent southeast MMU Business School, the MMU Science and Engineering Building (LPA Planning Ref. 125799/FO/2019), All Saints Park (LPA Planning Ref. 128485/FO/2020) and 3 Circle Square (LPA Planning Ref. 134288/FO/2022); as well as the adjacent All Saints Park, surrounding infrastructure and terrain

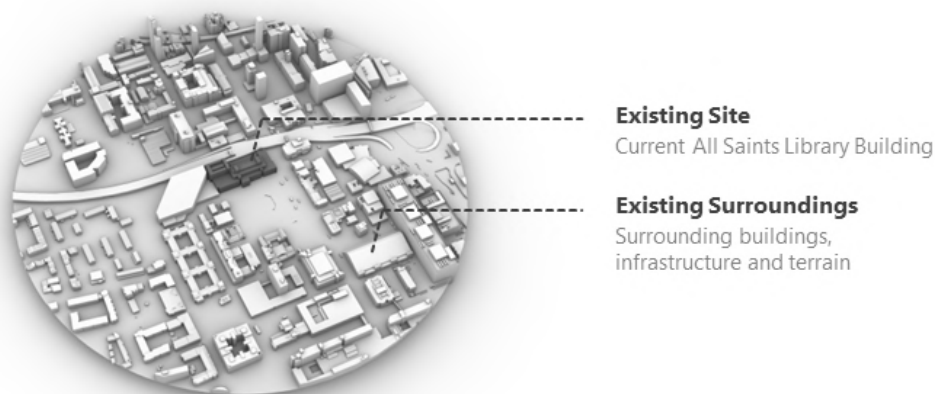
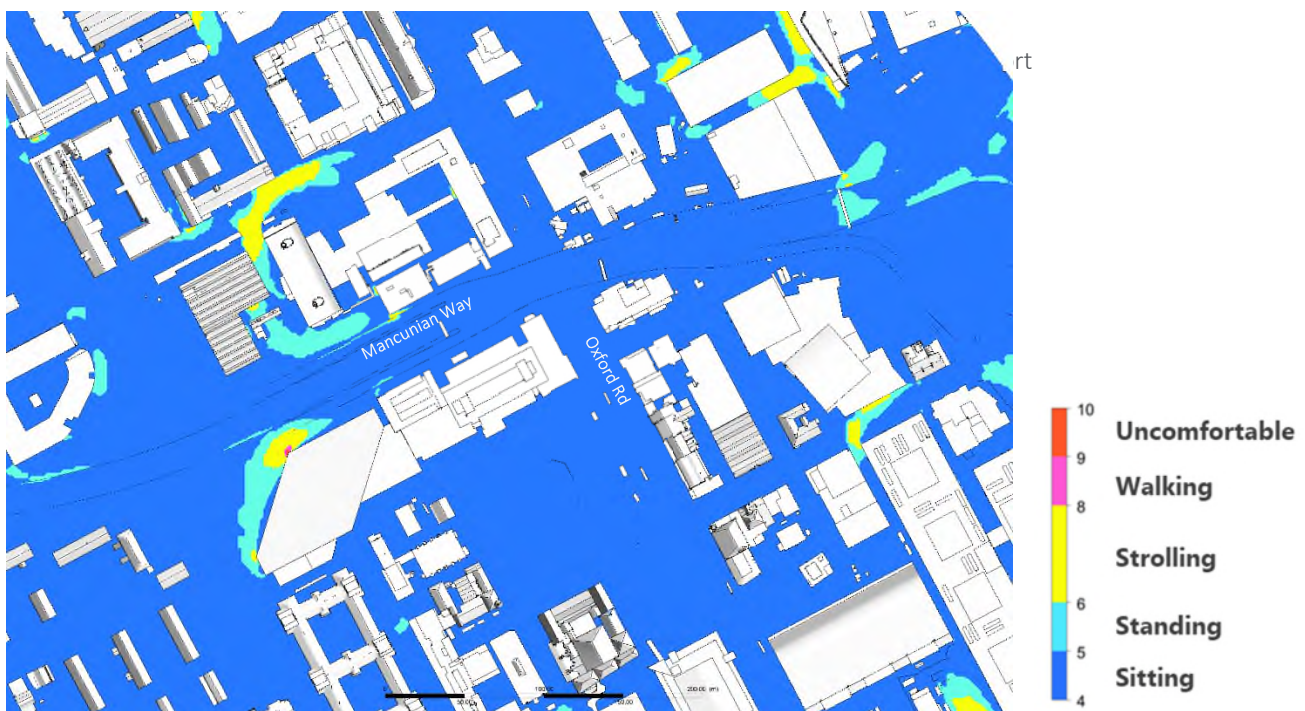
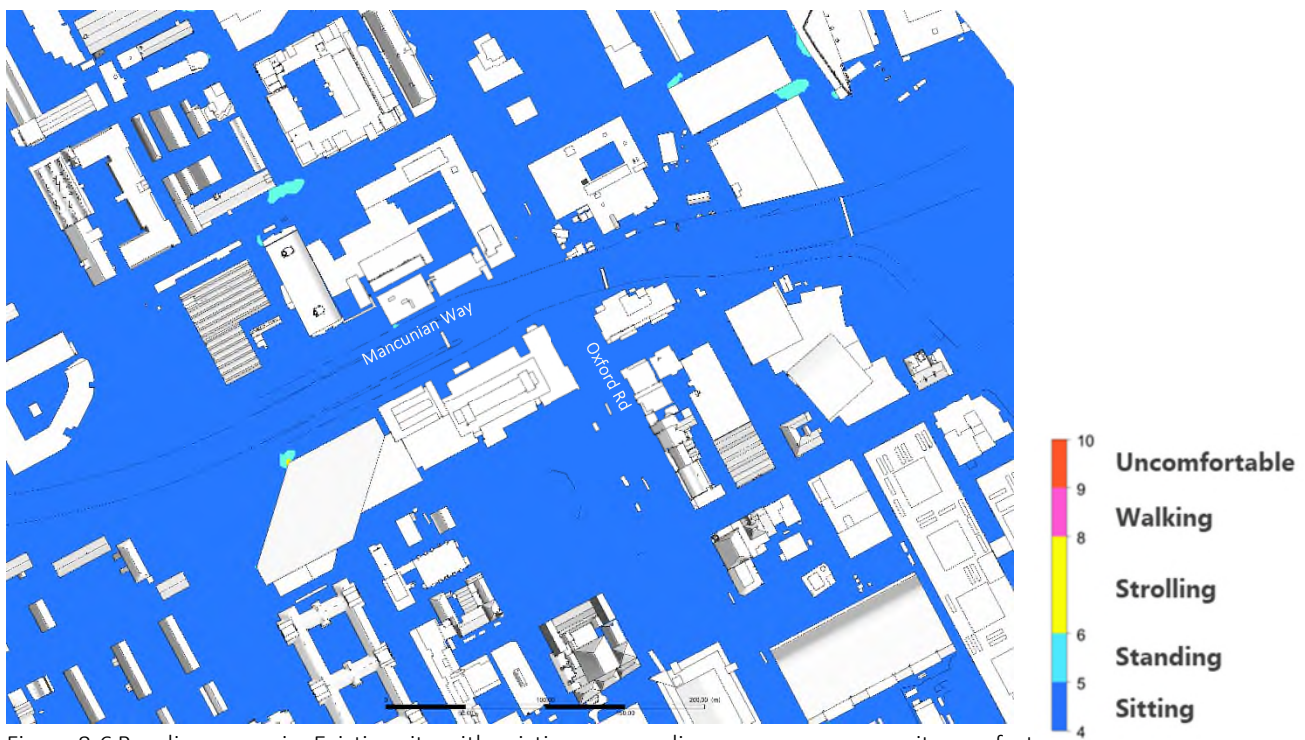


Figure 8-5 Modelled Baseline geometry, existing site in existing surroundings.

Wind conditions Baseline

- 8.52. The wind conditions have been analysed for the whole year, as well as for the summer and winter season. The latter are presented and discussed below.
- 8.53. The summer comfort map for the existing site is shown in Figure 8-6 Wind speeds are shown to be suitable for pedestrian sitting across the whole site. Sitting areas identified at All Saints Park show suitable sitting conditions.
- 8.54. In the summer season (Figure 8-6), a small area immediately adjacent to the northwest corner of the MMU Business School shows conditions that are more suited for sitting, with exception of the northwest corner of the Business School Building that shows suitable conditions for strolling activities.
- 8.55. Conditions are more exposed during the winter season, as expected. However, as can be seen from the winter comfort map in Figure 0-17, the conditions on the Site itself are in the comfortable range for sitting during the winter as well.
- 8.56. Thoroughfares areas around neighbouring buildings show windier conditions during the winter (windiest season) (Figure 0-17). However, they maintain acceptable conditions for the planned activity. The MMU Business School shows standing conditions along most of the north(western) facades and strolling conditions locally at the northwestern corner. Directly adjacent to the corner, conditions are expected to be windy, however within acceptable conditions for the planned Walking category. Furthermore, opposite of the Mancunian Way, an area of Standing conditions can be seen to the south and west of the MMU Faculty of Science and Engineering, while Strolling conditions prevail around its northwestern corner.
- 8.57. Bus stops around Oxford Road and Higher Cambridge St show conditions below (more comfortable than) the planned criteria, sitting in winter. All crossroads and entrances of around the Business school Building show suitable conditions with a category ranging from sitting and standing.



Identification and Evaluation of Significant Effects

- 8.58. This section studies the comfort and safety of pedestrians in the proposed scenario with existing surroundings. The modelled geometry for this scenario is shown in Figure 8-8. This includes:
- Proposed Development: new library building with outdoor terraces
 - Existing Surroundings: surroundings buildings, including also the adjacent southeast MMU Business School, the MMU Science and Engineering Building (LPA Planning Ref. 125799/FO/2019), All Saints Park (LPA Planning Ref. 128485/FO/2020) and 3 Circle Square (LPA Planning Ref. 134288/FO/2022); as well as the adjacent All Saints Park, surrounding infrastructure and terrain
- 8.59. The wind conditions have been analysed for the whole year, as well as for the summer and winter season. These are presented and discussed below.

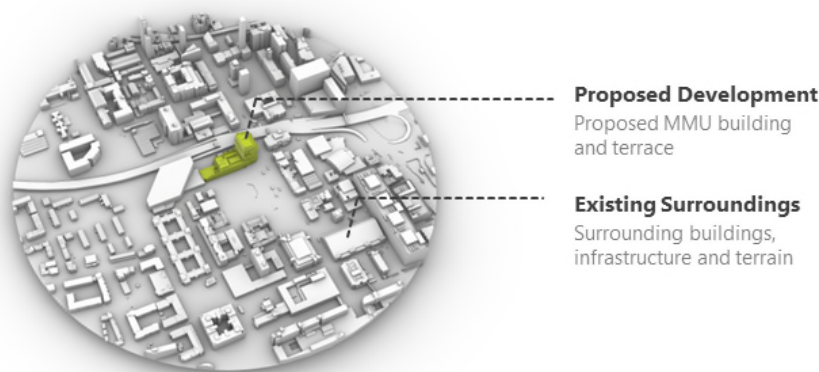


Figure 8-8 Modelled Proposed geometry, proposed site in existing surroundings

Relevant Aspects of the Scheme

- 8.60. For neighbouring buildings and thoroughfares, the likely pedestrian activity will be strolling and business walking. The wind conditions at the All Saints Park will also be assessed against the Sitting and Standing comfort criteria. For the Proposed Development, information regarding the intended usage of different areas and indicative building plots is taken from the design information provided by the design team. This includes the building entrances (see Figure 8-9), primary pedestrian thoroughfares along the site (marked in Figure 8-11) and additional areas where outdoor activities are likely to take place, such as the terraces (see Figure 8-10).
- 8.61. The Southern entrance is the Main Entrance to the Proposed building (including for visitors / general public). As this entrance also lies at the intersection of the All Saints Park, a lot of pedestrian activity is expected here. This will be mainly Strolling, as well as Sitting in the park itself. Locally at the Main Entrance, Standing will also be a common pedestrian activity. The New East Entrance will also feature Standing and Strolling / Walking activity along Oxford Rd, and around the MMU Business School. Some smaller amounts of Standing and Walking activity will take place at the North-West entrance and Mancunian Way.
- 8.62. The Proposed Building also includes some elevated terraces, which are highlighted in Figure 8-10. The intended usage for these is Sitting and Standing.
- 8.63. The remaining surrounding areas to the buildings which are not mentioned above are intended as circulations and would require conditions suitable for pedestrian walkthrough and are identified as thoroughfares.

The image below summarises the assumed entrance usage considered for students during the peak period, as agreed with MMU and H\B on 24.05.2023.

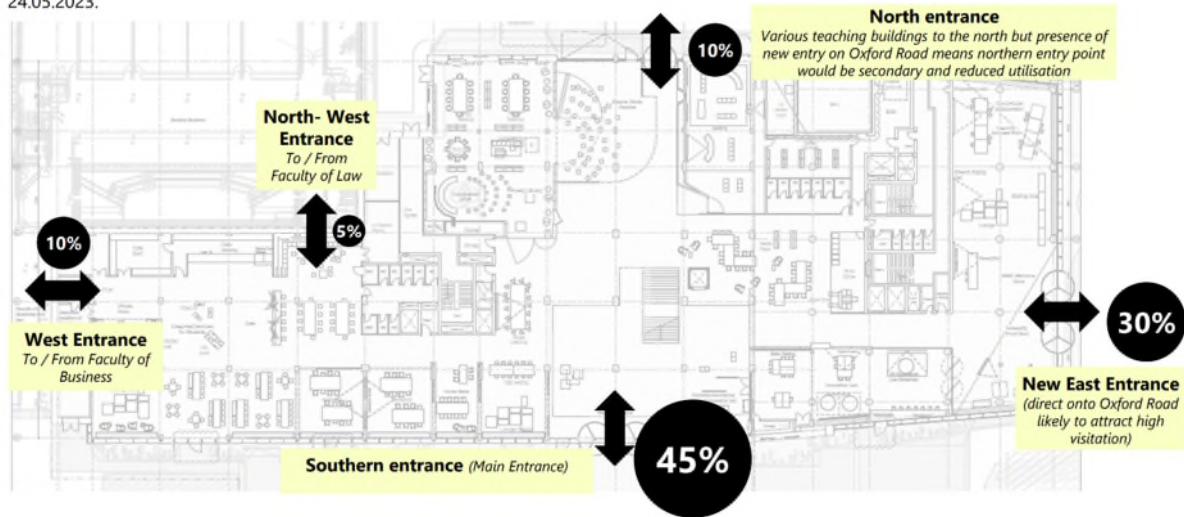


Figure 8-9 Entrance locations (MMU Library, People Flow Study - Final Report, 01/08/2023)

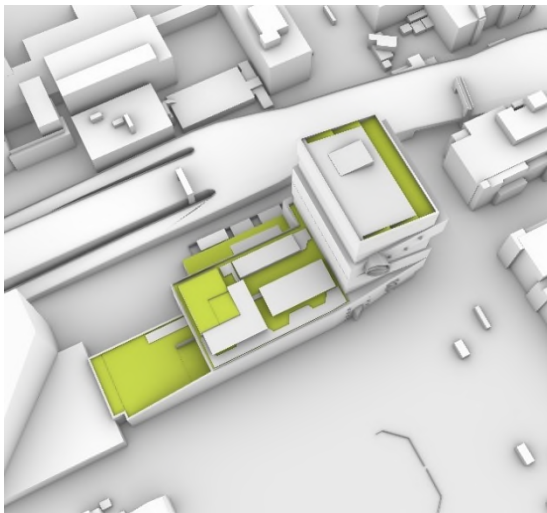


Figure 8-10 Terraces on Proposed Building (highlighted in green)

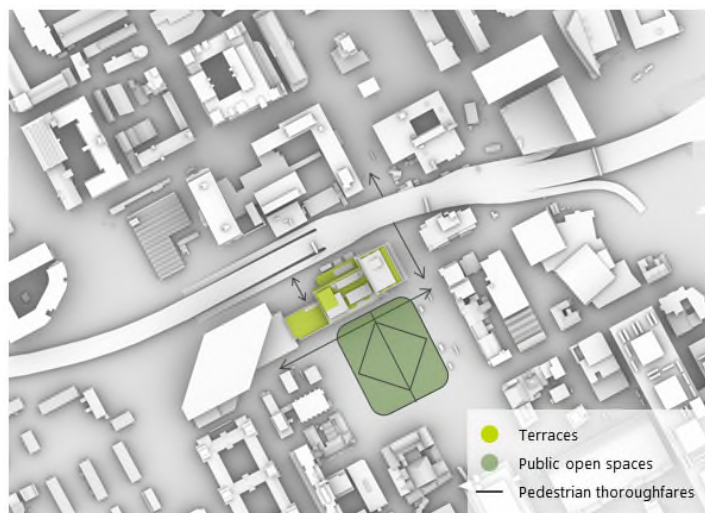


Figure 8-11 Pedestrian Thoroughfares and Public Spaces

Potential Effects of the Development and Their Significance (Within the Site Boundary)

Table 8-5 Impact significance matrix

Receptor	Sensitivity	Description of effect	Magnitude of change/impact	Effect significance
Seating areas, public open spaces, terraces	Moderate - High	Negligible	Negligible	Negligible
Standing areas, entrances, bus stops, standing areas	Moderate	Slightly windier winter conditions nearby New East and North-West Entrance	Negligible	Negligible (conditions remain comfortable for intended use)
		Negligible at other entrances / bus stops	Negligible	Negligible

Receptor	Sensitivity	Description of effect	Magnitude of change/impact	Effect significance
Thoroughfares	Low	Negligible for summer conditions Wind acceleration at eastern corner of Proposed Building in winter scenario Wind acceleration to the north of Proposed Building (on Mancunian Way)	Negligible Minor adverse Minor adverse	Negligible Minor adverse (conditions remain in comfortable ranges for standing to walking) Minor adverse (conditions remain in comfortable ranges for standing to walking)
Safety exceedances	High	No exceedance of safety criteria	Negligible	Negligible

Wind Effects on Pedestrian Comfort

Thoroughfares

- 8.64. The summer comfort map for the Proposed scenario (Proposed Development in existing surroundings) is shown in Figure 8-. The summer wind conditions of the Proposed scenario do not show any major differences from the Baseline conditions on the site - mostly within sitting category - with exception of the northwest corner of the Business School Building that shows suitable conditions for strolling activities.
- 8.65. Conditions are more exposed during winter, as expected. The winter comfort map for the Proposed Development in the existing surroundings is shown in Figure 8-. The thoroughfares along the southeastern façade and across the All Saints Park still show suitable conditions; one or two categories below the planned activity, walking. Towards the east corner of the Proposed Building on Oxford Rd, wind corner acceleration is shown, however, conditions show suitable for standing and strolling.
- 8.66. In a similar way, the thoroughfare along the northeastern façade (on Oxford Rd) does show a clear impact due to the southeastern building corner of the Proposed Development. However, the conditions remain within the comfortable ranges from sitting to strolling.
- 8.67. The west area of the Business School Building shows suitable conditions for standing to strolling, with exception of the west corner, a small area of acceleration similar to the baseline suitable for walking.

Entrances and Bus stops

- 8.68. The summer wind conditions at all the building entrances (see marked in Figure 8-) are within the comfortable range for the intended use. The summer scenario does not show any impact on the assessed entrances due to the construction of the Proposed Development.
- 8.69. Windier conditions are found during winter (shown in Figure 8-) nearby the New East and North-West Entrance, but the entrances remain within the comfortable range for their intended Standing use.
- 8.70. Bus stops are suitable for the planned activity from sitting to standing conditions.

Sitting Areas

- 8.71. Summer wind conditions show sitting areas identified at All Saints Park suitable for sitting activity.

Terraces

- 8.72. The wind conditions on the Proposed Development's external terraces are shown in Figure 8- for the summer conditions. Comfortable conditions for Sitting are expected across all the terraces in the summer scenario. Overall, it can be concluded that the terrace conditions are within the acceptable range for their intended use.

Surroundings

- 8.73. The slightly windier winter conditions that were found along the northwestern façade of the MMU Business School in the Baseline scenario and around the MMU Faculty of Science and Engineering across Mancunian Way remain similar in extent and comfort classification range in the Proposed scenario.
- 8.74. Overall, the assessment shows no major impacts due to the Proposed Development on the surrounding circulation zones.

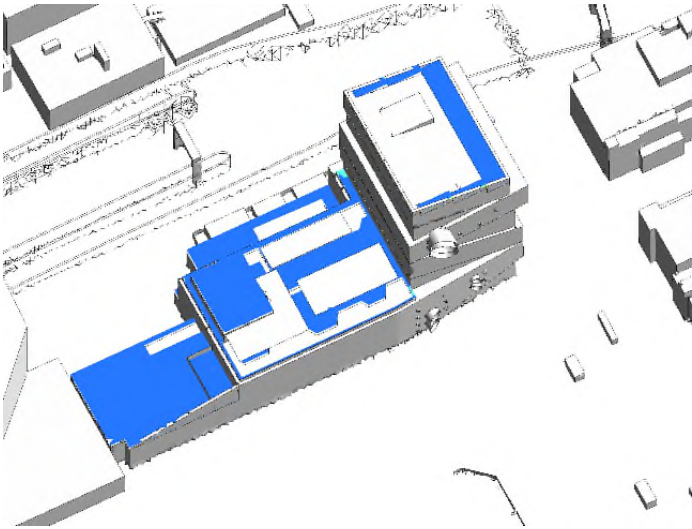


Figure 8-12 Proposed scenario: Proposed Development in existing surroundings - comfort on Terraces in summer

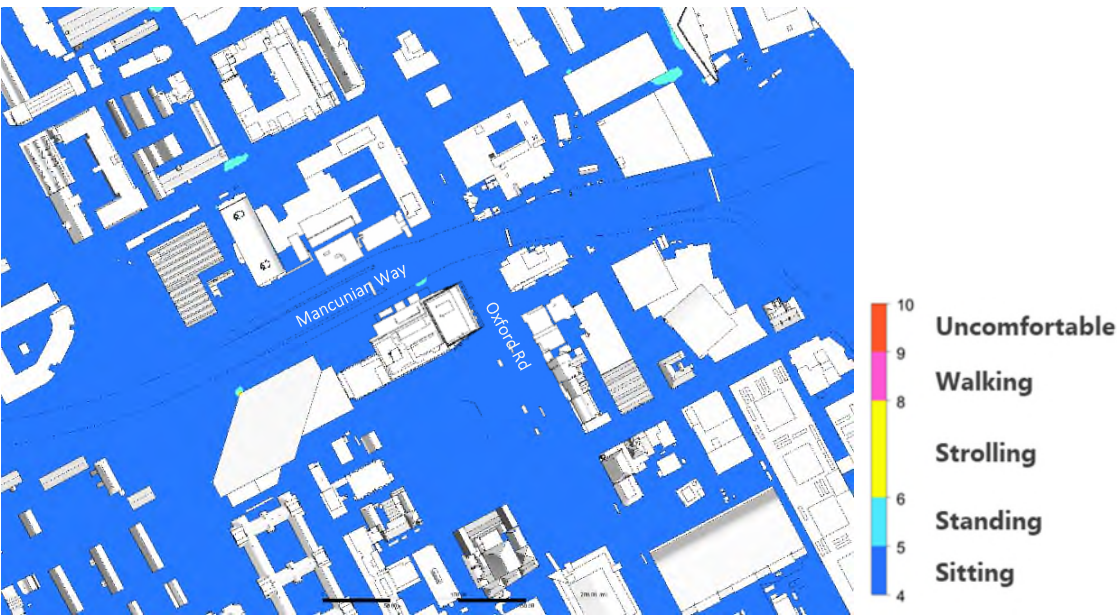


Figure 8-13 Proposed scenario: Proposed Development in existing surroundings - summer composite comfort map

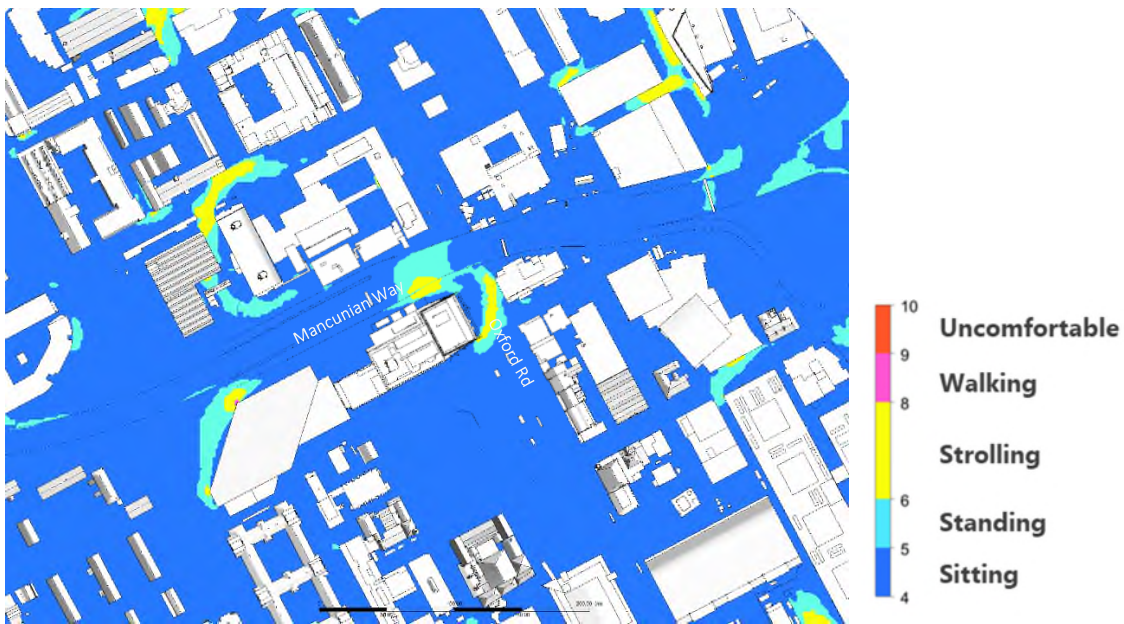
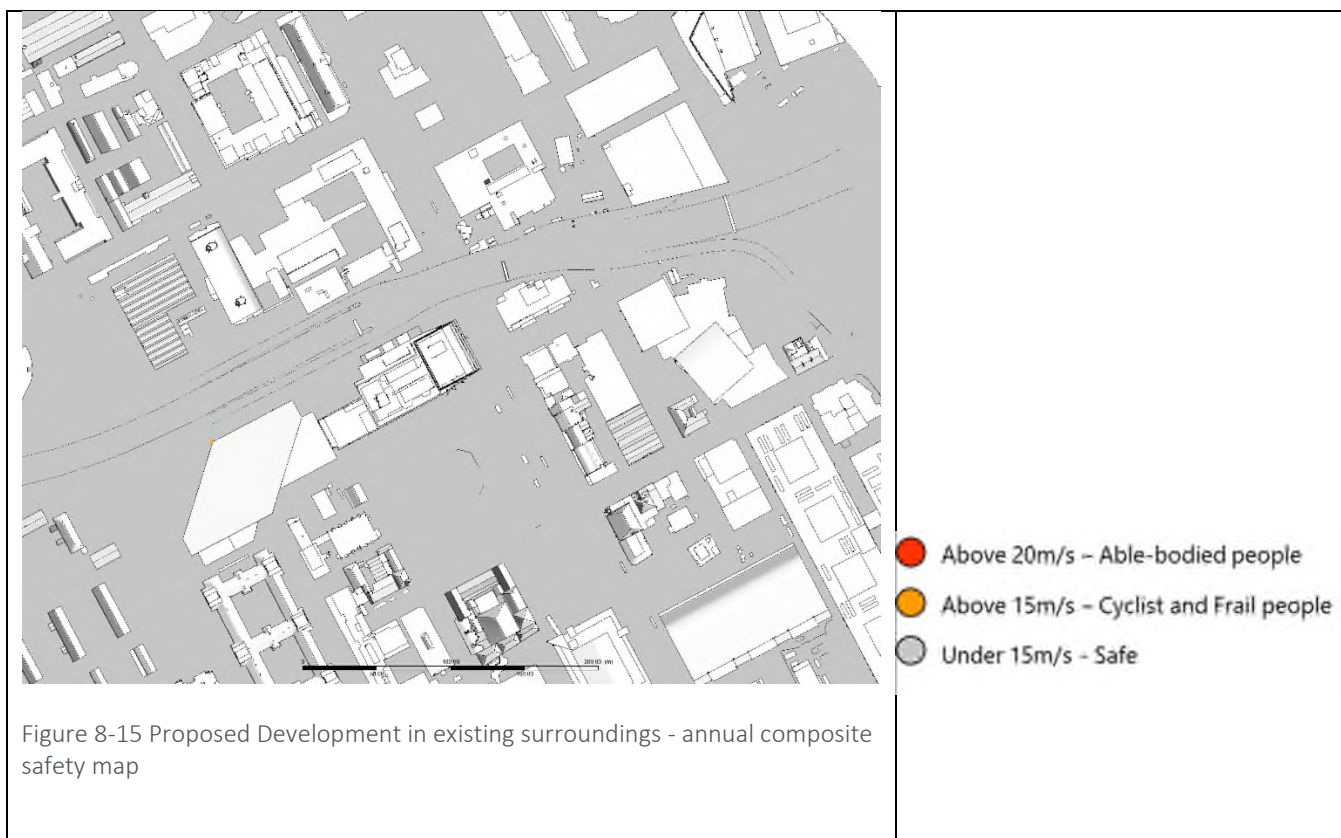


Figure 8-14 Proposed scenario: Proposed Development in existing surroundings - winter composite comfort map

Wind Effects on Pedestrian Safety

8.75. 8-15 shows the annual composite safety map for the Proposed scenario with existing surroundings. As can be seen, the safety criteria are not exceeded and mitigations are therefore not necessary.



Mitigation Measures

8.76. No mitigation is required.

Cumulative Effects

- 8.77. Considering that the only future building in the vicinity is 137 Oxford Road, and its alterations include just one additional level and a modest façade extension of approximately 3 meters, it's noteworthy that the overall structure will have a total of five stories after these changes. This adjustment is deemed to exert a minimal influence on the wind dynamics around the given plot, in the full analysis context.
- 8.78. The planned 137 Oxford Road development (LPA Planning Ref 128837/FO/2020) is positioned 100 meters southeast of the proposed development site, and its impact on the anticipated wind conditions, stemming from the introduction of the proposed development, is projected to be negligible.
- 8.79. In light of the previously mentioned points, a qualitative evaluation of the forthcoming surrounding scenario is considered appropriate and valid. An additional Cumulative Effects (Proposed Development in cumulative surroundings) scenario was therefore deemed unnecessary.
- 8.80. Based on Experience and previous assessments in Manchester, the small changes explained above on 137 Oxford Road, with the introduction of the proposed development are likely to produce the same results as the proposed development scenario due the combination of wind directions and the mild wind conditions evaluated around 137 Oxford Road suitable for sitting. These conditions are likely to remain the same due the small change of the massing of the cumulative plot.
- 8.81. In the case of the effects in proximity to the proposed development, the wind effects that are shown in the existing surroundings scenario will not be affected by 137 Oxford Road's cumulative changes, these will likely remain the same due the orientation and distance of 137 Oxford Road from the proposed building. The cumulative plot also shows a relative shelter from the easterly wind directions towards the proposed development.

Reference List

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

- The UK wide National Planning Policy Framework (NPPF)
- Manchester's Local Development Framework, Core Strategy Development Plan Document, July 2012.
- T. V. Lawson, Wind Effects on Buildings, Applied Science Publishers, 1980

Note on Design Changes Since Wind Assessment in this Report

8.83. The design changes up date (12th October 2023) and since the undertaking of this wind assessment are, to the best of our knowledge, limited and are not expected to alter the conclusions with regards to the wind conditions on the site as outlined in this report. Figure 8-16 shows the building massing in the Stage 3 S4 Report (Document number: 1044B-HBA-ZZ-XX-RP-A-00H111) from Hawkins Brown Architects LLP & Schmidt Hammer Lassen Architects (29 September 2023) and the CFD model used in this wind assessment respectively.

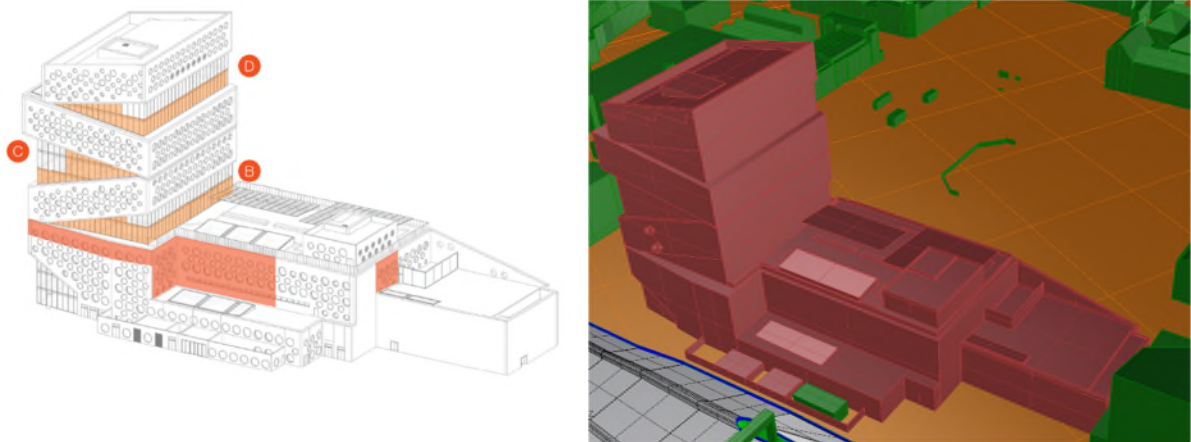


Figure 8-16 Building design to date (left) versus CFD model used in wind assessment (right)

9. Summary of Residual Impacts

9.1. This chapter summarises residual impact expected as a result of the Proposed Development. Mitigations measures identified will be captured through the use of planning conditions on any planning permission that is granted.

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (i.e. Temporary/Permanent)
Minor adverse of Embodied carbon associated with the product stage (A1-A3)	The global atmosphere	Put in place a commitment to reduce lifecycle embodied carbon by 10% compared to the business-as-usual baseline. The business-as-usual baseline is defined as the design of the residential or commercial unit using current standard best practice construction materials and techniques. An appropriate baseline should be defined for the proposed development, taking into consideration industry benchmarks set by LETI and RIBA, and reduction secured through further design refinement. Reduce the demand for materials with a high carbon footprint (such as concrete), especially in the production and transport stages of the lifecycle of the proposed development (e.g. using cement replacement) Explore the use of off-site modular construction to consolidate delivery requirements, and for energy efficient assembly and minimising site installation process. Review opportunities to minimise internal finishes such as dry lining, ceilings and decorative floor screeds / covering where not technically required (e.g. for acoustics or fire protection), opting for fair faced finishes instead.	Developer / Contractor	Negligible
Minor adverse of Embodied carbon associated with the construction process stage (A4-A5)	The global atmosphere	Implement a travel plan for site staff Temporary electrical supply connection to minimise the use of on-site diesel generators.	Developer / Contractor Contractor. To be included as part of the Construction Management Plan.	Negligible
Minor adverse effect of Embodied carbon associated with the in-use stage for the Proposed Development (B1-B5)	The global atmosphere	Put in place a commitment to reduce lifecycle embodied carbon by 10% compared to the business-as-usual baseline. The business-as-usual baseline is defined as the design of the residential or commercial unit using current standard best practice construction materials and techniques. An appropriate baseline should be defined for the proposed development, taking into consideration	Developer / Contractor	Negligible

		industry benchmarks set by LETI and RIBA, and reduction secured through further design refinement. Minimise the use of materials that require more frequent replacement or refurbishment (such as carpets and floor coverings). Extend the longevity of the materials (e.g., specifying appliances with extended warranty and lifespan).		
Minor adverse effect of operational energy for the Proposed Development (B6)	The global atmosphere	Where any electrical equipment (e.g., oven, white goods etc.) is being installed by the house builder, identify unregulated energy loads and demonstrate reduction through specifying energy efficient equipment. Specify a target year for net zero carbon emissions in operation, well ahead of the UK's trajectory to net zero in 2050.	Developer / Contractor	Negligible
Major adverse effect of operational water (B7)	The global atmosphere	Specify the use of water meters to measure water consumption. Explore the feasibility of specifying rainwater harvesting in order to reduce potable water consumption. Specify water saving devices, such as low flush toilets and showers to reduce water consumption associated with the proposed development. Grey and/or rain water harvesting to supply non-potable demand within the buildings. Specify landscaping that does not require irrigation in order to reduce unregulated water consumption.	Developer / Contractor	Minor adverse
Moderate adverse effect of GHG emissions associated with the End of life stage (C1-C5)	The global atmosphere	Put in place a commitment to reduce lifecycle embodied carbon by 10% compared to the business-as-usual baseline. The business-as-usual baseline is defined as the design of the residential or commercial unit using current standard best practice construction materials and techniques. An appropriate baseline should be defined for the proposed development, taking into consideration industry benchmarks set by LETI and RIBA, and reduction secured through further design refinement. Circular economy principles to be considered for the project to identify opportunities to maximise material recovery at the end of life.	Developer / Contractor	Minor adverse

Table 9-6 Summary of residual risks ratings based on probability and consequence taking into account mitigation measures

Risk	Probability rating (1-5)	Consequence rating (1-7)	Risk rating
Rainstorm	5	1	5
Heavy snow	2	2	4
Fog	5	1	5
Hail	5	1	5
Severe wind	3	2	6
Extra tropical storm	3	3	9
Lightning	4	1	4
Extreme winter conditions	2	3	6
Cold wave	2	3	6
Extreme cold days	2	3	6
Heat waves	4	3	12
Extreme hot days	5	2	10
Drought	4	2	8
Flash/surface flood	3	4	12
River flood	2	3	6
Groundwater flood	2	3	6
Subsidence	1	6	6
Water-borne disease	2	3	6
Vector borne disease	2	4	8
Air-borne disease	2	3	6
Insect infestation	2	3	6

Townscape and Visual Impact

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (i.e. Temporary/Permanent)
Construction Phase				
Direct, temporary, short-term adverse effects on surrounding townscape.	Townscape Character, Building Height, Urban Grain, Movement & Access & Public Open Space.	Table 3.10 Traffic Management Plan to minimise disruption to local movement network – Construction techniques to minimise noise and vibration to surrounding areas of public realm. Perimeter fencing protecting surrounding area from changes to site character from construction works.	Construction Management and Phasing Plan + Traffic Management Plan.	Direct, temporary, short-term, adverse effect which are considered to be of minor significance.

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (i.e. Temporary/Permanent)
Direct, temporary, short-term adverse effect on surrounding townscape.	Site Character	Table 3.10 Construction techniques to minimise noise and vibration to surrounding areas of public realm. Perimeter fencing protecting surrounding area from changes to site character from construction works.	Construction Management and Phasing Plan	Direct, temporary, short-term, adverse effect which is considered to be of moderate significance .
Direct, temporary, short-term adverse effect on views. Views of construction works, magnitude of effects increasing as taller building elements are constructed. Construction activities at lower levels screened by tree canopies.	Viewpoints 1,5,6,7 & 8	Table 3.10 – Visual impacts of construction activities minimised through material storage generally contained within the site boundary and erection of perimeter fencing to a specified standard. Wider external environment protected by ensuring delivery wagons leave the site clean and tidy with regular cleaning of Oxford Road using road sweepers.	Construction Management and Phasing Plan	Direct, temporary, short-term adverse effects which are considered to be not significant.
Direct, temporary, short-term adverse effect on views. Views of construction works above existing trees, increasing as taller building elements are constructed. Construction activities at lower levels screened by tree canopies.	Viewpoints 2,3	As above	Construction Management and Phasing Plan	Direct, temporary, short-term, adverse effects which are considered to be of minor significance.
Direct, temporary, short-term adverse effect on views. Views of construction works beyond the elevated roadway increasing as taller building elements are constructed. Construction activities at lower levels partially screened by tree canopies and infrastructure.	Viewpoint 4	As above	Construction Management and Phasing Plan	Direct, temporary, short-term, adverse effect which has moderate significance .
Operational Phase				
Long-term, beneficial effects on Townscape receptors.	Townscape Character, Urban Grain & Building Height, Movement & Linkages, Public Open Space.	Para 3.117 Embedded Mitigation. Building form & Massing tower forms a local and city-wide landmark. Landscape creating a sense of place - retained existing mature trees and new public realm.	Design & Access Statement + Design Drawings	Long-term, beneficial effects which are considered to have minor significance.
Long-term, beneficial effects on Townscape receptors.	Site Character.	Para 3.117 Embedded Mitigation. Building form & Massing tower forms a local and city-wide landmark. Landscape creating a sense of place - retained existing mature trees and new public realm.	Design & Access Statement + Design Drawings	Long-term, beneficial effect which are considered to have moderate significance .
Long-term, beneficial effects on Visual receptors. Minor, glimpsed view of the taller building element.	View 7	Para 3.117 Embedded Mitigation. Architectural and Landscape design & materiality	Design & Access Statement + Design Drawings	Long-term, effect which is considered to be not significant
Long-term, beneficial effects on Visual receptors.	Views 3,5,6 & 8	Para 3.117 Embedded Mitigation. Architectural and Landscape design & materiality	Design & Access Statement + Design Drawings	Long-term, beneficial effects which are

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (i.e. Temporary/Permanent)
				considered to have minor significance.
Long-term, beneficial effects on Visual receptors. Clear change in the view. The Proposed Scheme will be a prominent new building.	Views 1,2 & 4	Para 3.117 Embedded Mitigation. Architectural and Landscape design & materiality	Design & Access Statement + Design Drawings	Long-term, beneficial effects which are considered to be moderately significant .

Wind Microclimate

Likely Significant Effect	Receptor	Mitigation Measure	Means of Implementation	Post Mitigation Residual Effect – Significance and Duration (i.e. Temporary/Permanent)
Construction Phase				
Negligible	All	None	None	Negligible
Operational Phase				
Negligible	Seating areas, public open spaces, terraces	None	None	Negligible
Negligible	Standing areas, entrances, bus stops, standing areas	None	None	Negligible
Negligible	Thoroughfares	None	None	Negligible
Negligible	Safety exceedances	None	None	Negligible

10. Type 1 Cumulative Effects

- 10.1. This section gives consideration to 'Type 1' cumulative effects.
- 10.2. The assessment is informed by the results of the technical assessments as set out in Chapter 6 - 8 of the ES.
- 10.3. Type 1 cumulative effects are also known as 'inter-project' effects, which are the combined effects arising from the Proposed Development upon a set of defined sensitive receptors.
- 10.4. Type 2 cumulative effects are considered within the ES technical chapters. The technical chapters also had regard to the potential for Type 1 cumulative effects, however for robustness the results of a standalone assessment of these is provided below. The standalone assessment is based on the professional opinion and experience of Deloitte, in its capacity as the EIA coordinator.

Legislation, Policy and Guidance

Legislation

- 10.5. There is no legislation outlining how cumulative effects should be assessed or determined as significant. However, there is a requirement in Part 1, Schedule 4 of the EIA Regulations to consider cumulative effects. Cumulative is not defined in the EIA Directive or Regulations however a dictionary definition is 'increasing by one addition after another'.
- 10.6. The EIA Regulations require 'a description of the likely significant effects', including cumulative effects.
- 10.7. In the context of this assessment, 'cumulative effects' refers to the interactions between different likely residual effects resulting from the Proposed Development (Type 1). Both positive and negative effects are considered across the construction and operational phases.

Policy

- 10.8. As this chapter considers the cumulative effects of the technical areas within the ES, all relevant policy has already been reviewed within the individual technical chapters.

Guidance

- 10.9. A number of guidance documents which relate to assessing cumulative effects have been used to inform the assessment and include:
- European Commission (EC) Environment DG (May 1999), 'Study on the Assessment of Indirect and Cumulative Impacts as well as Impact Interaction', Hyder Consulting; and
 - Institute of Environmental Management and Assessment (1992), Guidelines for the Environmental Assessment of Road Traffic.
- 10.10. The EC guidelines 'are not intended to be formal or prescriptive, but are designed to assist EIA practitioners in developing an approach which is appropriate to a project'.
- 10.11. Paragraph 24 of the National Planning Practice Guidance (NPPG) (Reference ID: 4-024-20170728) outlines the consideration to be given to cumulative effects in the context of EIA: *"Each application (or request for a screening opinion) should be considered on its own merits. There are occasions, however, when other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a Proposed Development. The local planning authorities should always have regard to the possible cumulative effects arising from any existing or approved development."*

Assessment Methodology and Significance Criteria

Methodology

- 10.12. This assessment is primarily concerned with where there is a likelihood of significant Type 1 cumulative effects occurring, in accordance with EIA practice and the NPPG guidance.

- 10.13. The assessment is based on experience and professional judgement, drawing upon relevant guidance set out above and the residual environmental effects identified within the results of the EIA technical assessments and, as relevant, the non-technical reports.
- 10.14. The assessment has been undertaken by suitably qualified and experienced EIA practitioners. The assessment has primarily focused on sensitive receptors identified within close proximity to the EIA Site (e.g. local residents and businesses located in close proximity to the EIA Site), likely cumulative effects, and their capacity to accommodate changes that will occur as a result of the combined residual environmental effects.
- 10.15. Relevant guidance has been reviewed, and an approach has been developed which uses the residual environmental effects identified within the ES. An exercise which tabulates the residual effects against receptors or receptor groups has then been carried out in order to identify the potential for Type 1 cumulative effects.
- 10.16. Negligible or neutral residual effects have been excluded from the assessment as, by their nature, they are considered to be imperceptible. Therefore, only minor, moderate or major effects have been given consideration during the assessment.
- 10.17. For the purposes of the assessment, receptor groups have been identified as those surrounding the EIA Site and those identified within the individual technical assessments.

Significance Criteria

- 10.18. The following terms have been used to define the significance of the effects identified:
- Major effect: where the Proposed Development could be expected to have a very significant effect (either positive or negative) cumulatively;
 - Moderate effect: where the Proposed Development could be expected to have a noticeable effect (either positive or negative) cumulatively;
 - Minor effect: where the Proposed Development could be expected to result in a small, barely noticeable effect (either positive or negative) cumulatively; and
 - Negligible: where no discernible effect is expected as a result of the Proposed Development cumulatively.
- 10.19. The significance level attributed to each effect has been assessed based on the magnitude of change due to the combination of residual effects and the sensitivity of the affected receptor/receiving environment to change, as outlined in Chapter 2 of the ES. Magnitude of change is assessed on a scale of major, moderate, minor and negligible and the sensitivity of the affected receptor/receiving environment is assessed on a scale of high, medium, low and negligible.

Limitations and Assumptions

- 10.20. Due to the reliance on qualitative data and subjective opinion, there are limitations related to the range and depth in which the cumulative effects have been investigated. It must be realised that analysing the cumulative effects of developments is often speculative and cannot be predicted as clearly as individual effects such as the effects upon traffic of a development, which relies heavily upon quantitative data to inform the assessment.
- 10.21. As a result, a number of assumptions have been made throughout in terms of the outcome of the accumulation of effects and based upon professional judgement. This section and the assessment process of identifying the likely significant Type 1 cumulative effects have, however, provided a reasoned consideration of and insight into the potentially significant Type 1 cumulative effects of the Proposed Development.

Identification of Likely Significant Type 1 Cumulative Effects

Construction Phase

- 10.22. Based on the methodology detailed above, Table 10.1 presents the results of the review of the potential for interactions of individual effects during the construction phase of development. The potential effect interactions are then discussed further.

Table 10-1 Potential Interactions

Sensitive Receptor Group	Construction Phase Residual Effects	Likely Significant Cumulative Effects
Economic Growth and Employment	Moderate Beneficial impact on local employment during the construction phase (temporary).	No in combination effects.
Local Residents	Minor adverse impacts during the construction phase (temporary).	No in combination effects.
Carbon Emissions	Moderate adverse due to materials and vehicle movements required (temporary)	No in combination effects.
Townscape	Minor to moderate adverse impacts on the townscape and key views during the construction phase (temporary)	No in combination effects.

10.23. Table 10.1 shows that there are unlikely to be in-combination construction phase Type 1 cumulative effects.

Operational Phase

10.24. Based on the methodology detailed above, Table 10.2 presents the results of the review of the potential for interactions of individual effects during the construction phase of development. The potential effect interactions are then discussed further.

Table 10-2 Potential Interactions

Sensitive Receptor Group	Construction Phase Residual Effects	Likely Significant Cumulative Effects
Economic Growth and Employment	Minor beneficial impact from the jobs created as a result of the Proposed Developments (permanent).	No in combination effects.
Social Infrastructure	Minor adverse impact due to the increased number of students who may need to use the facilities (permanent).	No in combination effects.
Local Residents	Minor adverse acoustic impacts during the operational phase (permanent). Negligible impact on the daylight and sunlight experienced by local residents	Minor to moderate adverse impact.
Carbon Emissions	Minor to moderate adverse impact on carbon emissions and climate change (permanent)	No in combination effects.
Townscape	Minor to moderate beneficial impact on the surrounding townscape and key views.	No in combination effects.
Open Spaces	Negligible impact on the sunlight received at All Saints Square (permanent).	No in combination effects.

10.25. Table 10.2 shows that there is potential for in-combination operational phase Type 1 Cumulative Effects to arise in relation to local residents. The interaction between residual daylight sunlight, and noise effects of the proposals on

local residents is complex and varied, depending upon a range of factors such as the specific location of the residents. As such, it is not likely that one typical effect can be concluded, and a range of cumulative effects might be expected as shown. Although at times adverse effects may be experienced, it is not considered that these are significant and such effects will be appropriately controlled through the design and planning processes, and specific measures subject to planning conditions as appropriate. The effects must also be viewed within the much broader context of any adverse impacts being very localised to immediately surrounding buildings and that overall this is a small proportion of the surrounding neighbourhood and wider City Centre.

Mitigation Measures

- 10.26. Where relevant, the individual residual effects which contribute to the potential cumulation have been considered within the ES and mitigated where necessary and feasible.



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