



No.3, Circle Square Environmental Statement

July 2022

Contents

1.	Introduction	2
2.	EIA Methodology	8
3.	Site Description and Proposed Development	15
4.	Alternatives and Design Evolution	20
5.	Construction Phasing and Methodology	24
6.	Climate Change	31
7.	Daylight, Sunlight and Overshadowing	43
8.	Townscape and Visual Impact	57
9.	Water Quality, Drainage and Flood Risk	76
10.	Wind Microclimate	90
11.	Type 1 Cumulative Effects	105
12.	Summary of Residual Impacts	109

1. Introduction

- 1.1. This Environmental Statement (ES) accompanies an application for Full Planning Permission being submitted by Bruntwood Circle Square 12 Ltd (“the Applicant”) for the redevelopment of No. 3 Circle Square, Plot 12 of the Circle Square Masterplan, Oxford Road, Manchester (the “Site”). The Applicant is seeking Planning Permission for the erection of a 15 storey office building, new public realm and associated works, including back of house and ancillary areas. (“the Proposed Development”).
- 1.2. The Site is bounded by Newman Street (formerly Brancaster Road) to the north, Princess Street to the east, Cloak Street and the Mancunian Way to the south and Manchester Technology Centre to the West.
- 1.3. The Site is located at the southern edge of Manchester City Centre. It is within the Circle Square Masterplan. It is part of a wider vision to provide a mixed-use neighbourhood in the area, creating inspiring workspace, stylish living space, and innovative retail and leisure all centred on a new city park. The Site has previously been known as Plot 12 of the Circle Square Masterplan but is now known as No.3 Circle Square.
- 1.4. A rare opportunity for large scale, comprehensive regeneration within Manchester City Centre arose in 2009 when the BBC announced that they would be relocating from their existing base at New Broadcasting House, Oxford Road to MediaCity:UK in Salford Quays. The Former BBC Site is around 4 hectares and is bounded by Oxford Road, the River Medlock and Princess Street, the Mancunian Way and Charles Street. In order to ensure that any development on the Site would contribute to the sustained economic growth and competitiveness of the City and deliver employment-led regeneration, Manchester City Council’s Executive Committee endorsed a Strategic Regeneration Framework (SRF) in July 2013.
- 1.5. Bruntwood acquired the Masterplan Site in March 2015 and developed, with their development partner, a concept Masterplan to deliver on this vision. This proposed a comprehensive, employment-led mixed use redevelopment of the Site seeking to deliver some 1.2 million sq ft commercial office space; other business/research space; a new residential neighbourhood; ground floor retail and leisure space; and a series of public realm interventions that would see the Site becoming a vibrant new district, legibly connecting in to the wider city centre fabric. The Masterplan was endorsed in April 2015. The buildings that form Phase 1 of the Masterplan have now been completed.
- 1.6. The Proposed Development assessed as part of this EIA represents Phase 2 of the Masterplan and comprises a stand-alone application for Plot 12 of the Masterplan, ensuring a robust assessment of the future impact of the Proposed Development against the baseline and emerging on-site context. Subject to planning permission being granted, construction of the Proposed Development will commence with initial works in Q4 2022, with an anticipated completion date of end of 2024.
- 1.7. The Site benefits from an Extant Consent (ref: 125451/FO/2019 (as amended). approved by Manchester City Council in February 2020 for a Ground Plus 14 storey office building with ground floor commercial units. This application was supported by an Environmental Statement and suite of technical assessments that concluded that the proposal was acceptable and of an appropriate scale and massing.
- 1.8. This ES sets out the findings of an Environmental Impact Assessment (“EIA”) carried out in respect of the development of the Site.
- 1.9. The Proposed Development, as outlined in detail at Chapter 3 of this Environmental Statement (“ES”), is hereafter referred to as the “Proposed Development”.

Requirements for EIA

- 1.10. The EIA process is the mechanism by which development proposals are appraised in terms of their likely environmental and socio-economic effects, in addition to engineering and technical considerations.
- 1.11. The purpose of the EIA is to establish the nature of the Proposed Development and the environment in which it is likely to take place, during both construction and operational phases, so as to identify the likely significant effects on the environment. The assessment compares the existing situation at the start of the work (baseline) with the situation once the proposals are in place.
- 1.12. The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the “EIA Regulations”) require that any Proposed Development falling within the description of a ‘Schedule 2 development’, within the meaning of the Regulations, will be subject to an EIA where such development is likely to have ‘significant’ effects on the environment by virtue of such factors as its nature, size or location (Regulation 4(2)).

- 1.13. The Proposed Development falls under the category of “Infrastructure Projects” (Schedule 2, 10, (b)) where:
- The development includes more than 1 hectare of urban development which is not dwellinghouse development; or
 - The development includes more than 150 dwellings; or
 - The overall area of the development exceeds 5 hectares.
- 1.14. An EIA has been carried out on the basis that the Proposed Development has the potential to give rise to significant effects on the environment.
- 1.15. A formal Request for an EIA Screening and Scoping request was submitted to MCC on 30 May 2022 following ongoing liaison with the Local Planning Authority regarding the Scope of the ES. We have received a number of responses and a full formal response is due to be received following submission of the planning application.
- 1.16. In accordance with the EIA Regulations, this ES sets out the following information:
- A description of the Proposed Development comprising information about its nature, size and scale;
 - The data necessary to identify and assess the main effects that the Proposed Development is likely to have on the environment;
 - A description of the likely significant effects, direct and indirect on the environment, explained by reference to the Proposed Development’s possible impact on human beings, flora, fauna, soil, water, air, climate, cultural heritage, landscape and the interaction between any of the foregoing material assets;
 - Where significant adverse effects are identified with respect to any of the foregoing, mitigation measures have been proposed in order to avoid, reduce or remedy those effects; and
 - Summary, in non-technical language, of the information specified above.

Project Team

- 1.17. Details of the EIA Technical Team are set out in the table below:

Table 1.1 EIA Technical Team

Expertise	Consultant	Qualifications
Applicant	Bruntwood Circle Square 12 Ltd	
EIA Coordination and Town Planning	Deloitte	Members of CIWEM and ICE, IEMA
Climate Change	Elemental	MIEMA, CEnv
Sunlight, Daylight and Overshadowing	GIA	Members of the RICS
Townscape and Visual Impact	Planit	CMLI (Chartered Member of the Landscape Institute)
Water Quality, Drainage and Flood Risk	Curtins	Members of CIWEM and ICE
Wind Microclimate	Nove Fluid Mechanics	MEng ACGI PhD MRAeS

Organisation of the Environmental Statement

- 1.18. This ES comprises 11 chapters and is supported by figures (located at the back of each chapter within Volume 1) and technical appendices (within a separate Volume 2). A Non-Technical Summary (NTS) of the full ES is provided as a separate standalone document.

- 1.19. Figures have been referenced using the chapter number as a prefix followed by the number of the figure within a given chapter. Appendices have been referenced in the same way but due to their size they are contained separately in Volume 2.
- 1.20. Table 1.2 sets out the structure of the ES.

Table 1.2 Environmental Statement

Chapter	Chapter Title	Description
Volume 1: Following 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.	Site Description and Proposed Development	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.
7.	Daylight, Sunlight and Overshadowing	Assessment of the effect on daylight and sunlight to adjacent receptors.
8.	Townscape and Visual Impact	Assessment of effects relating to townscape and visual impact.
9.	Water Quality, Drainage and Flood Risk	Assessment of effects relating to water quality, including effects relating to drainage and flood risk.
10.	Wind Microclimate	Assessment of effects on the microclimate in terms of wind, including pedestrian comfort levels and safety.
11.	Type 1 Cumulative Effects	Assessment of effects and interaction of effects.
12.	Summary of Residual Impacts	Summary of the effects that remain after mitigation.
Volume 2: Technical Appendices		
Volume 3: Non-Technical Summary		

Volume 2

1.21. Volume 2 of the ES contains the figures and appendices in support of the technical chapters provided in Volume 1.

Table 1.3 Environmental Statement Appendices

Appendices	
Appendix 1.1	Site Location Plan
Appendix 2.1	Cumulative Developments
Appendix 2.2	EIA Scoping Report
Appendix 2.3	MCC Scoping Opinion
Appendix 5.1	Construction Management Plan
Appendix 6.1	Life Cycle Assessment: Concept Design
Appendix 6.2	Environmental Standards Statement
Appendix 7.1	Drawings of the Baseline and Proposed Scenario
Appendix 7.2	Daylight and Sunlight Results for Baseline v Proposed
Appendix 8.1	Townscape Baseline and Assessment Table
Appendix 8.2	Visual Baseline and Assessment Table
Appendix 8.3	TVIA Figures
Appendix 8.4	Views and Photomontages
Appendix 9.1	Flood Risk and Drainage Strategy
Appendix 10.1	Wind Microclimate Study

Table 1.4 Environmental Statement Figures

Figures	
Figure 5.1	Site Logistics
Figure 10.1	Annual and Seasonal Cumulative Probability Distributions at the Site
Figure 10.2	Proposed Soft Landscaping
Figure 10.3	Existing Soft Landscaping
Figure 10.4	Wind Microclimate Summary, Existing Site
Figure 10.5	Wind Microclimate Summary, Future Baseline
Figure 10.6	Wind Microclimate Summary, Proposed Development in Existing Surrounds

Other Documents

1.22. Table 1.5 sets out the list of supporting documents submitted for the planning application in addition to the EIA.

Table 1.5 Supporting Application Documents

Document / Plan	Consultant
Application red-line boundary plan	Bridge Architects
Proposed plans, elevations and sections	Bridge Architects
Accommodation Schedule	Bridge Architects
Design and Access Statement	Bridge Architects
Landscaping Strategy	Planit
Statement of Consultation	Deloitte
Crime Impact Statement	Greater Manchester Police: Design For Security
Environmental Standards Statement including Energy Strategy and BREEAM Pre-Assessment	Crookes Walker and Element Sustainability
Air Quality Assessment	Hoare Lee
Heritage Statement	KM Heritage
Construction Noise and Vibration Assessment	Sandy Brown
Acoustic Planning Report	
Phase 1 Preliminary Risk Assessment	Curtins
Phase 2 Ground investigation	
Television and Radio Baseline Survey	Pager Power
Television and Radio Written Scheme	
Framework Travel Plan	Curtins
Transport Assessment	Curtins
Local Labour Agreement	Bruntwood
Ventilation Strategy	Crookes Walker
Archaeological Desk Based Assessment	Pre-Construct Archaeology
Ecological Assessment	Brookes Ecological
Waste Management Strategy	Curtins

Environmental Statement Availability

- 1.23. The ES is available on Manchester City Council's Public Access website at the following address:
<http://pa.manchester.gov.uk/online-applications/> once the application has been submitted and validated.
- 1.24. For copies of the ES please contact the Manchester Planning Team at Deloitte:
- Circle Square Project Team
Deloitte
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 Development on the environment.

Legislation and Guidance

- 2.2. The ES has been prepared to comply with EIA Regulations, which implement European Council Directive No. 85/337/EEC as amended by Directive 2014/52/EU and entered into force on 17 May 2017.
- 2.3. Reference has also been made to currently available good practice guidance in EIA including:
- Circular 02/99: Environmental Impact Assessment
 - The European Commission's numerous EIA guidance documents available here: <http://ec.europa.eu/environment/eia/eia-support.htm>
 - Guidance on EIA Scoping, European Commission, June 2001.
 - Guidance on Transport Assessment, DCLG and DfT, March 2007.
 - National Planning Practice Guidance – Department for Communities and Local Government (March 2014 and continuously updated as a 'live' resource)
 - Reference has been made to the Institute of Environmental Management and Assessment (IEMA) publications, including:
 - IEMA ES Review Criteria
 - IEMA Guidelines for Environmental Impact Assessment (2004)
 - IEMA Special Report into the State of Environmental Impact Assessment Practice in the UK (2011)
 - IEMA Shaping Quality Development (2015) – IEMA Delivering Quality Development (2016)
 - IEMA Delivering a Proportionate EIA (2017)
- 2.4. The ES has also had regard to the National Planning Policy Framework 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.
- 2.5. It is considered that there is no relevant regional planning policy and guidance of relevance to this ES.
- 2.6. As relevant to the ES technical chapter's scope, methodology and assessment of effects, key local planning policy and guidance documents have been considered. These include:
- Manchester City Council Core Strategy (2012)
 - Saved Unitary Development Plan Policies (1995)
- 2.7. Any additional planning policy or guidance documents considered relevant have been identified within the relevant technical chapters.

Screening, Scoping

- 2.8. A formal Request for an EIA Screening and Scoping request was submitted to MCC on 30 May 2022 following ongoing liaison with the Local Planning Authority regarding the Scope of the ES. We have received a number of responses and a full formal response is due to be received following submission of the planning application.

Consultation

- 2.9. Pre-application consultation to this application has been undertaken. In summary, the following activities have taken place to date:
- Regular dialogue has taken place with Senior Planning Officers at Manchester City Council throughout the design development process.
 - The project team has consulted technical consultees at Manchester City Council including Environmental Health and Highways Officers on the scope and content of their assessments.
 - Local Ward Councillors have been sent details of the proposals and the consultation activities planned.
 - Local residents and businesses within the vicinity of the Site have been invited to attend a consultation event.
- 2.10. Full details are included in the Statement of Consultation submitted in support of this application.

Non-Significant Effects

- 2.11. As part of this scoping process the following topics have been scoped out:
- Acoustics
 - Agricultural Circumstances
 - Archaeology
 - Air Quality
 - Aviation
 - Ecology
 - Electronic Interference - Television, FM Radio and DAB Radio Reception
 - Ground Conditions
 - Heritage
 - Human Health
 - Socio-Economic
 - Transport

Approach to Technical Studies

- 2.12. 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 Development by defining the environmental sensitivities, constraints and opportunities associated with the Site.
- 2.13. 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, Highway Authority, and Environmental Health Department.
- 2.14. The technical studies have been undertaken in accordance with current best practice. Specific guidance used is referenced within each of the respective assessment chapters.
- 2.15. The majority of assessments involved consultations with statutory and non-statutory bodies, desk-based research, site inspections and surveys, impact prediction and mitigation.
- 2.16. The assessment and conclusions of the ES are based on the description of the Proposed Development provided in Chapter 3. The methodology for each technical chapter is provided below.

Structure of Technical Chapters

- 2.17. Each technical chapter of the ES (Chapters 5 to 10) 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 the 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 Development and the ES.
Assessment Methodology and Significance Criteria	This section describes the method or approach employed in the assessment of impacts, the criteria against which the significance of effects has been evaluated, the sources of information used and any technical difficulties encountered. Relevant legislation is also identified.
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 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 Development. A description of the likely effects of the Proposed 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	Type 2 - Cumulative effects, i.e. - those that arise from incremental changes caused by other consented or reasonably foreseeable activities ('committed developments') are considered in each technical chapter as necessary. Type 1 - Cumulative effects are the interactions between effects of the Proposed Development on a single receptor. These are addressed in Chapter 11.
Residual Effects	The residual effects, i.e. the remaining effects of the Proposed 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 Development.

- 2.18. Chapter 5 provides information to allow the construction phase of the Proposed Development to be assessed by the disciplines set out in Chapters 6 to 10.

Assessment and Evaluation of Significant Effects

- 2.19. 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

- 2.20. The methodology for determining the scale, or magnitude of effect as set out in Table 2.2.

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

- 2.21. 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 little ability to absorb change without fundamentally altering its present character, or is of international or national importance.
Low	The receptor/resource is tolerant of change without detriment to its character, is of low or local importance

Significance

- 2.22. 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 derive effect significance.

Table 2.4: Methodology for Assessing Sensitivity

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

- 2.23. 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'.
- 2.24. For the purposes of this ES, an effect will be considered to be 'significant' if it is classed as either 'moderate' or 'major'.

Baseline Conditions

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

Mitigation

- 2.28. Any adverse environmental effects have been considered for mitigation at the design stage and, where practicable, specific measures have been put forward. Measures have been considered based on the following hierarchy of mitigation:
- Avoidance.
 - Reduction.
 - Compensation.
 - Remediation.
 - Enhancement.
- 2.29. Where the effectiveness of the mitigation proposed has been considered uncertain, or where it depends upon assumptions of operating procedures, data and/or professional judgement has been introduced to support these assumptions.

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

Residual Effects

- 2.32. The likely significant effects on the environment, assuming the successful implementation of mitigation measures proposed, have been estimated within each chapter. These are termed 'residual effects'.

Cumulative Effects

- 2.33. Type 2 cumulative effects, i.e. the potential for likely significant effects on the environment resulting from consented or reasonably foreseeable activities or developments in the area, which could lead to potentially significant cumulative effects in conjunction with the Proposed Development ('Committed Developments'), are assessed in each technical chapter.
- 2.34. 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.
- 2.35. Committed Developments are included in **Appendix 2.1**.
- 2.36. In addition, Chapter 11 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 Site remain.
 - Baseline conditions have been established in 2022 from a variety of sources, including historical data, but due to the dynamic nature of certain aspects of the environment, conditions will change during the Proposed Development;
 - Information received from third parties is complete and up to date;
 - The various stages of the Proposed Development will satisfy minimum environmental standards, consistent with contemporary legislation, practice and knowledge;
 - Assessments are based upon, and conclude, the "worst case" effects that would arise from the application as defined by the description of development set out in Chapter 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 Development; and
 - Necessary off-site services infrastructure for the Proposed Development will be provided by statutory undertakers.

Objectivity

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 Description and Proposed Development

Site

- 3.1. The Site is primarily vacant and is bounded by Newman Street (formerly Brancaster Road) to the north, Princess Street to the east, Cloak Street and the Mancunian Way to the south and Manchester Technology Centre to the West.
- 3.2. Part of the Site, where the proposed office building will sit, most recently comprised the construction compound for Sisk, the contractors developing the other plots on the Circle Square Masterplan. It is now cleared and hoarded, awaiting development.
- 3.3. Outside of the hoarding, there is an area of temporary grass adjacent to the MCSP and car parking adjacent to Manchester Technology Centre used by Bruntwood staff, in addition car parking is included under the Mancunian Way again solely used by Bruntwood staff.
- 3.4. Sorton Street and Cloak Street also served as a continuous link through the Site, however both roads have been stopped up. In addition, there is an access off Newman Street to the car parking associated with Manchester Technology Centre.
- 3.5. A substation is located to the south of the Site adjacent to the Mancunian Way. There are no trees on or adjacent to the Site.
- 3.6. A site plan is provided at **Appendix 1.1**.

Surrounding Uses

- 3.7. Circle Square sits at the heart of Manchester Oxford Road Corridor, a hub of scientific research and a home to a growing and thriving community of institutions, students and professionals.
- 3.8. To the west of the Site is Manchester Technology Centre, in use as a commercial office building with retail units located on the ground floor. Bruntwood's 'Hatch' development is located adjacent to the Manchester Technology Centre and beneath the Mancunian Way and provides a range of flexible retail and leisure uses.
- 3.9. Directly to the north of the site is Princess House, the River Medlock and Vita Student, beyond this to the north west is the remainder of Circle Square.
- 3.10. To the east of the Site, beyond Princess Street, lies the University of Manchester North Campus comprising several buildings used for education and research purposes. ID Manchester, a partnership between the University of Manchester and Bruntwood SciTech, will be a world class Innovation District extending from the Charles Street Multistorey Car Park to Manchester Piccadilly Station.

Environmental Designations

Ecology

- 3.11. There are no sites with environmental designations with respect to ecology on the Site. However, the Rochdale Canal Site of Biological Importance (SBI) and Ashton Canal SBI are located approximately 850m north-east of the Site. These are designated for the presence of protected flora species such as floating water-plantain (*Luronium natans*) and grasswrack pondweed (*Potamogeton compressus*). The SBIs in question are of considerable distance from the Site and unlikely to be impacted by Proposed Development.

Flood Risk

- 3.12. As a consequence of the River Medlock bounding the wider Masterplan of Circle Square, to the east of the Site, and the difference in levels across the Site, there are varying flood risk zones. The north and east part of No.3, bounded by Newman and Princess Street respectively, are allocated in Flood Zone 2. The southern part of the Site, bounded by Hawkshaw Street, is in Flood Zone 1.
- 3.13. The Site also falls within the Conurbation Core Critical Drainage Area in the Salford and Trafford Critical Drainage Area (CDA), designated in 2011.

Heritage

- 3.14. The Site does not contain any listed buildings or sit within a Conservation Area.
- 3.15. The Whitworth Street Conservation Area is located to the north of the Masterplan, visible from the Site along Princess Street. There are a number of listed buildings in the vicinity, including inter alia: the Grade II Listed Oddfellows Hall and 94-98 Grosvenor Street to the south, beyond Mancunian Way; the Grade II listed Lass O’Gowrie pub on Charles Street; and Grade II* Palace Hotel, Grade II Listed Oxford Road Station and Grade II Listed Dancehall on Oxford Road.

Air Quality

- 3.16. The Site is located in the Greater Manchester Air Quality Management Area (AQMA).

Site Topography

- 3.17. There are significant level changes across the Site. The lowest point on the Site is on the northern side of the Site at a level of 30.8m AOD. The highest points on the Site are at the southern, western and eastern sides where the level is 33.81m AOD.

Transport and Accessibility

- 3.18. The Site is in a highly accessible location, offering excellent linkages to a variety of modes of transport:
- The Site is in walking distance of a range of employment, shopping, amenity and civic functions within Manchester City Centre.
 - Access to the Inner Ring Road, providing connections to the strategic road network is within 100m of the Site;
 - Located adjacent to the Circle Square MSCP which provides 1,100 secure car parking spaces;
 - The Site is within 300m to Oxford Road Railway Station, which is an important hub on the north-west railway network, and serves destinations throughout Greater Manchester and the north of England. Piccadilly Station, located approximately 400m to the north east of the Site, is a major railway station which not only connects to local and regional services but also national destinations
 - The Manchester Piccadilly Station and St Peter’s Square Metrolink Stations both offer high-frequency services across Greater Manchester, and the network is currently in the process of being expanded.
 - Regular bus services run along Oxford Road. Recently, Oxford Road adjacent to the Masterplan Site has been transformed into a bus and cycle corridor.

The Circle Square Masterplan

- 3.19. A rare opportunity for large scale, comprehensive regeneration within Manchester City Centre arose in 2009 when the BBC announced that they would be relocating from their existing base at New Broadcasting House, Oxford Road to MediaCity:UK in Salford Quays. The Former BBC Site is around 4 hectares and is bounded by Oxford Road, the River Medlock and Princess Street, the Mancunian Way and Charles Street.
- 3.20. In order to ensure that any development on the Site would contribute to the sustained economic growth and competitiveness of the City and deliver employment-led regeneration, Manchester City Council’s Executive Committee endorsed a Strategic Regeneration Framework (SRF) in July 2013. This SRF encompasses the Former BBC Site plus office accommodation to the south of Brancaster Road and Cloak Street at Armstrong House and the Manchester Technology Centre; and Manchester City Council landholdings at the junction of Upper Brook Street / Mancunian Way.
- 3.21. The SRF Vision is:
- “To create a high quality, commercially-led mixed use development which maximises The Site’s employment generation in a manner that contributes to the City’s knowledge economy and in doing so leverages The Site’s location within the Corridor, proximity to major institutions and exceptional accessibility by a range of means of transport. In order to support this principal use of The Site, its redevelopment must create an environment that is sustainable, distinctive, vibrant, incorporates well-designed and managed public realm/ civic spaces, and which is fully integrated into the wider neighbourhood.”*

- 3.22. The SRF highlights that Circle Square is, “viewed as a strategic employment location in the context of the GMS and Manchester Corridor and there will be significant opportunity cost if the site’s potential in this regard is not maximised through an employment-led development.” In endorsing the SRF on 24 July 2013, the Council’s Executive Report notes that:
- “An inability to maximise the enormous potential offered by the site would fundamentally damage ongoing efforts to improve the wider competitiveness and functionality of the city centre as a whole. Only by maximising these strategic opportunities when they present themselves is the City able to drive forward its growth agenda in years to come.”*
- 3.23. Bruntwood acquired the Masterplan Site in March 2015 and developed, with their development partner, a concept Masterplan to deliver on this vision. This proposed a comprehensive, employment-led mixed use redevelopment of the Site seeking to deliver some 1.2 million sq ft commercial office space; other business/research space; a new residential neighbourhood; ground floor retail and leisure space; and a series of public realm interventions that would see the Site becoming a vibrant new district, legibly connecting in to the wider city centre fabric.
- 3.24. In endorsing the masterplan on 14 April 2015, the Council’s Executive Committee Report states:
- “The revised masterplan responds positively to the SRF endorsed in 2013. It would add value by accommodating the new Sir Henry Royce Institute by the University of Manchester, a world-leading facility in the field of advanced materials. The proposals provide the scale to have a catalytic effect on the rest of The Corridor, creating a new community targeted at providing grow-on space for businesses in the knowledge economy; residential accommodation targeted at the young workforce that these companies will employ, academics, mature and foreign students; and a quality retail and leisure offer that is currently lacking from the area.”*
- 3.25. Employment generating uses comprise around 60% of the total new-build floorspace proposed in the masterplan, including around 7% being ground and first floor retail, leisure and food & drink uses. The direct employment outputs (FTE) will be between 9,500 jobs and 11,800 jobs which represents a minimum 52% increase on the employment outputs envisaged in the 2013 SRF (6,262 jobs). At the upper end of the scale, it is an 88% increase.
- 3.26. Fully occupied, the Proposed Development would itself contribute c. 2,200 direct FTE jobs (calculated using the Employment Density Guide 3rd Edition¹).

Masterplan Delivery to-date

- 3.27. The Council’s Executive Committee endorsed a Delivery Strategy and Phasing Plan for the Masterplan Site on 29 July 2015, which set out three development phases. This sought to ensure that development momentum, once commenced, was maintained at all times and that the process of regeneration across the Site is a continuous and coordinated one.
- 3.28. The first intervention was the cessation of the surface car parking use in early August 2015. The second was preparing the Site ahead of its imminent redevelopment. A planning application for these Site Enabling Works was approved by Manchester City Council on 6 October 2015 (Ref: 109647). Following the completion of these Enabling Works in April 2016, the Masterplan Site was a cleared, secure environment capable of accepting development.
- 3.29. Since then, Planning permission has been granted for Phase 1 of the development (summarised in the table below), comprising 1.42m sq ft of floor space set around some of the largest and highest quality areas of public realm in the city. These buildings are now fully operational.

Table 3.1 Masterplan Site Planning History

Phase of Development	Application Reference Number	Description of Development	Date of Approval	Status
Complete				
Enabling Works	109647/FO/2015/C1	Site preparation works including demolition of existing structures on site, removal of below ground structures, re-grading of the site, processing of removed materials, diversion of existing utilities and drainage connections, erection of perimeter hoarding and removal of 5 trees (4 adjacent to River Medlock and 1 adjacent to Brancaster Road)	06/10/2016	Complete

¹ Homes and Communities Agency (2015), *Employment Density Guide 3rd Edition* – Accessed [here](#).

Phase of Development	Application Reference Number	Description of Development	Date of Approval	Status
Phase 1A	110055/FO/2015/C1 (Plots 10 and 11)	Development comprising the erection of 1no. 12 floor serviced apartment building (Sui Generis) (Building 10) (384 units) with ground floor ancillary areas including reception, residents hub and associated facilities and 1no. part 14 floor part 18 floor serviced apartment building (Sui Generis) (Building 11) (220 units) with ground and mezzanine floor ancillary areas including reception, residents hub and amenities, plus commercial units (Use Class A1, A2, A3, A4, B1, D2) and associated access, landscaping and cycle parking facilities to include landscaping to Brancaster Road.	08/01/2016	Complete
Phase 1B	111025/FO/2016/C1 Plots 2, 3 and 4	Blocks 2,3 and 4 - Erection of two buildings (18 and 14 storeys (Blocks 2 and 4)) comprising offices (Class B1) with ground and mezzanine floor commercial uses (Class A1 (shop), A2 (Financial and Professional Services), A3 (Restaurant and Cafe), A4 (Drinking Establishment), B1 (Offices), D1(Non-residential Institutions - Creche only) and D2 (Assembly and Leisure - Gym only)) and rooftop restaurant (Class A3) with associated external terrace (Block 4), creation of public green space with pavilion building (Block 3) for events space / uses within Classes A1, A3, A4, D1(Exhibition Hall / Public Hall only) , D2(Concert Hall / Music Hall only)(Sui Generis) accessed from ground level within basement level below alongside creation of areas of public realm including tree planting and all associated access and servicing.	02/06/2016	Complete
	111026/FO/2016/C1 (Plots 5 and 6)	Blocks 5 and 6 - Erection of part 17, part 36 storey building to comprise 411 residential apartments (Class C3) (14 studios, 136 x 1 bed, 228 x 2 bed and 33 x 3 bed) with mid and top roof level private dining / media room/ gardens, ground and mezzanine floor residential amenity uses including a gym,, plus lower ground, ground and mezzanine level commercial uses (Class A1 (shop), A2 (Financial and Professional Services), A3 (Restaurant and Cafe), A4 (Drinking Establishment), B1 (Offices), D1(Non-residential Institutions Creche only) and D2 (Assembly and Leisure - Gym only)) and associated junction improvements to Oxford Road / Charles Street, access, servicing, and landscaping.	01/07/2016	Complete
	111027/FO/2016/C1 (Plots 7 and 8)	Blocks 7 and 8 - Erection of 17 storey building to comprise 266 residential apartments (Class C3) (14 studios, 56 x 1 bed, 168 x 2 bed and 28 x 3 bed) with top roof level private dining / media room / gardens, ground and mezzanine floor residential amenity uses including a gym and home working lounge, plus ground and mezzanine level commercial uses (Class A1 (shop), A2 (Financial and Professional Services), A3 (Restaurant and Cafe), A4 (Drinking Establishment), B1 (Offices), D1(Non-residential Institutions - creche only) and D2 (Assembly and Leisure - gym only)) and associated access, servicing, and landscaping.	06/07/2016	Complete
	111028/FO/2016/C1 (Plot 14)	Block 14 - Demolition of any existing structures and erection of multi-storey car park (1028 spaces including 50 disabled) in 10 storey building, with ground and mezzanine commercial uses (Class A1 (shop), A2 (Financial and Professional Services), A3 (Restaurant and Cafe), A4 (Drinking Establishment), B1 (Offices), D1(Non-residential Institutions Creche only) and D2 (Assembly and Leisure Gym only)) and associated access, servicing, landscaping and cycle parking facilities.	23/06/2016	Complete

Phase of Development	Application Reference Number	Description of Development	Date of Approval	Status
	113832/FO/2016 (Plot 14)	Block 14 - Demolition of any existing structures and erection of part 12, part 18 storey building to comprise a multi-storey car park (maximum 1,100 spaces including 55 spaces for disabled car users) (ground to 11th floor) a hotel (150 beds) (12th to 17th floor) and an energy centre (ground floor and mezzanine) with ground and mezzanine commercial uses (Class A1 (shop), A2 (Financial and Professional Services), A3 (Restaurant and Cafe), A4 (drinking Establishment), B1 (Offices), D1 (Non-Residential Institutions Creche only) and D2 (Assembly and Leisure Gym only)).	18/11/2016	Complete
Plot 9	114863/FO/2016	Erection of 18 storey serviced apartment building (384 units) with ancillary retail (A1, A2, A3, A4), residents hub and associated access and landscaping.	09/03/2017	Complete
Extant Permissions				
Plot 12 (Now referred to as No. 3 Circle Square)	125451/FO/2019	Erection of new 15 storey building plus basement to include basement plant room, ground floor reception, cycle store and commercial space (flexible Use Classes A1 (Shop), A2 (Financial and Professional Services), A3 (Restaurant and Cafe), A4 (Drinking Establishment), D1 (Non-residential Institutions - Creche only) and D2 (Assembly and Leisure - Gym only) and 14 storeys of offices (Use Class B1) together with rooftop lounge and terrace, associated means of access and external landscaping around base of building	07/02/2020	Extant.

Proposed Development

3.30. The Proposed Development comprises of a 15 storey office building, new public realm and associated works, including back of house and ancillary areas. The building has been designed by Bridge Architects. The landscaping surrounding the building has been designed by Planit-IE, the landscape architect across the masterplan.

3.31. The formal description of development is as follows:

“Erection of 15 storey building comprising office space (Use Class E(g)(i)) and ancillary flexible commercial uses (Use Class E), rooftop terrace, highway works, landscaping, refuse store and other associated works”

3.32. The breakdown of uses and parameters of the building is highlighted in the table below.

Table 3.2 Quantum of Proposed Development

Description	Area / Number
Site Area	0.964 ha
Floorspace (Use Class E)	33,238 sq. m GIA / 36,448 sq. m GEA including 962 sq m (NIA) of flexible commercial space
External Roof Terraces	268 sq. m GEA
Cycle Parking	122 internal cycle parking spaces, 30 visitor external cycle parking spaces
Car Parking	0 - Car Free Development

4. Alternatives and Design Evolution

Introduction

- 4.1. Paragraph 2, Part I of Schedule 4 of the EIA Regulations requires the Applicant to provide details of the main alternatives considered.
- 4.2. The form of the Proposed Development has been influenced by a range of factors, including location, surrounding land use and input from Manchester City Council, Statutory 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:
 - The ‘do nothing’ alternative where the Proposed Development is not progressed.
 - Alternative locations for the Proposed Development.
 - Alternative uses for the Site.
 - Alternative design/layout for the Proposed Development in the context of the design evolution.

The ‘do nothing’ Alternative

- 4.5. The “do nothing” option represents the existing situation on the Site, which is an underutilised brownfield Site. The Site was previously cleared as part of the enabling works for the Circle Square Masterplan and was recently occupied by the construction site cabins for the development of the wider masterplan, but is now unused following completion of Phase 1. The Site is currently accessed from Newman Street.
- 4.6. In its current state, the Site does not contribute to the local area and is therefore not maximising its economic and regeneration potential. From a townscape perspective, the Site does not provide any vitality or natural surveillance within the local area.
- 4.7. On a city centre scale, the Site is located in a highly prominent and strategic location. As such, it is imperative that the Site is redeveloped to maximise the significant planning and regeneration benefits that will flow from redevelopment and to underpin the revitalisation of the local economy.
- 4.8. The Site is subject to an endorsed Strategic Regeneration Framework (2013) and Masterplan (2015), which identifies it as a key strategic area for regeneration. The Site’s redevelopment is expected to bring socio-economic and regeneration benefits to Greater Manchester. Manchester’s Core Strategy (2012) Policy CC1 ‘Primary Economic Development Focus: City Centre and Fringe’ states the City Centre (within which the Site is located) is expected to accommodate 33ha and the City Centre Fringe 25ha of office or similar employment development over the plan period.
- 4.9. In addition, the Extant Consent for office use illustrates the desire for the Site to be developed.
- 4.10. The “do nothing” scenario has been discounted due to the established need for regeneration of the Site, and the potential socio-economic benefits it is anticipated to bring. The Site is considered suitable for the Proposed Development as it is brownfield land, and suitable for commercial development in terms of its urban location and good transport links. A number of key benefits would also be missed should the Site not be redeveloped, as set out below:
 - The scale and potential of the proposed building, in combination with the public realm and active ground floors will generate substantial footfall to the Site and significantly improve connections between the City Centre and the Site.

- The proposed building will be a gateway into the Circle Square creating a link between Oxford Road and Princess Street. Enhancements to Newman Street will integrate surrounding streets and communities via Princess Street into Circle Square. This will provide access to all the opportunities that the area will deliver.
- Creating high density employment within one of Manchester City Centre's priority regeneration areas and key strategic employment locations, and maximising the economic potential of this highly accessible Site.
- Retail, commercial and ancillary uses at the lower floors will encourage activity and vitality to the area and provide natural surveillance to the wider area.
- The unique mix and exceptional quality of the Proposed Development is intended to transform the character of the area, creating a new community based within a new neighbourhood, which becomes a magnet for future developments.
- The proposed public realm enhancements particularly as part of Symphony Gardens will introduce new species into the area, creating an increase in biodiversity.
- The development will meet an identified need for high quality commercial development within the City Centre.

Consideration of Alternative Locations

- 4.11. The Site is a large strategic Site within a key area of Manchester City Centre. It is subject to the endorsed Former BBC Site Strategic Regeneration Framework (Manchester City Council Executive Committee, June 2013) and an endorsed Circle Square Masterplan (Manchester City Council Executive Committee, April 2015).
- 4.12. In this context, alternative locations for regeneration within the city centre were considered at an earlier stage of the planning process and this has defined the proposed use for the Site.
- 4.13. The Site is within Manchester City Centre, and has the potential to provide economic, regeneration, and employment benefits which will contribute to wider strategic aims of the region. It is brownfield land, previously in use for temporary car parking and construction compound, and its selection for regeneration is supported by a range of policy documents, as discussed in the Planning Statement submitted in support of the planning application. Furthermore, the Extant Consent confirms the appropriateness for an office use at the Site.
- 4.14. The Site's urban location, transport links, brownfield nature, and ability to sustainably contribute to wider strategic aims are key elements in its selection as a suitable Site for mixed-use commercial and residential development.
- 4.15. Therefore, this chapter does not consider alternative Sites within the context of the planning application, as the Site's selection occurred beforehand through the Strategic Regeneration Framework processes and development Masterplan.

Consideration of Alternative Uses

- 4.16. In order to ensure that any development on the Site would contribute to the sustained economic growth and competitiveness of the city and deliver employment-led regeneration, Manchester City Council's Executive Committee endorsed the Former BBC Site Strategic Regeneration Framework (SRF) in July 2013.
- 4.17. Circle Square was identified as one that could become one of the most significant opportunities for jobs and investment in the region for many years and the SRF makes it clear that the Site should deliver a commercially-led, employment generating development and create a critical mass of economic activity to promote and encourage investment and growth opportunities. The SRF also recognised that non-employment generating uses would be required where they support the delivery of investment e.g. in public realm, which supports the key objective of establishing the wider Site as a strategic employment location.
- 4.18. The Proposed Development fully reflect this and will deliver a commercial office development as identified in the SRF and Masterplan. The exceptional quality of the Proposed Development is intended to contribute to the transformation of the character of the area, by delivering the third commercial building in the masterplan. The quality of the Proposed Development is consistent with the previous phases of development. From a wider planning point of view, the Proposed Development will provide an addition to the quality and type of commercial floorspace available helping to support the creation of a mixed use community alongside existing residential blocks.

- 4.19. The mix of uses in the Proposed Development complies with the objectives of planning policy at all levels including the NPPF and NPPG. The NPPF sets out in Paragraph 81 that significant weight should be placed on the need to support economic growth and productivity. It notes that this is particularly important where Britain can be a global leader in driving innovation and in areas with high levels of productivity, which should be able to capitalise on their performance and potential.
- 4.20. The NPPG sets out in Paragraph 126 that good design is a key aspect of sustainable development, creating better places in which to live and work and helps make development acceptable to communities. Paragraph 134 also sets out that great weight should be given to outstanding or innovative designs which promote high levels of sustainability or help raise the standard of design more generally in an area.
- 4.21. For the reasons above, alternative uses were discounted as the proposed commercial development contributes to the Site's viability and deliverability, while the employment uses will provide an important asset to the local and regional community.

Design Evolution

- 4.22. The form of the Proposed Development has been influenced by a range of factors, including location, surrounding uses, landscape character, and technical constraints at the Site.
- 4.23. The design has evolved over a period of many months of detailed investigation in search of the optimum arrangement in urban, architectural and technical terms.
- 4.24. The design team has investigated solutions to resolve the building size, façade colour and elevation design of the building so that the Proposed Development can be as good as it can be both for the new occupiers, residents and users as well as for the City.
- 4.25. The design of the building has developed from the Extant Consent (ref: 125451/FO/2019) to better the approved scheme in terms of the operation of the building. The building is designed to be Net Zero Carbon in operation and a commitment has been made by Bruntwood for the building to achieve a minimum NABERS rating of 5 (with 5.5 being the aspiration). In addition, and following the redevelopment of the Masterplan, including the success of Symphony Park, the public realm strategy has enhanced. This has provided the opportunity to revisit and improve on the design of the building and public spaces created.
- 4.26. The brief is to create a c.350,000 sq. ft. best-in-class office building with modern, flexible floorspace that meets the requirements of modern businesses to attract users in Bruntwood's target sectors. Vibrant external spaces, enhancing connections throughout Circle Square, are to be created alongside a landscaped garden for all to enjoy.
- 4.27. This has resulted in a re-designed building that is of a similar height and slightly larger footprint than that approved. In addition, an extensive area of public realm is proposed creating a less formal softer space with the introduction of plants, shrubs and trees providing a differentiated green space within the City Centre.
- 4.28. The Proposed Development has been developed in consultation with the Local Planning Authority, Statutory Consultees, key stakeholders and adjoining owners and occupiers. As part of the consultation process, the following key stakeholders have been engaged:
- Manchester City Council (Planning, Highways and Environmental Health)
 - Greater Manchester Police.
 - Transport for Greater Manchester.
 - Greater Manchester Archaeological Advisory Service.
 - Local Residents and Businesses
- 4.29. The strategic principles and design drivers identified for the Proposed Development were:
- Maximising the benefits of its City Centre location;
 - Contributing to the Circle Square, in line with the Masterplan;
 - Opening up connections within and through the Site;
 - Contributing to the creation of sustainable neighbourhoods with a distinctive sense of place;

- Reinstating the historic grid pattern; and
- Providing a landmark, high-quality development to showcase Manchester on the world stage.

4.30. Sustainability principles have also been incorporated throughout the design process. Key considerations included:

- Sustainable high-quality design.
- Targeting a BREEAM Excellent rating.
- Committing to NABERS 5, with an aspiration of 5.5.
- Significantly reducing carbon emissions through developing an energy efficient building.
- Promoting biodiversity.
- Complementing sustainable transport measures and increasing accessibility.
- Managing of water and energy resources.
- Encouraging waste minimisation.

Alternative Designs

4.31. Various design iterations were developed, tested and reviewed in determining the optimum solution for the Site

4.32. The massing of the proposed building is established by the principles set out in the Circle Square Masterplan and the Extant Consent. However, the building footprint has been extended to include Plot 13, and whilst the number of storeys remains the same as the Extant Consent there is a nominal overall increase in building height. The simple form is reflective of the wider Masterplan and delivers large, flexible open floorplan office space to meet market demand.

4.33. The building facades have been evolved in consideration of Net Zero Carbon (NZC), buildability, programme, cost and aesthetics. The key design variations relative to the previously consented scheme are:

- Increased plot size (to take into account loss of Plot 13)
- Re-location of main building entrance to Symphony Park/ Symphony Gardens orientation
- Rationalisation of core, to provide more open/ flexible floorplates
- Additional floor plate (with minimal overall impact on consented building height)
- Omission of basement levels

4.34. Various design iterations were however developed, considered and evolved in creating the Proposed Development as now submitted for planning permission and fully detailed in the Design and Access Statement by Bridge Architects. The current proposals are considered to represent the most appropriate design solution in response to the Site opportunity.

Summary

4.35. Alternative options have been considered throughout the design process in order to develop the optimum viable solution which delivers on the Council's objectives of the Circle Square Masterplan, is respectful to its setting and makes a positive contribution to the emerging townscape around this part of the City.

4.36. The Proposed Development has been influenced by consultation with a variety of stakeholders. Public comments will continue to be considered during the planning post-submission process.

4.37. A summary of the consultation process undertaken can be found in Chapter 2, EIA Methodology and in the Statement of Consultation submitted in support of the planning application.

5. Construction Phasing and Methodology

Introduction

- 5.1. This chapter of the ES describes the proposed construction programme and the likely activities that will be undertaken. Detailed consideration of potential impacts during the construction process and any necessary mitigation measures are provided in each relevant chapter of the ES. It should be read in conjunction with **Figure 5.1 (Site Logistics)** and **Appendix 5.1 Construction Management Plan**.
- 5.2. The main aim throughout the construction period is to minimise impact on the surrounding properties and roadways for the duration of the work. Close collaboration with all project teams of all construction projects will be maintained at all times to achieve this aim.
- 5.3. The following narrative explains this methodology and timescales envisaged at the time of the planning application. More detailed proposals will be developed prior to commencement on Site. This will include preparation of detailed plans to incorporate Construction Management, Construction Phase Health and Safety, Environmental Management as well as Site Waste Management, Logistics and Traffic Management.

Programme

- 5.4. Subject to planning permission, the construction programme for No.3 will span a period of approximately 26 months. Within this period there will be elements of piling, ground works and foundations, frame construction, façade cladding, internal fit-out and landscaping works. The construction programme will be phased as set out below.

Substructure

- 5.5. The initial works will involve the installation of the piling mat in November 2022, from here in early 2023, piles and substructure works will be carried out and completed. Initially we will focus on completing the foundations for the core as this will enable us to begin the concrete core as the remainder of the substructure works are being completed. A tower crane will be erected in to facilitate the concrete core construction.

Superstructure - Concrete core and steel frame

- 5.6. Once the core foundations are completed and while the remaining pile caps and ground beams are being installed, the concrete core slip form will commence. When the concrete core is completed, the steel frame construction will commence and another tower crane will be erected and used for the steel frame Installation. The precast stairs will be installed using the first tower crane and when completed, both tower cranes will then be used for the erection of the steel frame.
- 5.7. The concrete composite floors will start installation once the steel frame is up to level 8 and both activities will be completed in phases around and up the building until completion.

Envelope – Roof and façade

- 5.8. Works to the envelope include the installation of the weather boarding system, window installation, brickwork and curtain walling. These works will commence from mid-late summer of 2023 and all works will be completed from fixed mast-climbers located around the building perimeter.
- 5.9. Due to logistical constraints, there will be limited storage on site, a lot of the materials will be stored off site where practical and delivered to site on a 'just in time' basis.
- 5.10. Works to the roof structure will be progressed in late spring of 2024 on completion of the roof slab. Rain water will be controlled during the build process by utilising temporary water proofing, drainage solutions and de-watering techniques so as to remove any unnecessary build up of water on site.
- 5.11. The envelope works are expected to be complete by the late summer of 2024, when the mast climbers will be removed.

Internal Fit Out & Commissioning

- 5.12. Internal fit out works include the installation of substations, partitions and ceilings, M&E installations, wall and floor finishes and internal Joinery. The fit-out works will run concurrently with the envelope works, albeit staggered slightly for sequencing and water tightness purposes.
- 5.13. Careful coordination of the fit-out works will be implemented due to the restricted footprint of the build and again, materials will be delivered to site on a 'just in time' basis. Offsite construction methods will be encouraged where possible. M&E central plant will be delivered to site in time for installation and commissioning periods. The M&E commissioning period will take place towards the end of the fit-out phase, Witnessing and statutory authority inspections will conclude the commissioning process.

External Works & Symphony Gardens

- 5.14. As part of the overall development there is hard landscaping works relating to Cloak St and around the new building, and the construction of Symphony Gardens. All these works will commence towards the end of the project in late summer of 2024 and will be completed as part of the overall project for the end of 2024.
- 5.15. The programme has been developed based upon normal working hours in line with Manchester City Council Guidance of 07:30 to 18:00 Monday to Friday and 08:30 to 14:00 on Saturdays. Outside of these hours, any works that take place will have been agreed in advance with the Council. Access to Site will be permitted 30 minutes prior to the working day commencing with noise kept to a minimum for the first hour of each shift. Any further out of hours working will be generally limited to internal fit out operations.
- 5.16. The close proximity of the neighbouring residents is noted and as such this methodology will be followed ensuring that the programme and working hours are adhered to in order to protect residential amenity.

Hours

- 5.17. The programme has been developed based upon normal working hours in line with Manchester City Council Guidance of 07:30 to 18:00 Monday to Friday and 08:30 to 14:00 on Saturdays. Outside of these hours, any works that take place will have been agreed in advance with the Council. Access to Site will be permitted 30 minutes prior to the working day commencing with noise kept to a minimum for the first hour of each shift. Any further out of hours working will be generally limited to internal fit out operations.
- 5.18. The close proximity of the neighbouring residents is noted and as such this methodology will be followed ensuring that the programme and working hours are adhered to in order to protect residential amenity.

Construction Methodology

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

Site Logistics

- 5.20. For the duration of the project, we will be locating our site offices and welfare on the existing Bruntwood car park located under the Mancunian Way and the location is shown below. The offices and welfare are in close proximity to site and provide ample accommodation for site staff, operatives, and visitors alike, Access to the sites from here will be through a pedestrian access gate located in the hoarding of both the welfare area and site. Further details of this can be found in the 'Contractors Staff and Operative Site Access' section of the Construction Management Plan.
- 5.21. Access to the Site will be controlled by electronic facial recognition through a secure metal turnstile. This will not only monitor operatives' movements but also prevent unauthorised public access during and out of working hours. The main gates will be locked secure at all times with the exception of when a delivery is being made. The gates will be manned by a qualified banksman who will co-ordinate traffic, bank deliveries as well as ensure Newman Road and associated pavement areas are kept clear from debris and materials.
- 5.22. It is envisaged that construction vehicle access into No.3 will utilise a one-way delivery system for access and egress on the Site. Deliveries will access the development from Oxford Road, onto Newman Street and into the Site, deliveries will then exit the Site onto Princess Street either via Newman Street or directly from Site onto Princess Street.

- 5.23. Material storage on the site is limited, all supply chain members will co-ordinate their respective needs with the site gateman and deliveries team. All deliveries will need to be booked in on an online delivery system. This will help alleviate construction traffic in the surrounding area. Materials will be offloaded from the vehicle directly to the point of use wherever possible.
- 5.24. A footpath or partial footpath closure will be required on Princess Street for the duration of the project (full details to be confirmed with MCC Highways). Delivery routes / information will be provided to all contractors with an emphasis on utilising the main route (Oxford Road and egress via Princess Street). Any significant deliveries (cranes / piling rig) will be coordinated with neighbouring sites to mitigate any disruption.
- 5.25. Double access vehicle gates and single pedestrian gates will be provided to the compound area in the Site ensuring that segregation from the general public is maintained. Where required, appropriate wheel and vehicle washing facilities will be placed to ensure delivery vehicles leave the Site clean and tidy.
- 5.26. 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 with a small covered skip to prevent the encouragement of vermin.
- 5.27. The site will also be monitored out of hours by a tag guard system whereby if the motion sensors/beams are broken, a locally appointed security guard will be immediately notified and attend site to investigate and deal with the situation as necessary, as the work progresses the security will upgrade to that of a static guard.

Construction

- 5.28. The works generally comprise of the following:
- Creation of piling mat substrate
 - Piling installation
 - Construction of pile caps
 - Construction of core base
 - Formation of tower crane base
 - Installation of tower crane
 - Construction of concrete core and steel frame
 - Installation of façade, including brickwork, windows and curtain walling
 - Roof coverings
 - Installation of internal mechanical and electrical systems including main lifts
 - Fit-out including walls, floors and ceilings and final finishes
 - Completion of external works
 - Completion of Symphony Gardens
 - Removal of permanent hoardings and temporary gates
 - Decant from Site and opening of the development

Infrastructure

- 5.29. The works generally comprise of the following:
- Drainage connection to main foul adjacent to the Site
 - Rainwater discharge
 - Electrical connection and formation of new three-phase, high-voltage (HV) electrical supply will be provided to serve the No.3 building, taken from the district network operators (DNO) HV network. From the DNO connection point, the HV supply will serve a suitably rated HV-LV transformer incorporated within a package sub-station located at ground floor level. The transformer will be owned, operated and maintained by the landlord, with utility HV metering
 - Mains water connection to main situated adjacent to the Site
 - Telecoms and data infrastructure connections

Traffic Management Plan

- 5.30. It is envisaged that construction vehicle access into No. 3 will utilise a one-way delivery system for access and egress on the Site. Deliveries will access the development from Oxford Road, onto Newman Street and into the Site, deliveries will then exit the Site onto Princess Street either via Newman Street or directly from Site onto Princess Street.
- 5.31. A Site wide construction phase traffic management plan is being 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.
 - The provisions 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 development.

Deliveries

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

Parking

- 5.33. There is no provision for parking within the footprint of the Site or the construction welfare compound. However, there is a NCP next to the project and it will provide safe and controlled parking.

Health and Safety

CDM

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

Construction Materials

- 5.35. There are no materials at this stage of the design process which are considered to generate a risk to construction personnel which will be unfamiliar to an experienced contractor. The hazards arising from the use of wet cement, epoxy resins and solvent based paints can be expected and appropriate measures to minimise any risk will be a requirement of the main contractor.

Site Security and Safety

- 5.36. 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 the erection of perimeter fencing to a specified standard will be taken.

- 5.37. Vandalism and theft of plant, equipment, materials and fuel is possible throughout the duration of the development. We 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 system controlled by an individual facial recognition system.

Environmental Management

- 5.38. An Environmental Plan will be developed by the main contractor(s) to address and monitor the following issues;
- Applicable environmental legislation.
 - Pollution
 - Nuisance (noise, vibration, dust, emission and light).

Environmental Legislation

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

Pollution

- 5.40. Established procedures will be utilised to ensure the prevention of water and ground pollution, relating to the following risk activities:
- Earthworks
 - Concrete works (including washing out of concrete delivery vehicles and pumps)
 - Storage and movements fuels, oils, chemicals and other such fluids
 - Cleaning (including plant, machinery and wheel washing)

Nuisance

- 5.41. Principal concerns include the potential nuisance caused by noise and vibration associated with 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 the carrying out certain activities during agreed hours of the day.
- 5.42. In addition, concerns relate to air quality and emissions from construction activities in the form of dust and fumes, the degree of dust deposition is usually dependent on the nature of the works. Increased levels of dust are most likely to occur during Site activities related to demolition (of which is generally being undertaken during the enabling work stage), piling, moving construction traffic and ground works.
- 5.43. In order to minimise dust and fumes, we will consider the following;
- Protection of surfaces and exposed material from winds until disturbed areas are sealed and stable
 - Dampening down of exposed stored materials, which will be stored as far from sensitive receptors as possible;
 - Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
 - Avoidance of activities that generate large amounts of dust during windy conditions;
 - Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
 - Avoid dry sweeping;
 - Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site, This may require the sweeper being continuously in use;
 - Ensure vehicles entering and leaving the site are covered to prevent escape of materials during transport;
 - Minimisation of vehicle movements and limitation of vehicle speeds to 5mph

Public Relation

- 5.44. The contractor will ensure that regular contact is made with local residents and community groups to ensure they are kept up to date with general progress on the Site, respond to issues promptly and transparently.
- 5.45. Risks of noise, dust and air pollution will be considered for each proposed activity and associated mitigation measures will be implemented.
- 5.46. The contractor will be obliged to follow the Considerate Constructor's scheme.

Waste Management Strategy

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

Operational Waste Removal

- 5.48. All waste generated during the construction phase will be disposed of using skips that have been supplied by reputable suppliers. Waste management licenses and waste carrier's licenses will be obtained from all suppliers prior to removing the waste from site thus ensuring that all waste has been dealt with in accordance with the regulations.
- 5.49. Any hazardous waste i.e. empty spray paint cans, oily rags etc will be disposed of in the site hazardous waste drums. Once these are full, they will be collected and disposed of by GMI's designated waste management contractor.
- 5.50. Some of the waste produced during the construction phase will be recyclable and the waste collection contractor will segregate (off site) all the waste that can be recycled. All spoil arisings from the groundworks will either be removed from site or used as capping material where permitted. Designated skips will be used to recycle other waste.
- Effective management of waste on site will consist of the following measures;
 - Closed skip container (food waste etc.)
 - Regular clean-up of the site
 - Careful handling and transportation to avoid damage
 - Efficient ordering
 - Off-site manufacturing (where possible).
 - Skips will be located in the site storage compound.



- Location of site offices & Welfare under the Mancunian Way
- Circle Square 3 site

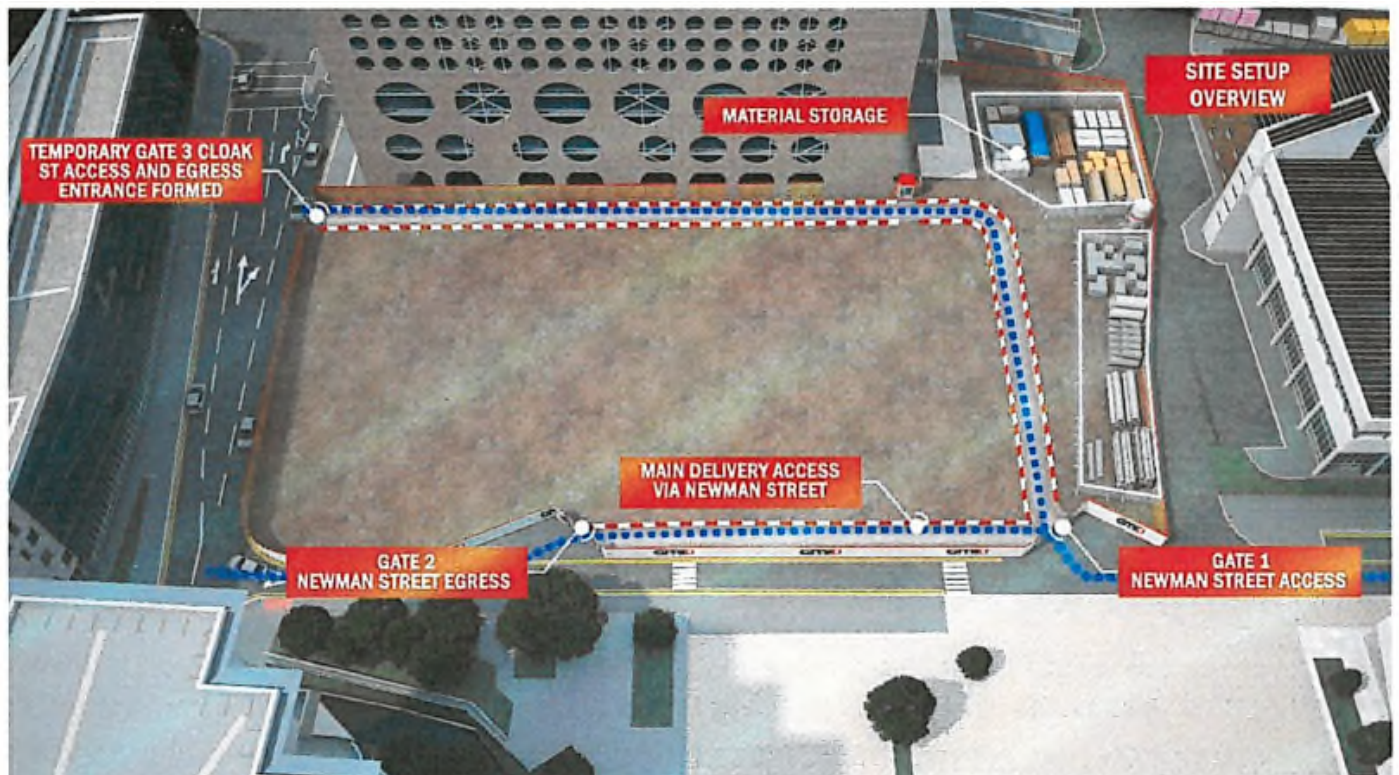


Figure:

5.1

Title:

Site Logistics

Project:

No.3 Circle Square

Date:

July 2022

Scale:

Scale /NTS

6. Climate Change

Introduction

- 6.1. This Chapter of the ES has been prepared by Element Sustainability and assesses the likely climate 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.
- 6.2. This Chapter is accompanied by two technical appendices, LCA report reference '2021.305 - CWC, No.3 Circle Square LCA STAGE 3 v2.3' (Appendix 6.1) and then Environmental Standards Statement (Appendix 6.2).

Table 6.1 – Author Credentials

Name	Credentials
Laurie Wills	Environmental Management BA. (Hons), MIEMA, CEnv
Charles Atkins	Geography BSc. (Hons), Environmental & Business Management MSc

- 6.3. This report has been prepared by members of the Element Sustainability Team who have been responsible for undertaking the assessment reported, contributing to the information described and for compiling the document. Table 6.1 provides details of the experts who have contributed.

Legislative and Policy Context

Legislation

- 6.4. **Climate Change Act (2008)** - The Climate Change Act 2008 establishes a legally binding target to reduce the UK's greenhouse gas emissions by at least 80% in 2050 from 1990 levels. To drive progress and set the UK on a pathway towards this target, the Act introduced a system of carbon budgets.
- 6.5. **The Town and Country Planning (EIA) Regulations 2017** - "(2) The EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors-" "(c)land, soil, water, air and climate"
- 6.6. **The Carbon Plan (2011)** - sets out the UK government's plans for achieving the emissions reductions it committed to in the first 4 carbon budgets.

National Planning Policy

- 6.7. At the heart of the 2021 updated NPPF lies the 'presumption' in favour of sustainable development; the golden thread running through plan-making and decision taking.
- 6.8. The National Planning Policy Framework states that the purpose of the planning system is to contribute to the achievement of sustainable development and to support a low carbon future. It should help to reduce the greenhouse gas emissions, minimise vulnerability and improve resilience.

Local Planning Policy

- 6.9. **Manchester Core Strategy** - Manchester's Core Strategy (CS) was adopted on 11th July 2012 and is the key Development Plan Document in the Local Development Framework (LDF).
- 6.10. **CS Policy EN 4** - Reducing CO2 Emissions by Enabling Low and Zero Carbon Development requires all development to follow the principles of the Energy Hierarchy
- 6.11. **CS Policy EN 6** - Target Framework for CO2 reductions from low or zero carbon energy supplies - Applications for residential development of 10 or more units and all other development over 1,000 sq m will be expected as a minimum to meet the target shown below:

Table 6.2 – Target Framework

Target	% Minimum Requirements
Target 1: Network development area	CHP/district heating anchor or connection or where not feasible, a 15% increase on Part L 2010
Target 2: Electricity intense buildings - (Applies to commercial uses with a high proportion of emissions from electricity use (>45 kg CO2/m2))	+10%increase on Part L 2010
Target 3: Micro generation area	+15% increase on Part L 2010

- 6.12. **CS Policy EN 8** – Adaption to Climate Change requires all new development 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 rainwater permeability;
 - Reduction in urban heat island effect using Green Infrastructure such as green roofs, green walls, increased tree cover and waterways;
 - The need to control overheating of buildings through passive design; and
 - The opportunity to provide linked and diverse green space to enhance natural habitats which will assist species adaptation.
- 6.13. **CS Policy T 1** – Sustainable Transport aims to deliver a sustainable, high quality, integrated transport system to encourage modal shift away from car travel to public transport, cycling and walking, to support the needs of residents and businesses and to prepare for carbon free modes of transport.
- 6.14. **Manchester Climate Emergency** - On 10th July 2019, a motion asking MCC to formally declare a climate emergency was unanimously agreed. The motion declares that climate change is a serious risk to Manchester's future and demonstrates MCC's commitment to embedding the issue as an integral part of councils decision-making process, making sure all key decisions are taken with the city's target of becoming zero-carbon by 2038 in mind.
- The actions are structured into five key sections as follows:
- Buildings and energy;
 - Transport and travel;
 - Reducing consumption based emissions and influencing suppliers;
 - Climate adaptation, carbon storage and carbon sequestration;
 - Influencing behaviour and being a catalyst for change.
- 6.15. **Places for Everyone** - Places for Everyone (PfE) is a long-term plan of nine Greater Manchester districts (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan) for jobs, new homes, and sustainable growth. It has been prepared by the GMCA on behalf of the nine districts and will determine the kind of development that takes place across the city-region. The consultation for the PfE concluded in October 2021 and that it is now expected to progress to examination. It is therefore considered that the Plan is in an advanced stage of preparation.

Assessment Methodology and Significance Criteria

Methodology

- 6.16. The emission sources, broken down by module (lifecycle stage) have been identified using guidance from the Institute of Environmental Management and Assessment (IEMA). Professional judgement has been used to determine which sources to scope in and out of the assessment, as outlined below:

Table 6.3 – Assessment Scope

Module	Lifecycle Stage	Scoped In	Scoped Out	Justification
A1 – A3: Manufacturing and transportation of raw materials	Construction	✓		Construction materials required for the proposed development will potentially generate significant emissions
A4: Transport of materials to site	Construction	✓		Construction stage emissions from fuel / energy consumption due to the delivery of material to site have the potential to be large.
A5: Plant and equipment use during construction	Construction	✓		Fuel / energy consumption of plant and equipment used during construction would generate GHG emissions.
B2: Maintenance	Operation	✓		Maintenance is expected to be a low
B3: Repair	Operation	✓		Repairs are expected to be low
B4-5: Replacement & Refurbishment	Operation	✓		The replacement and refurbishment of the Proposed Development / elements of the scheme has the potential to release significant levels of emissions
B6: Operational energy	Operation	✓		In-use electricity emissions will be released on an annual basis
B7: Water Use	Operation	✓		This is not likely to change drastically as a consequence of the proposed scheme.
C1-C4: Decommissioning processes	End of Life	✓		Any emissions arising from decommissioning, stripping out, disassembly, deconstruction and demolition operations as well as from transport, processing and disposal of materials at the end of life of the project.

D: End-user emissions	End of Life	✓		Changes to regional traffic flows are expected and this has the potential to result in a large change in GHG emissions.
B1: In use emissions	Operation		x	This is not considered to be a large emission source and was also omitted from the LCA

Study Area

- 6.17. The assessment has identified those emissions which have been generated as a direct or indirect result of the proposed development. This includes:
- Construction emissions: These include the emissions arising from on-site construction activities and the transport and manufacturing of raw materials.
 - Operational Emissions: This includes the operational energy demands and any refurbishments to the building.
 - End of Use: Any emissions arising from decommissioning, stripping out, disassembly, deconstruction and demolition operations as well as from transport, processing and disposal of materials at the end of life of the project.
- 6.18. The current baseline has been assessed using existing sources of Green House Gas (GHG) emissions prior to construction and operation of the Proposed Development (i.e., without development). Sources of GHG emissions following the construction and during operation of the Proposed Development are then assessed, from which the significance, mitigation measures and residual effects are determined.

Assessment Methodology

- 6.19. The assessment has been conducted in accordance with the IEMA Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance. This outlines the importance of reporting GHG emissions associated with the EIA and project.
- Therefore, the following items have been included:
- Baseline setting;
 - Determining the significance of each GHG emission source; and,
 - Setting mitigation strategies.
- 6.20. The environmental impacts assessed are as follows:
- Whole Life Embodied Emissions: This assesses all the emissions generated as a result of the development and includes all lifecycle stages. The scope of the LCA has been aligned with BS EN ISO 14040 and standard lifecycle analysis methodology.
 - The LCA tool 'OneClickLCA', a BRE IMPACT compliant tool, has been used to calculate the whole life carbon emissions of the Circle Square 3 Scheme. Materials were chosen from the 'OneClickLCA' carbon database, and the level of GHG potential is displayed as KgCO₂e. This was also converted to GHG potential per GIA (kgCO₂e/m²).
 - To assess the magnitude of these impacts, a comparison has been made with the RIBA targets outline in section 1.43.
 - Operational Building Emissions: This includes the emissions associated with the day-to-day energy consumption of the building, throughout the building's lifespan. The lifespan has been modelled at 60 years, covering the time period 2024 – 2084.

- An energy strategy has been prepared and included within the Environmental Standards Statement. The mitigation measures included as part of this strategy (application of the energy hierarchy, enhanced fabric specification, building services and renewable energy technology etc.) are summarised in the mitigation section of this chapter.
- The building energy use has been compliance checked with Part L2A (2013) of the Building Regulations
- To assess the magnitude of each impact, a comparison has been made relative to the established RIBA targets for operational energy consumption.
- Impacts and potential mitigation from the other technical chapters, particularly around management of surface water, waste management, green and blue infrastructure, biodiversity and ecology, and travel planning.

Cumulative Effects

- 6.21. The main receptor for the Proposed Development is the global climate. All aspects of the development will result in GHG emissions, and the associated effects are not geographically constrained to the Site. For this reason, it is not possible to define a study area and carry out a cumulative effects assessment for GHG emissions. As a result, it is not considered to be applicable.

Significance Criteria

- 6.22. There is currently no default way of assessing the significance of GHG emissions. In regard to determining significance, IEMA have provided this guidance on how to assess GHG emissions in the context of an EIA:

“extensive research is being undertaken to explore significance, thresholds for GHG emission assessments, and science-based targets...”

...Under the principle that all GHG emissions might be considered significant, and the ongoing research of how to actually measure significance, it is down to the practitioner’s professional judgement on how best to contextualise a project’s GHG impact...

...some projects will replace existing development that have higher GHG profiles. The significance of a project’s emissions should therefore be based on its net impact, which may be positive or negative”.

- 6.23. Following the rationale of IEMA guidance above, the sensitivity of the receptor (which is the climate) is considered to be high, and all effects are considered to be adverse.
- 6.24. To contextualise and assess the carbon emissions of the Proposed Development, these have been compared to the RIBA 2030 Climate Challenge carbon emission targets, which sets a series of targets for practices to adopt to reduce operational energy, embodied carbon and potable water.

Table 6.4 – RIBA 2025 and 2030 Targets

	Business as Usual	2025 Targets	2030 Targets
Whole life Embodied Carbon (kgCO ₂ e/m ²)	1200	< 800	< 625
Operational Energy (kWh/m ² /y)	120	< 60	< 35

- 6.25. The emissions produced by the proposed development have been assessed against the RIBA 2030 target, 2025 target and Business-As-Usual benchmarks to assess the magnitude of the associated impacts of the whole life carbon emissions and the operational emissions from energy usage.
- 6.26. The following magnitudes are considered appropriate to assess the project’s impact significance:
- Major magnitude of impact: where the Proposed Development exceeds the “Business as Usual” for embodied carbon and operational energy performance
 - Moderate magnitude of impact: where the Proposed Development meets the “Business as Usual” for embodied carbon and operational energy performance
 - Minor magnitude of impact: where the Proposed Development is aligned with the established “2030 Targets” for embodied carbon and operational energy performance

- Negligible magnitude of impact: where the Proposed Development significantly improves upon the “2030 Targets” for the embodied carbon and operational energy performance.

Baseline Conditions

- 6.27. The current baseline conditions are represented by the existing sources of GHG emissions arising from the project boundary site, within Manchester City Centre prior to construction and operation. This will be led primarily by the extensive, previous phases of the Circle Square Masterplan, as the site will be affected by the GHG emissions related to the current infrastructure.
- 6.28. The current land use of the site is for construction vehicles for the surrounding circle square masterplan. Therefore, the emissions being produced will predominantly be from various modes of transport.
- 6.29. As a result, the current carbon emissions baseline is classed as minor.

Identification and Evaluation of Significant Effects

- 6.30. The following carbon and transport emissions have been derived from the Life Cycle Assessment which supports this application.
- 6.31. Potential impacts and mitigation measures associated with the other relevant technical chapters, particularly around management of surface water, waste management, green and blue infrastructure, biodiversity and ecology, travel planning, and efficiency of the building fabric have been addressed. Further information is detailed in the supporting Environmental Standards Statement (prepared by Element Sustainability) and Energy Assessment (prepared by Crookes Walker Consulting).

Construction Phase

Table 6.5 – Embodied and Transport Carbon Emissions during Construction

Type	Carbon Emissions (kg CO ₂ e)
Emissions related to A1-A3 Product Stage	13,773,943
Emissions related to A4 Transport to Site	113,209
Emissions related to A5 On-site construction works	1,463,251
Total	15,350,403

- 6.32. The total embodied carbon calculated to be generated during the construction phase of the Proposed Development is therefore 15,350,403 kgCO₂e.

Operation Phase

- 6.33. The calculations for the embodied carbon emissions during the operational phase are provided in Table 1.6.
- 6.34. The total kilograms of embodied carbon estimated to be generated during the operational phase of the Proposed Development equals 28,105,594 kgCO₂e.

Table 6.6 - Total Embodied Carbon Emissions during Operation

Type	Carbon Emissions (kg CO ₂ e)
Emissions related to B4: Replacement, B5: Refurbishment	5,393,588
Emissions related to B6: Energy Consumption	21,714,576
Emissions related to B7: Water	997,430
Total (kgCO₂e)	28,105,594

Annual Operational Building Energy

- 6.35. Based upon extensive building energy modelling and application of the CIBSE TM54: Operational; Energy Performance methodology, the annual energy performance target calculated by Crookes Walker Consulting, which is believed to be the most realistic occupancy scenario, is 73.7kwh/m²/yr.
- 6.36. This figure is aligned with the United Kingdom Green Building Council (UKGBC) 2030-2035 interim energy intensity target of 70kWh/m²/year. It should be noted that this calculated performance will benefit further following improvements of power efficiencies and technology during the building’s life cycle.

Table 6.7 – Energy Intensity

Type	Carbon Emissions (kg CO ₂ e)
Energy Consumption Intensity	73.7

- 6.37. The energy consumption intensity of the proposed development is estimated to be 73.7kwh/m²/per year. This is a significant improvement on the Business-as-Usual target and is close to achieving the RIBA 2025 Climate Challenge target (60 kWh/m² per year). Therefore, the operational carbon emissions are likely to have a minor to moderate magnitude.
- 6.38. It can be concluded that the significance of effect of the operational carbon emissions will be moderate to minor (adverse) prior to the implementation of mitigation measures set out below.

Operational Transport Energy

- 6.39. The operational transport emissions for No.3 Circle Square have not been included in this assessment as these were omitted from the travel assessment conducted by Curtins. This is due to these emissions being previously considered as part of the multi storey car park (MSCP) development, immediately to the south of the proposed application site.
- 6.40. The transport consultant (Curtins) confirmed that the 'trip generation' methodology remains similar to the consented development. There is no additional parking proposed onsite, therefore the neighbouring MSCP will address the parking requirements of the development for the few users that may choose to drive to the building, and a traffic forecasting exercise has already been conducted during the planning stage for the MSCP and wholly accounts for the associated traffic emissions.
- 6.41. In summary, the development would result in no net impact in addition to what has already been assessed and consented, therefore Curtins do not believe that calculating any additional transport emissions is necessary for the Proposed Development at this stage.

Operational Waste Management

- 6.42. The Waste Management Strategy prepared by Curtins presents the following calculations for weekly arisings based on MCC's GD04 Guidance recommendations for offices of 2,600l per 1,000m² of gross floor space. An initial recycling percentage of 60% has been estimated for calculation purposes. Due to the high levels of staffing within the Circle Square 3 development, a significant amount of operational waste will be generated. This will therefore have an adverse impact on the climate, due to the increase in demand for waste transportation away from the site.

End of Life Phase

Table 6.8 - End of life Embodied Carbon

Type	Carbon Emissions (kg CO ₂ e)
Emissions related to C1: De-construction, Demolition, C2: Transport, C3: Waste processing, C4: Disposal	388,118

- 6.43. The total Kilograms of embodied carbon estimated to be generated during the end-of-life phase of the Proposed Development is 388,118 kgCO₂e.

Whole Life Carbon Emissions

- 6.44. The total whole life carbon emissions have been calculated at 43,844,116 kgCO₂e and 1,491 kgCO₂e m².

Table 6.9 - Whole Life Carbon Emissions

Type	Carbon Emissions (kg CO ₂ e m ²)
Total Carbon Emissions (kgCO ₂ e)	1,491

- 6.45. In order to assess the significance of the GHG emissions generated by the Proposed Development in terms of carbon emissions, the comparisons below have been undertaken.
- 6.46. The assessed construction option which this carbon data relates to is LCA Option 3 which reflects the planned construction comprising:
- Core – poured concrete

- Frame – steel frame
- Floors / Ceilings – poured concrete, open ceilings, laminate floor
- Façade – Brickwork

- 6.47. The whole-life embodied carbon emissions (extracted from the LCA) of the proposed development are estimated to be 718.85 kgCO₂/m² which is an improvement on the Business-as-Usual target (1,200 kgCO₂/m²). However, this is currently higher than the RIBA 2030 Climate Challenge target (625 kgCO₂/m²). As a result, the embodied carbon emissions are considered likely to have a moderate magnitude of impact on the climate.
- 6.48. Therefore, it can be concluded that the significance of effect of the embodied carbon emissions will be minor (adverse) prior to the implementation of mitigation measures set out below for the construction, operation and end of life phases.
- 6.49. Please see accompanying LCA report reference '2021.305 - CWC, No.3 Circle Square LCA STAGE 3 v2.3' for further detail.

Surface Water

- 6.50. The Flood Risk from Surface Water map indicates low risk of surface water flooding to the site. Further mitigation strategies are reported in section 1.63 and addressed within the supporting ESS.

Biodiversity and Ecology

- 6.51. A Phase One Habitat Survey has been undertaken by Penny Anderson Associates, which concluded that the site is of limited ecological value. Mitigation measures to enhance the sites biodiversity are addressed in section 1.64.

Summary of Significance

- 6.52. The whole embodied (A-C from construction to end-of-life) carbon emissions of the development are 43,844,116 kgCO₂e, which corresponds to 1,491 kgCO₂e/m².
- 6.53. The annual energy consumption rate of the proposed development is estimated to be 73.7 kWh/m² per year. Since the proposed development has followed an all-electric approach using air source heat pumps, then it is realistically going to benefit from a decarbonising electricity grid.

Table 6.10 - Summary of the Level of Climate Impact Significance pre mitigation

Stage	Sensitivity of Receptor	Nature of Impact	Impact Magnitude	Significance
Whole Life Embodied Emissions (Including Construction Transport)	High	Adverse	Minor	Minor Adverse
Operational Building Emissions	High	Adverse	Moderate – Minor	Moderate – Minor Adverse
Operational Transport Emissions	High	Adverse	N/A	N/A

Mitigation Measures

Whole Life Embodied Emissions

- 6.54. The majority of embodied emissions are generated during the construction stage and therefore, mitigation measures need to be considered.
- 6.55. Considerations where possible should also be given to the relevant Circular Economy principles recommended by GLA in the Circular Economy Statement Guidance (Draft for consultation, September 2020), which are presented in table 6.11 below.

Table 6.11 - Circular Economy Statement Guidance

Principle	Development commitments
1. Conserve resources, increase efficiency and source sustainably	1.1 Minimise the quantities of materials used
	1.2 Minimise the quantities of other resources used
	1.3 Specify and source materials and other resources responsibly and sustainably
2. Design to eliminate waste (and for ease of maintenance)	2.1 Design for longevity, adaptability or flexibility and reusability or recoverability
	2.2 Design out construction, demolition, excavation and municipal waste arising
3. Manage waste sustainably and at the highest value	3.1 Manage demolition waste
	3.2 Manage excavation waste
	3.3 Manage construction waste
	3.4 Manage municipal waste (and industrial waste, if applicable)

Source: Greater London Authority 2021

6.56. The proposed design can also align with the relevant Whole Life Carbon reduction principles as recommended by GLA in their Whole Life Carbon Assessment Guidance displayed in table 6.12 below to further mitigate the embodied carbon levels of the scheme.

Table 6.12 - Whole Life Carbon Assessment Guidance Principles

WLC reduction principles	Key benefits
Use recycled or repurposed material	Reduces carbon emissions and reduces waste.
Material selection	Appropriate material choices are key to carbon reduction. Ensuring that there is synchronicity between materials selected and planned life expectancy of the building reduces waste and the need for replacement, thus reducing in use costs.
Minimise operational energy use	A 'fabric first' approach should be prioritised to minimise energy demand and reduce carbon and in-use costs.
Minimise operational water use	Choice of materials and durability of systems, to avoid leakage and subsequent building damage, contribute to reducing the carbon cost of water use.
Disassembly and reuse	Designing for future disassembly ensures that products do not become future waste and maintain their environmental and economic value.
Regenerative design	Removing CO2 from the atmosphere through materials and systems absorbing it makes a direct positive contribution to carbon reduction.
Designing for durability and flexibility	Durability means that repair and replacement is reduced which in turn helps reduce life-time building costs. A building designed for flexibility can respond with minimum environmental impact to future changing requirements and a changing climate, thus avoiding obsolescence which also underwrites future building value.
Optimisation of the relationship between operational and embodied carbon	Optimising the operational/embodied carbon relationship contributes directly to resource efficiency and overall cost reduction.
Building life expectancy	Defining building life expectancy gives guidance to project teams as to the most efficient choices for materials and products. This aids overall resource efficiency, including cost efficiency and helps future proof asset value.
Local sourcing	Sourcing local materials reduces transport distances and supply chain lengths and has associated local social and economic benefits.
Minimising waste	Waste represents an unnecessary and avoidable carbon cost. Buildings should be designed to minimise fabrication and construction waste, and to ease repair and replacement with minimum waste, which helps reduce initial and in-use costs.
Efficient fabrication	Efficient construction methods (e.g. modular systems, precision manufacturing and modern methods of construction) contribute to better build quality, reduce construction phase waste and reduce the need for repairs during post completion and the defects period (snagging).
Lightweight construction	Lightweight construction uses less material which reduces the carbon footprint of the building as there is less material to source, fabricate and deliver to site.
Circular economy	The circular economy principle focusses on a more efficient use of materials which in turn leads to carbon and financial efficiencies.

Source: Greater London Authority 2021

Construction Transport Emissions

- 6.57. Construction Transport Emissions can be mitigated by opting for locally sourced construction materials where feasible and viable, which will help to minimise the impact of carbon dioxide emissions associated with the transportation of materials. In addition to this, delivery slots for materials will need to be scheduled outside of peak traffic hours to minimise local disruption.

Construction Waste Management

- 6.58. The following construction waste mitigation measures are discussed in more detail within the supporting Environmental Standards Statement. However, the development has established targets to generate no more than 7.5 m³ / 6.5 tonnes of construction waste per 100m² Gross Internal Floor Area during construction.
- 6.59. The development will implement best practices and promote the minimisation of waste arising on site and seek to maximise the use of recycled materials in construction. The proposed design will also implement the Whole Life Carbon Assessment Principles discussed earlier in this chapter to minimise the effect of waste on the climate receptor.

Operational Building Emissions

- 6.60. The table below presents the proposed material specification related with the building fabric and thermal performance that will be incorporated to limit heat loss and ensure efficient operation of the Proposed Development.

Table 6.13 - Proposed Building Fabric Specification

Building Fabric	U-Values (W/m ² K)
Floor	0.10
Roof	0.10
External wall	0.20
External window	1.60
Personnel Doors	2.00
Façade Louvred Panel	0.5
Air Permeability	3.00 (m ³ /(hr.m ²))

- 6.61. These specifications and design attributes will provide the following mitigation benefits:
- High performance thermal insulation throughout the building envelope (ensuring very low U-values for all heat loss elements) and thermally efficient windows and doors will minimise heat loss through the main building elements;
 - Low air permeability in order to minimise uncontrolled ventilation. This will further reduce heat losses and provide high levels of occupant comfort;
 - Optimised cold bridging junctions including the provision of insulation to reduce heat and limit heat losses that occur at the junctions between building elements and around openings and will significantly improve the emission rates; and,
 - Efficient Form – Office blocks are an inherently efficient form of construction, both in terms of the materials required to build the scheme and the ongoing heat energy demand. This is a result of relatively low areas of external heat loss elements associated with such layouts which enhance the energy efficiency of the scheme and guarantees low energy demand throughout their occupation.

Table 6.14 - Proposed Mechanical and Electrical Specification

Building Service	System
Heating	Air – Source Heat Pumps
Cooling	Air – Source Heat Pumps
Hot Water	Water – Source Heat Pumps
Ventilation	Mech. Vent, Heat Recovery
Lighting	100% LED
Controls	Presence Detections Sensors
Renewables	PV – Approximately 620m ²

6.62. This mechanical and electrical specification will deliver a Building Regulation Part L2A (2013) compliant scheme for all aspects of the Proposed Development and will provide the following benefits:

- Low energy and LED lighting will be specified throughout the Site in order to maximise operational efficiencies and lifespan of the fittings. LEDs operate with an estimated energy efficiency of up to 90% when compared to traditional lighting and conventional light bulbs.
- Sophisticated Lighting Controls including Presence Detections Sensors will ensure the efficient usage of lighting throughout the building and avoid unnecessary energy usage.
- Mechanical ventilation with heat recovery (MVHR) will maintain a healthy working environment and further reduce the heat losses and the energy demand of the office block.

6.63. Additional Operational Energy Intensity Mitigation Measures

- Robust monitoring of energy consumption (i.e. smart metering);
- Procurement of high standards energy efficient whitegoods (A++ where possible);
- Monitoring of In-Use Energy Consumption and comparison against the RIBA 2030 targets during later design stages.

Operational Waste Management

6.64. To mitigate the impacts associated with operational waste generation on site, the management company will be responsible for monitoring the recycling rates and promoting recycling habits with members of staff of the different uses. This can be achieved through providing information on the benefits of recycling and how to segregate waste. The development is anticipated to be served by five-times-a-week collections and will also adopt principles of the waste hierarchy to further minimise the effects.

Surface Water

6.65. The drainage strategy will incorporate the use of Sustainable Drainage Systems (SuDS) where appropriate throughout the site. The proposed surface water drainage strategy for the site currently includes below ground cellular attenuation tanks which will help to alleviate the volume of runoff discharging into the public sewer system.

Biodiversity and Ecology

6.66. The following measures will be implemented to enhance the sites biodiversity and to address the carbon sequestration potential of the proposed development:

- Integration of the landscaping scheme into the wider site soft landscaping to increase permeability of the site to wildlife. This will also sequester carbon on a local scale;
- Use of native or wildlife-friendly tree, shrub and herbaceous species in any landscape planting, for example inclusion of species which provide nectar for invertebrates or berries to provide a food source for birds; and,
- Inclusion of bird boxes to accommodate typical urban bird species, away from street and security lighting.

Residual Effects

6.67. There will be unavoidable GHG emissions resulting from the construction and operation of the Proposed Scheme; however, none of the effects are likely to be significant.

6.68. Summary of significance of effects on the climate, before and after mitigation are presented in Table 6.15

Table 6.15 - Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

Environmental Effect	Sensitivity of Receptor	Nature of Impact	Impact Magnitude	Significance	Additional Mitigation	Residual Impact Magnitude	Residual Significance of Effect
Whole Life Embodied emissions	High	Adverse	Minor	Minor	Whole life carbon and construction reduction measures and the reuse and efficient use of materials	Minor	Minor Adverse
Operational Building Emissions	High	Adverse	Moderate - Minor	Moderate-Minor Adverse	Robust monitoring, enhanced fabric, low energy use M&E and smart controls. The inclusion of PV's and air and water source heat pumps.	Moderate - Minor	Moderate-Minor Adverse

6.69. The effects from whole life embodied emissions and operational building emissions assessed are likely to have a residual minor magnitude of impact and therefore the residual significance of effects will be Moderate-Minor (adverse).

Reference List

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

- IEMA - Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance
- GLA - Whole Life-Cycle Carbon Assessments guidance
- GLA - Circular Economy Statement Guidance

7. Daylight, Sunlight and Overshadowing

Introduction

- 7.1. This Chapter of the ES has been prepared by GIA and assesses the likely daylight, sunlight and overshadowing 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.
- 7.2. This assessment and ES chapter has been produced by GIA and is supported by the following technical results within the following appendices:
- Appendix 7.1 – Drawings of the Baseline and Proposed Scenario;
 - Appendix 7.2 – Daylight and Sunlight Results for Baseline v Proposed;
- 7.3. This Chapter of the ES was written by Sam Wallis BSc (Hons) MRICS. Sam is a chartered surveyor with 18 years' experience specialising in daylight and sunlight. GIA are the largest specialist daylight and sunlight advisor in the UK, with over 27 years of specialisation and expertise, having advised on some of the largest developments within Greater Manchester.

Legislative and Policy Context

National Planning Policy

Revised National Planning Policy Framework 2021

- 7.4. The National Planning Policy Framework stipulates that “...Planning policies and decisions should ensure that developments... 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.”
- 7.5. The document also states that “...planning policies and decisions should always seek to secure a good standard of amenity for existing and future occupants of land and buildings.”
- 7.6. Paragraph 125 further states:
- “Where there is an existing or anticipated shortage of land for meeting identified housing needs, it is especially important that planning policies and decisions avoid homes being built at low densities, and ensure that developments make optimal use of the potential of each site. In these circumstances:*
- [...]*
- c) when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site (as long as the resulting scheme would provide acceptable living standards).”*

The National Planning Policy Guidance (NPPG) 2019

- 7.7. The National Planning Practice Guidance (NPPG) – Making Efficient Use of Land, published on 22 July 2019, Paragraph: 006 Reference ID: 66-006-20190722 states that:
- “Where a planning application is submitted, local planning authorities will need to consider whether the proposed development would have an unreasonable impact on the daylight and sunlight levels enjoyed by neighbouring occupiers, as well as assessing whether daylight and sunlight within the development itself will provide satisfactory living conditions for future occupants.”*
- 7.8. Paragraph 007 Reference ID: 66-007-20190722 also states:

“All developments should maintain acceptable living standards. What this means in practice, in relation to assessing appropriate levels of sunlight and daylight, will depend to some extent on the context for the development as well as its detailed design. For example in areas of high-density historic buildings, or city centre locations where tall modern”.

Local Planning Policy

Manchester Core Strategy (2012 – 2027)

- 7.9. Policy DM1 – Development Management – States that all developments should have regard to the effects on amenity including privacy, light, noise, vibration, air quality and odours.
- 7.10. Policy EN2 – Tall Buildings – States that, by their very size, tall buildings can have a significant impact on the local environment and its micro-climate. It is therefore expected that this impact be modelled and that submissions for tall buildings also include appropriate measures to create an attractive, pedestrian friendly local environment.

Guide to Development in Manchester Supplementary Planning Document and Planning Guidance (Adopted April 2007)

- 7.11. The SPD sets out a series of design principles which should be considered and implemented where necessary, those measures relevant to this assessment are:
- Minimise reliance on energy-using equipment for heating, cooling, lighting and natural ventilation.
 - Site layout and building design principles should maximise the capture and use of daylight and passive solar energy, whilst avoiding excessive solar gain in the summer.
 - Consider the impacts of overshadowing.

Guidance Documents and Standards

Building Research Establishment (BRE) ‘Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice’, Second Edition, 2011

- 7.12. The Building Research Establishment (BRE) Guidelines ‘Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice 2011, 2nd edition’ (released October 2011) provides advice on site layout planning to achieve good sunlighting and daylighting within buildings, and in the open spaces between them. It is intended for use by building designers, developers, consultants and Local Planning Authorities (LPAs). The advice it gives is not mandatory and should not be used as an instrument of planning policy, it states:
- “This guide is a comprehensive revision of the 1991 edition of Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice. It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location.”*
- 7.13. It also states:
- “The advice is given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. In special circumstances the developer or planning authority may wish to use different target values... in an area with modern high-rise buildings, a higher degree of obstruction maybe unavoidable if new developments are to match the height and proportions of existing building” (para.1.6).*
- 7.14. In addition, the BRE Guidelines state (para. 1.3) that, “it is intended to be read in conjunction with the interior daylighting recommendations in the British Standard 8206-2 Code of practice for daylighting, and in the CIBSE publication Lighting guide: daylighting and window design”.

British Standard (BS) 8206-2:2008: ‘Lighting for Buildings – Part 2: Code of Practice for Daylighting’

- 7.15. The British Standard 8206 part 2 provides recommendations regarding the design for daylight in buildings and sets out various methods for assessing daylight. The document states:
- “Daylighting gives to a building a unique variety and interest. An interior which looks gloomy, or which does not have a view to the outside when this could reasonably be expected, will be considered unsatisfactory by its users.”*

EN17037:2019 Daylight in Buildings (December 2018)

- 7.16. The new European Standard for Daylighting, or EN17037 was published in December 2018. Most local authorities continue to refer to the BRE guidelines. It was understood the BRE planned to secure funding and rewrite the BRE guidelines in the financial year beginning April 2019, with the view of a revised publication in 2020. As such, there is a fair degree of ambiguity as to when the new European Standard will become part of planning policy and what the transition between standards will be. In the meantime, The BRE guidelines and BS8206 remain the relevant tests.

Daylighting and window design: Lighting Guide LG10 (CIBSE) (1999)

- 7.17. This guide replaces the CIBSE Applications Manual Window Design (1987) and provides a daylight design guide. It states:
- “when daylighting decisions are made, however, they will have implications for other, interrelated aspects of window performance such as solar heat gain, winter heat loss, provision of view, acoustic performance, privacy, security and protection from fire.”*

Assessment Methodology and Significance Criteria

Methodology for Determining Baseline Conditions and Sensitive Receptors

- 7.18. The BRE Guidelines suggest that residential properties have the highest requirement for daylight and sunlight and states that:
- “the guidelines are intended for use for rooms in adjoining dwellings where light is required, including living rooms, kitchens and bedrooms.”*
- 7.19. The scope of residential properties that have been assessed has been determined through professional judgement, considering their orientation and proximity to the Proposed Development.
- 7.20. The following properties are defined as sensitive receptors and will be considered due to their proximity to the Site, and their residential use:
- Vita Living
 - Montana House
 - Princess House, 144 Princess Street
- 7.21. These properties are identified in the drawings contained at Appendix 7.1.
- 7.22. Only windows and rooms within the surrounding properties that have a reasonable prospect of being impacted by the Proposed Development have been assessed. Vita Living has an oblique view of the Site, and so only limited windows and rooms have been assessed. Princess House, 144 Princess Street is directly opposite the Site, and so there is more potential for a greater number of windows and rooms to be impacted.
- 7.23. The assessment has considered other adjacent residential properties and due to the distance and orientation from the Proposed Development, they are unlikely to be affected, so they have not been assessed in detail.
- 7.24. There are no amenity areas located in close proximity to the Site. As such, no overshadowing assessment of surrounding amenity areas is required.

Scenarios Assessed

- 7.25. The following scenarios have been assessed and are reported within this Chapter of the ES:
- Baseline configuration (pre-development);
 - Future Baseline; and
 - Proposed Development.
- 7.26. Where consented schemes have the potential to be affected by the Proposed Development or cause cumulative impact to the existing surrounding residential buildings, these have been included in the baseline scenario and assessed individually in detail, so no separate technical assessment of the cumulative impact is required. This approach is in line with the BRE Guidelines.
- 7.27. The Baseline scenario considers the current baseline condition (as can be seen in June 2022). This scenario is depicted on drawing nos. 1901/01-03 (Appendix 7.1).
- 7.28. Planning permission was approved on the Site in February 2020 (ref: 125451/FO/2019) for a 15-storey office building. The impact associated with this extant permission was considered appropriate during its determination, as such there is an expectation of a reduction in daylight and sunlight amenity.

- 7.29. The impact associated with the extant permission against the Proposed Development is considered in the Future Baseline section of this Chapter.
- 7.30. The Proposed Development is illustrated on drawing nos. 1901/04-06 (Appendix 7.1).

Methodology for Determining Demolition and Construction Effects

- 7.31. Owing to the evolving and changing nature of demolition and construction activities, the assessment of potential effects during demolition and construction of the Proposed Development on daylight and sunlight to surrounding properties has not been modelled.
- 7.32. Since the potential daylight and sunlight effects relating to demolition and construction works will vary throughout the construction programme and gradually increase to the potential effects identified for the completed Proposed Development, the interim construction effects are not assessed quantitatively. It is considered that the completed Proposed Development represents the worst-case assessment in terms of likely daylight and sunlight impacts.

Methodology for Determining Operational Effects

- 7.33. The following approaches are undertaken to assess the effect on the sensitive receptors of surrounding properties when the Proposed Development is completed and operational:
- Daylight
 - Vertical Sky Component (VSC); and
 - No Sky Line (NSL) Method.
 - Sunlight
 - Annual Probable Sunlight Hours (APSH).

Outline Approach for Daylight, Sunlight and Overshadowing Assessments

- 7.34. The technical analyses carried out to inform the daylight and sunlight assessment have been undertaken by creating a digital three-dimensional (3D) model of the existing Site and Proposed Development, based on measured survey data.
- 7.35. The 3D model uses Waldram Diagrams to establish the VSC and 3D geometric calculations for daylight distribution. This model (which is orientated to north by the use of Ordnance Survey (OS) information) enables the path of the sun to be tracked throughout the year to establish the shadow cast by the existing and proposed buildings and thus calculate the sun hours on ground in each scenario.
- 7.36. In accordance with the BRE Guidance, only those surrounding properties which have windows facing towards the Site were included in the assessment. If a nearby property has no windows facing the Site, these properties would not be affected by the Proposed Development in terms of light.

Daylight

Vertical Sky Component (VSC) Method

- 7.37. The VSC method of assessment is defined in the BRE Guidelines as the:
- “ratio of that part of illuminance at a point on a given vertical plane that is received directly from a CIE standard overcast sky, to illuminate on a horizontal plane due to an unobstructed hemisphere of this sky”.*
- 7.38. This ratio is the percentage of the total unobstructed view that is available, once obstructions (e.g. the Proposed Development), are placed in front of the point of view.
- 7.39. The assessment is calculated from the centre of a window on the outward face and measures the amount of light available on a vertical wall or window following the introduction of visible barriers, such as buildings. The VSC has been calculated using a 'Waldram Diagram'.
- 7.40. The Waldram Diagram is effectively a snapshot taken from that point of the sky in front of the window, together with all relevant obstructions to it, i.e. the buildings. For calculation purposes, trees may be ignored unless they form dense continuous belts.
- 7.41. Due to the limitations of peripheral vision, the maximum VSC value is almost 40% for a completely unobstructed vertical wall or window. In terms of assessment criteria, the BRE Guidelines state that:
- “if the VSC, with the development in place, is both less than 27% and less than 0.8 times its former value, occupants of the existing building will notice the reduction in the amount of skylight. The area lit by the window may appear more gloomy and electric lighting will be needed more of the time”.*

No Sky Line (NSL) Method

- 7.42. The BRE Guidelines provide that where room layouts are known, the effect on the daylight distribution can be calculated by plotting the NSL. In terms of the surrounding receptors, it has not been possible to obtain room layouts for all of the properties and therefore layouts have been assumed where information is not available.
- 7.43. The NSL method is a measure of the distribution of daylight at the 'working plane' within a room. The 'working plane' means a horizontal 'desktop' plane 0.85m in height for residential properties. The NSL divides those areas of the working plane which can receive direct sky light from those which cannot. If a significant area of the working plane lies beyond the NSL (i.e. it receives no direct sky light), then the distribution of daylight in the room will be poor and supplementary electric lighting may be required.
- 7.44. The potential effects of daylighting distribution in an existing building can be found by plotting the NSL in each of the main rooms. For houses, this will include living rooms, dining rooms and kitchens. Bedrooms should also be analysed, although the BRE state that they are less important. The BRE Guidelines identify that if the area of a room that does receive direct sky light is reduced to less than 0.8 times its baseline value, then this would be noticeable to its occupants.
- 7.45. BS 8206 Part 2 states (para 5.7) that the:
"uniformity of daylight is considered to be unsatisfactory if a significant part of the working plane (normally more than 20%) lies behind the no sky line".
- 7.46. Therefore, it is implied that an NSL of at least 80% would be considered satisfactory.
- 7.47. In regard to deep rooms which are lit by windows on one side, the BRE Guidelines state (para. 2.2.10):
"If an existing building contains rooms lit from one side only and greater than 5m deep, then a greater movement of the no sky line may be unavoidable."

Sunlight

Annual Probable Sunlight Hours

- 7.48. Sunlight is measured using a sun indicator which contains 100 spots, each representing 1% of APSH. Therefore, where no obstruction exists the total annual probable sunlight hours would amount to 1,486, and each spot equates to 14.86 hours of the total annual sunlight hours.
- 7.49. The number of spots is calculated for the Baseline and Proposed Development scenarios during the year and during the winter period, and a comparison made between the two. This provides a percentage of APSH for each of the time periods for each window assessed.
- 7.50. The BRE Guidelines note that:
"In housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day, but especially in the afternoon."
"all main living rooms of dwellings...should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun".
"If the main living room to a dwelling has a main window facing within 90° of due north, but a secondary window facing within 90° of due south, sunlight to the secondary window should be checked."
"...a south facing window will, in general, receive most sunlight, while a north facing one will receive it only on a handful of occasions. East and west facing windows will receive sunlight only at certain times of day".
- 7.51. In regard to existing surrounding receptors, the BRE Guidelines provide that a window may be adversely affected if a point at the centre of the window receives less than 25% of the APSH, including at least 5% of the APSH during the winter months (21 September to 21 March), or less than 0.8 times its baseline sunlight hours during either period, or if there is a reduction in total APSH which is greater than 4%.
- 7.52. BS 8206 Part 2 (section 5.2) states that:
"Provided that the entry of sunlight is properly controlled, it is generally welcome in most buildings in the UK. Dissatisfaction can arise as much from the permanent exclusion of sunlight as from its excess. The provision of sunlight is important in dwellings, particularly during winter months. Sunlight is especially valued in habitable rooms used for long periods during the day."

“Interiors in which the occupants have a reasonable expectation of direct sunlight should receive at least 25% of probable sunlight hours (see 2.10.2). At least 5% of probable sunlight hours should be received during the winter months, between 21 September and 21 March. Sunlight is taken to enter an interior when it reaches one or more window reference points.”

- 7.53. As is often the case, it is not possible to determine the room uses within each of the neighbouring properties, nor is it clear which window should be considered as the ‘main windows’. Therefore, unless the rooms use is known through plans, all the rooms with windows facing the Site and within 90 degrees of due south have been considered in the assessment. Windows that do not face within 90 degrees of due south do not have a realistic expectation of direct sunlight, due to their orientation and the sunlight path in the northern hemisphere.

Summary of Criteria for Daylight and Sunlight

- 7.54. The following table provides a summary of the criteria set out within the BRE Guidelines for daylight and sunlight.

Table 7.1– Summary of Daylight and Sunlight Assessment Criteria

Method	BRE Criteria
VSC	A window may be adversely affected if its VSC measured at the centre of the window is less than 27% and less than 0.8 times its former value.
NSL	A room may be adversely affected if the daylight distribution (NSL) is reduced beyond 0.8 times its existing area.
APSH	A window may be adversely affected if a point at the centre of the window received for the whole year, less than 25% of the APSH including at least 5% of the APSH during the winter months (21 September to 21 March) and less than 0.8 times its former sunlight hours during either period, and for existing neighbouring buildings, if there is a reduction in total APSH which is greater than 4%.

Significance Evaluation Methodology

Daylight and Sunlight Magnitude of Effect

- 7.55. For daylight and sunlight, the BRE Guidelines outline the approach within the accompanying appendix, in terms of assigning criteria to assess the effects:

“Adverse impacts occur when there is a significant decrease in the amount of skylight and sunlight reaching an existing building where it is required...The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied.”

“Where the loss of skylight or sunlight fully meets the guidelines, the impact is assessed as negligible or minor adverse. Where the loss of light is well within the guidelines, or only a small number of windows or limited area of open space lose light (within the guidelines), a classification of negligible impact is more appropriate. Where the loss of light is only just within the guidelines and a larger number of windows or open space are affected, a minor adverse impact would be more appropriate, especially if there is a particularly strong requirement for daylight and sunlight in the affected building or open space.”

“Where the loss of skylight or sunlight does not meet the guidelines in this book, the impact is assessed as minor, moderate or major adverse. Factors tending towards a minor adverse impact include:

- *Only a small number of windows are affected;*
- *The loss of light is only marginally outside the guidelines;*
- *An affected room has other sources of skylight or sunlight; and*
- *The affected building only has a low level of requirement for skylight or sunlight.”*

- 7.56. The classification of major adverse is documented within Paragraph 7 of the BRE Guidelines:

“Factors tending towards a major adverse impact include:

- *a large number of windows are affected;*
- *the loss of light is substantially outside the guidelines;*
- *all the windows in a particular property are affected; and*
- *the affected indoor spaces have a particular strong requirement for skylight or sunlight, e.g. a living room in a dwelling”.*

Beneficial impacts occur when there is a significant increase in the amount of skylight and sunlight reaching an existing building. Beneficial impacts should be worked out on the same principals as adverse impacts.”

- 7.57. The BRE Guidelines do not provide any guidance on what constitutes a moderate adverse impact.
- 7.58. Therefore, best practice guidance and professional judgment has been used to determine any impacts based on the guidance set out in Appendix I of the BRE Guidelines. Potential effects are identified as beneficial, adverse or negligible, and their magnitude of effects are set out as Minor, Moderate and Major.
- 7.59. The initial numerical criteria for determining the magnitude of effect is based on percentage alterations, as follows:

Table 7.2 – Daylight & Sunlight Magnitude of Effect

Magnitude of Effect	Percentage Alteration from Baseline
Negligible	0-20%
Minor	20-29.9%
Moderate	30-39.9%
Major	40%+

Sensitivity of Identified Receptor

- 7.60. It is important that the location and nature of the Site and surroundings are considered when determining the significance of any impacts identified. The BRE Guide is very clear that the targets provided are not mandatory. The location of the development could be deemed to be special circumstances in which the planning authority may wish to use different target values. This scope and view should also be followed through to the sensitivity of the surrounding receptors. There should be an expectation that a higher degree of obstruction is inevitable in an area with modern high-rise buildings. This point is also made in the NPPF and NPPG.
- 7.61. For these reasons, the surrounding receptors may have a lower sensitivity to change in an urban location than those located in sub-urban, less dense areas. Sensitivity classification is assigned on how the proposed receptor is able to accommodate or adapt to the effect of the development. The existing residential receptors surrounding the Site reside in a city centre location where there is an expectation for a higher density of development. The Site is currently cleared, meaning it is underdeveloped and unusually open aspect given the city centre location. The surrounding receptors are therefore deemed to have a medium sensitivity.

Significance of Effects

- 7.62. The significance of any identified environmental effects is determined by the assessment of their magnitude against their sensitivity. The table below illustrates how the sensitivity of the receptors and the magnitude of any effect combine to confirm significance.

Table 7.3 – Significance of Effect

Magnitude	Sensitivity		
	High	Medium	Low
Major	Major Adverse / Beneficial*	Moderate Adverse / Beneficial*	Minor Adverse / Beneficial
Moderate	Moderate Adverse / Beneficial*	Minor Adverse / Beneficial	Negligible
Minor	Minor Adverse / Beneficial	Minor Adverse / Beneficial	Negligible
Negligible	Negligible	Negligible	Negligible
Key	*Significant in terms of EIA regulations		

- 7.63. When assigning significance criteria for daylight and sunlight effects, professional judgement has been used. Consideration has been given to the proportion of rooms/windows affected, as well as the percentage alterations, absolute changes, sensitivity of the receptor, and any other relevant factors. There may be mitigating factors such as location and nature of development, balconies, overhangs or design features which may also affect the determination of assigning the criteria.

Significance of Effects in Context to the Locality

- 7.64. The context of the Site and surrounding area is key to understanding the sensitivity of the surrounding receptors and significance of daylight and sunlight effects.

- 7.65. The nature of the Site and surrounding area, and aspirations for its redevelopment, are therefore critical in understanding the daylight and sunlight effects in context. The NPPG acknowledges that lower daylight and sunlight levels may be considered acceptable in areas such as this, where tall modern buildings predominate, if new developments are to be in keeping with their surroundings.
- 7.66. The emerging height and density brought about by the area's regeneration alters the context of the Site and sets a benchmark whereby lower daylight and sunlight levels to surrounding receptors would be considered acceptable against other development scenarios.
- 7.67. Planning permission was approved on the Site in February 2020 (ref: 125451/FO/2019) for a 15-storey office building. The impact associated with this extant permission was considered appropriate during its determination, as such there is an expectation of a reduction in daylight and sunlight amenity.
- 7.68. The impact associated with the extant permission against the Proposed Development is considered in the Future Baseline section of this Chapter.

Limitations and Assumptions

- 7.69. Where actual room layouts were available on the planning portal, these have been considered when modelling of the internal layouts within the existing surrounding properties. Where layout information was not available, assumptions have been made as to the use and internal configuration of the rooms (from external observations during a site inspection) behind the fenestration observed.
- 7.70. In such cases a standard 4.2 metre (m) (14ft) room depth has been assumed, unless the building form dictated otherwise. This is common practice where access to buildings for surveying is unavailable. Obtaining these room layouts enables precise evaluation of the diffuse levels of daylight within each of the rooms via the NSL).
- 7.71. Floor levels have been assumed for adjoining properties assessed where access has not been obtained. This dictates the level of the working plane which is relevant for the NSL assessments.

Baseline Conditions

Daylight & Sunlight

- 7.72. The full Baseline Daylight and Sunlight results can be found in Appendix 7.2 and are summarised in Table 7.4 below.
- 7.73. A total of 278 windows facing the Site serving 115 rooms within three buildings were assessed for VSC and NSL for daylight and 56 rooms were assessed for APSH for sunlight within three buildings.
- 7.74. Out of the 278 windows assessed for daylight, 83 (30%) meet the BRE guidelines for VSC. For NSL, 72 (63%) of the 115 rooms assessed meet the BRE criteria. For sunlight, 44 (79%) of the 56 rooms assessed meet the BRE criteria for both Winter and Annual APSH.
- 7.75. Overall, this baseline scenario is considered a low level of compliance due to the city centre context of the Site, and the other plots within the wider Circle Square development.
- Vita Living
 - Montana House
 - Princess House, 144 Princess Street

Table 7.4 – Baseline Daylight and Sunlight results to surrounding sensitive receptors

Address	Total No. Windows That Meet VSC Criteria		Total No. of Rooms That Meet NSL Criteria		Total no. of Rooms That Meet APSH Criteria	
	Pass	Total	Pass	Total	Pass	Total
Vita Living	22	34	23	33	1	1
Montana House	0	35	1	22	12	22
Princess House	61	209	48	60	31	33
Total	83	278	72	115	44	56

- 7.76. The assessment of baseline levels to the surrounding properties considers whether a window/room already meets the BRE criteria in the existing scenario only, whilst the BRE guide states that a window/room should not be reduced by any more than 0.8 times its former value (a 20% reduction) in the proposed scenario. As such, as the VSC target is 27%, if a window in the baseline has 25% VSC, it will be classed as not meeting the BRE targets. In the proposed scenario, if the same window is reduced to 24%, it will be classed as meeting the VSC target as it is within 0.8 times its former value. Therefore, some windows/rooms may not meet the target criteria in the baseline but will in the proposed scenario.

Identification and Evaluation of Significant Effects

Future Baseline

- 7.77. In a 2011 revision of the BRE Guide, the BRE included Appendix F – Setting Alternative Values for Skylight and Sunlight Access, to address the application of the guidelines to dense, urban environments. Paragraph F1 of the appendix states: “Sections 2.1, 2.2 and 2.3 give numerical target values in assessing how much light from the sky is blocked by obstructing buildings. These values are purely advisory and different targets may be used based on the special requirements of the proposed development or its location. Such alternative targets may be generated from the layout dimensions of existing development, or they may be derived from considering the internal layout and daylighting needs of the proposed development itself.”
- 7.78. Paragraph F2 further states, “there may be an extant planning permission for a site, but the developer wants to change the design. In assessing the loss of light to existing windows nearby, a local authority may allow the vertical sky component (VSC) and annual probable sunlight hours (APSH) for the permitted scheme to be used as alternative benchmarks. However, since the permitted scheme only exists on paper, it would be inappropriate for it to be treated in the same way as an existing building, and for the developer to set 0.8 times the values for the permitted scheme as benchmarks.”.
- 7.79. Planning permission was approved on the Site in February 2020 (ref: 125451/FO/2019) for a 15-storey office building. The impact associated with this extant permission was considered appropriate during its determination, as such there is an expectation of a reduction in daylight and sunlight amenity.
- 7.80. As the BRE Guide does not advocate the use of a 0.8 times reduction, it would be inappropriate to use the extant permission as an alternative baseline and consider the significance of these reductions against the same numerical criteria as those used for the assessment of the Proposed Development against the Pre-Development baseline. As such, the magnitude of impact associated with the extant permission has been replicated here, and used as a sensitivity analysis.
- 7.81. The results for the previous planning permission are summarised in Tables 7.8 & 7.9 below.

Table 7.8 – Summary of VSC Daylight Results for Previous Planning Permission

Address	VSC				
	Total No. of Windows	No. of Windows That Meet BRE	Minor Adverse	Below BRE Guidelines	
				Moderate Adverse	Major Adverse
Vita Living	34	10	17	6	1
Montana House	35	35	0	0	0
Princess House	209	22	15	23	149
Total	278	67	32	29	150

Table 7.9 – Summary of NSL Daylight Results for Previous Planning Permission

Address	NSL				
			Below BRE Guidelines		
	Total No. of Rooms	No. of Rooms That Meet BRE	Minor Adverse	Moderate Adverse	Major Adverse
Vita Living	33	33	0	0	0
Montana House	22	21	1	0	0
Princess House	60	16	6	12	26
Total	115	70	7	12	26

Proposed Development Scenario

Daylight to Surrounding Sensitive Receptors

- 7.82. The full Proposed Development daylight results can be found within Appendix 7.2 and are summarised in Tables 7.5 and 7.6 below.
- 7.83. A total of 278 windows serving 115 rooms were assessed for daylight within three buildings considered to be sensitive receptors.

Table 7.5 – Summary of VSC Daylight Results

Address	VSC				
			Below BRE Guidelines		
	Total No. of Windows	No. of Windows That Meet BRE	Minor Adverse	Moderate Adverse	Major Adverse
Vita Living	34	9	17	7	1
Montana House	35	35	0	0	0
Princess House	209	17	14	16	165
Total	278	61	31	20	166

Table 7.6 – Summary of NSL Daylight Results

Address	NSL				
			Below BRE Guidelines		
	Total No. of Rooms	No. of Rooms That Meet BRE	Minor Adverse	Moderate Adverse	Major Adverse
Vita Living	33	33	0	0	0
Montana House	22	17	2	3	0
Princess House	60	14	4	5	37
Total	115	64	6	8	37

- 7.84. The breakdown of the baseline results against the Proposed Development for each of the individual buildings forming part of this assessment are discussed in more detail below.

Vita Living

- 7.85. A total of 34 windows serving 33 rooms were assessed for daylight within this property.
- 7.86. For VSC, 9 (27%) of the 34 windows assessed will meet the BRE criteria.
- 7.87. One of the affected windows will experience alterations in excess of 40%, seven will be reduced by between 30-40% and the remaining 17 windows will be reduced by 20-30%.
- 7.88. For NSL, 33 (100%) of the 33 rooms assessed will meet the BRE criteria, meaning the property remains fully compliant in the proposed scenario.

Montana House

- 7.89. A total of 35 windows serving 22 rooms were assessed for daylight within this property.
- 7.90. For VSC, 35 (100%) of the 35 windows assessed will meet the BRE criteria, meaning the property remains fully compliant in the proposed scenario.
- 7.91. For NSL, 17 (77%) of 22 rooms assessed will meet the BRE criteria. Three of the affected windows will experience alterations between 30-40% and the remaining two windows will be reduced by 20-30%.

Princess House, 144 Princess Street, 144 Princess Street

- 7.92. A total of 209 windows serving 60 rooms were assessed for daylight within this property.
- 7.93. For VSC, 17 (8%) of the 209 windows assessed will meet the BRE criteria. 165 windows will be reduced by in excess of 40%, 13 will be reduced by between 30-40% and 14 will be reduced by 20-30%.
- 7.94. For NSL, 14 (23%) of the 60 rooms assessed will meet the BRE criteria. 37 of these rooms will be reduced by in excess of 40%, five will be reduced by between 30-40% and four will be reduced by 20-30%.

Understanding the Results in their Context

- 7.95. Paragraph 007 of the National Planning Practice Guidance states (emphasis added):

- 7.96. *“All developments should maintain acceptable living standards. What this means in practice, in relation to assessing appropriate levels of sunlight and daylight, will depend to some extent on the context for the development as well as its detailed design. For example in areas of high-density historic buildings, or city centre locations where tall modern buildings predominate, lower daylight and daylight and sunlight levels at some windows may be unavoidable if new developments are to be in keeping with the general form of their surroundings.”*
- 7.97. It is therefore important to understand the context of the Site.

Characteristics of the Receptor

- 7.98. The BRE Guide states that an important issue to consider is whether a building is a good neighbour, standing a reasonable distance from the boundary and taking no more than its fair share of light.
- 7.99. Princess House, 144 Princess Street was converted from office use circa 2000 and was not designed to include residential accommodation. Consequently, the design of Princess House, 144 Princess Street means that it is particularly susceptible to changes in daylight as the overhanging architectural features and single aspect, deep rooms, make it difficult for daylight to penetrate into living spaces.
- 7.100. The building is unneighbourly, with habitable rooms to the full extent of the site boundary overlooking the Site, and its design as an office conversion means it is particularly susceptible to changes in daylight and sunlight. This places an unreasonable burden on the Site to maintain levels of daylight and sunlight which are commensurate with other residential buildings located in dense, urban environments throughout the city.

Baseline & Emerging Context

- 7.101. Manchester City Centre has experienced considerable change over recent years. The City Centre has always been a focus for new development, an approach in line with national planning policy on delivering development in the most sustainable locations and the adopted Core Strategy.
- 7.102. This is reflected in the Circle Square masterplan, endorsed by Manchester City Council in 2015, which anticipates a high-density commercially-led masterplan with a c.300,000 sq ft office building on the Site.
- 7.103. The five-storey Armstrong House formerly located on the Site presented a lower-rise massing as might be expected in this city centre location and one that would not contribute to the Circle Square masterplan. Following its demolition, the open nature of the Site and environs created an ‘artificial baseline’ for surrounding buildings, which experience improved levels of daylight and sunlight compared with what should reasonably be expected. The existing daylight levels at surrounding receptors are therefore not currently representative of city centre living within Manchester, and this is reflected when considered against comparable receptors in Manchester City Centre.
- 7.104. These results are commensurate with other residential accommodation in the immediate locality, representing both the historic settlement pattern and levels retained following recent planning permissions. A sample of retained VSC values are set out below from existing residential receptors that are within close proximity of the Site, but not impacted by the Proposed Development:

Table 7.7 Retained VSC Levels in the Locality

Address	Ground Floor Retained VSC Level
<i>Princess House, 144 Princess Street (following construction of the Proposed Development)</i>	5%
Asia House, Princess Street, Manchester	<2%
Lancaster House, Whitworth Street, Manchester	<2%
Oxford Place, Oxford Road, Manchester (following completion of 60 Charles St development, approved by MCC in May 2019)	5.6%
7.105. Only the windows overlooking the Proposed Development in Princess House, 144 Princess Street have been assessed, which represent a worst-case scenario, and so retained levels in the remainder of Princess House, 144 Princess Street will be higher.	
7.106. Receptors within Princess House, 144 Princess Street affected by the Proposed Development will continue to receive VSC levels that are comparable with other residential buildings in the area, thereby reflecting the existing character and expectations of this part of the city centre.	

- 7.107. The impacts on daylight and sunlight to surrounding receptors are comparable for the extant permission and the Proposed Development. The impact associated with this extant permission was considered appropriate during its determination, as such there is an expectation of a reduction in the baseline levels of daylight and sunlight amenity.

Evaluation of Significance

Vita Living

- 7.108. Overall, considering the city centre location and the characteristics of the surrounding architecture, the effect on daylight to this property is considered to be minor adverse in significance, and therefore not EIA significant.

Montana House

- 7.109. Overall, considering the city centre location and the characteristics of the surrounding architecture, the effect on daylight to this property is considered to be negligible in significance, and therefore not EIA significant.

Princess House, 144 Princess Street

- 7.110. Overall, considering the city centre location and the characteristics of the surrounding architecture, the level of retained daylight, the marginal difference between the impacts of the Proposed Development and previous planning permission and the medium sensitivity of the receptor, the effect on daylight to this property is considered to be moderate adverse in significance, and therefore not EIA significant.

Sunlight to Surrounding Sensitive Receptors

- 7.111. The full Proposed Development sunlight results can be found within Appendix 7.2 and are summarised in Tables 7.10 & 7.11 below.
- 7.112. A total of 56 rooms were assessed for sunlight within three buildings considered to be sensitive receptors.
- 7.113. The buildings are discussed in more detail below.

Table 7.10 – Summary of Annual Sunlight Results

Address	APSH				
			Below threshold for Total APSH		
	Total No. of Rooms	No. of Rooms That Meet BRE	Minor Adverse	Moderate Adverse	Major Adverse
Vita Living	1	0	0	0	1
Montana House	22	22	0	0	0
Princess House	33	17	0	1	7
Total	56	39	0	1	8

Table 7.11 – Summary of Winter Sunlight Results

Address	Winter PSH				
			Below threshold for Winter PSH		
	Total No. of Rooms	No. of Rooms That Meet BRE	Minor Adverse	Moderate Adverse	Major Adverse
Vita Living	1	0	0	0	0
Montana House	22	22	0	0	0
Princess House	33	17	0	0	13
Total	56	39	0	0	13

Vita Living

- 7.114. One window was assessed for sunlight within this property.
- 7.115. This window will experience alterations in Annual APSH in excess of 40%.
- 7.116. The room will achieve 20% APSH against the target of 25%, and 5% winter PSH against the target of 5%.
- 7.117. The effect to sunlight on this building is therefore considered to be minor adverse, and therefore not significant.

Montana House

- 7.118. A total of 22 rooms were assessed for sunlight within this property.

- 7.119. 22 (100%) out of the 22 rooms assessed will meet the BRE criteria for both Winter and Annual APSH.
- 7.120. The effect to sunlight on this building is therefore considered to be negligible, and therefore not significant.

Princess House, 144 Princess Street

- 7.121. A total of 33 rooms were assessed for sunlight within this property.
- 7.122. 17 (52%) out of the 33 rooms assessed will meet the BRE criteria for both Winter and Annual APSH.
- 7.123. One of the affected rooms will experience alterations in Annual APSH between 30%-30% and seven will experience alterations in excess of 40%. 13 rooms will experience alterations in Winter APSH in excess of 40%.

Understanding the results in their context

- 7.124. The BRE Guide is clear that context of the Site and Proposed Development is very important when considering the levels of retained daylight and sunlight in a sensitive receptor. It cannot be the case that the level of retained daylight within a city centre is the same as in low density sub-urban locations. It is therefore important to consider the level of daylight that is left with the Proposed Development built out, than just the absolute reductions in daylight and sunlight levels.
- 7.125. The proposed levels in Princess House, 144 Princess Street will be consistent with those received at Montana House in the baseline condition. The existing average Annual APSH to Montana House is 27%, whilst the proposed average Annual APSH to Princess House, 144 Princess Street is 38%.
- 7.126. Overall, considering the context and sensitivity of the building, the effect to sunlight on this building is considered to be moderate adverse, and therefore not significant.

Mitigation Measures

Demolition and Construction

- 7.127. The potential daylight and sunlight effects during demolition and construction have been scoped out, as per paragraph 7.28 and 7.29.
- 7.128. Since the potential daylight and sunlight effects relating to demolition and construction works will vary throughout the construction programme and gradually increase to the potential effects identified for the completed Proposed Development, the interim construction effects are not assessed quantitatively as it is considered that the completed Proposed Development represents the worst case assessment in terms of likely daylight and sunlight.

Completed Development

- 7.129. In order to ensure that daylight and sunlight impacts to surrounding receptors were limited, different massing options of the scheme were considered during the design process. This was informed by discussions between the client, wider design team and GIA.
- 7.130. The impact on daylight to the surrounding properties is considered negligible to moderate adverse and the impact on sunlight is considered negligible to moderate adverse. Overall, this is considered to result in non-significant effects. Given the context of the Site and nature of effects, no further mitigation is considered necessary.

Cumulative Effects

- 7.131. Where consented schemes have the potential to be affected by the Proposed Development, these have been included in the baseline scenario and assessed individually in detail, so no separate technical assessment of the cumulative impact is required. This approach is in line with the BRE Guidelines.

Residual Effects

Table 7.10 Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

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				
Daylight	Scoped Out	-	-	-
Sunlight	Scoped Out	-	-	-
Operational Phase				

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (i.e. Temporary/Permanent)
Daylight	Vita Living	None Required	N/A	Minor Permanent Adverse (Non-Significant Effect)
	Montana House	None Required	N/A	Negligible Permanent Adverse (Non-Significant Effect)
	Princess House	None Required	N/A	Moderate Permanent Adverse (Non-Significant Effect)
Sunlight	Vita Living	None Required	N/A	Minor Permanent Adverse (Non-Significant Effect)
	Montana House	None Required	N/A	Negligible Permanent Adverse (Non-Significant Effect)
	Princess House	None Required	N/A	Moderate Permanent Adverse (Non-Significant Effect)

Reference List

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

- Revised National Planning Policy Framework (2021);
- National Planning Practice Guidance (NPPG) 2019;
- Manchester Core Strategy (2012 – 2027);
- Guide to Development in Manchester Supplementary Planning Document and Planning Guidance (Adopted April 2007);
- Building Research Establishment (BRE) 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice', Second Edition, 2011; and
- British Standard (BS) 8206-2:2008: 'Lighting for Buildings – Part 2: Code of Practice for Daylighting'.

8. Townscape and Visual Impact

Introduction

- 8.1. This Chapter of the ES has been prepared by Planit-IE 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.
- 8.2. This Chapter is accompanied by four technical appendices:
- Townscape Baseline and Assessment Table (Appendix 8.1);
 - Visual Baseline and Assessment Table (Appendix 8.2);
 - Figures (Appendix 8.3)
 - Views and Photomontages (Appendix 8.3)
- 8.3. The author of this chapter is a fully qualified (CMLI) member of the Landscape Institute and has over 15 years experience in the preparation of Landscape and Visual Impact Assessments for ES developments.
- 8.4. Appendices 8.1 and 8.2 include the operational phase assessment of views from the consented scheme, which forms the future baseline, for comparison against the current assessment.

Legislative and Policy Context

- 8.5. 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.
- 8.6. 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

- 8.7. The National Planning Policy Framework was updated in July 2021 and sets out the government’s planning policies for England and how these are expected to be applied.
- 8.8. 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.
- 8.9. The environmental objective is of particular relevance to the purpose of townscape and visual impact assessment.

- 8.10. Section 12 of the NPPF deals with the requirements of good design. The overarching principle is set out in paragraph 126, which state, *“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.”*
- 8.11. Paragraph 130 of the NPPF sets out a number of principals 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.
- 8.12. 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”*.
- 8.13. Whilst the site is not located in a Conservation Area and does not contain listed buildings, heritage is an intrinsic part of townscape assessment and potential views from Conservation Areas listed buildings have been considered as part of the assessment. There is also an overarching desirability set out within the NPPF for new development to contribute positively to local character and distinctiveness.

Local Planning Policy Manchester’s Local Development Framework, Core Strategy Development Plan Document

- 8.14. 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

- 8.15. 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.
- 8.16. 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.
- 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

- 8.17. 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 the City Centre.
- 8.18. New developments must be designed to support the Council in preserving or, where possible, enhancing the historic environment, the character, setting and accessibility of areas and buildings of acknowledged importance, including scheduled ancient monuments, listed buildings, registered parks and gardens, conservation areas and archaeological remains.
- 8.19. 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

- 8.20. 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.

Place Making and Design

- 8.21. 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.
- 8.22. 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

- 8.23. 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.
- 8.24. 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

- 8.25. 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.
- 8.26. 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.

- 8.27. Heritage impacts are discussed and evaluated in more detail in the Built Heritage report submitted alongside the application.
- 8.28. Reference is made to the Second Edition of Historic England Advice Note 4: Tall buildings.

Assessment Methodology and Significance Criteria

Assessment Methodology

- 8.29. This assessment has been carried out with reference to the Guidelines for Landscape & 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.
- 8.30. A three-stage assessment process has been adopted. Firstly, the nature of receptors (sensitivity) have been assessed, and secondly, the nature of effects (magnitude) likely to result from the proposed development have been assessment. From this, the overall significance of the identified effects on receptors have been assessed.
- 8.31. 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 8.1 and 8.2** 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.
- 8.32. Heritage matters are intrinsically linked to townscape and visual considerations and, although they are dealt with in a separate report they are considered here as key components of the City fabric.
- 8.33. The study area for this assessment is illustrated in **Figure 8.1** in **Appendix 8.3** and is approximately 500m from the centre of the Site and focusses on the ‘the Corridor’ townscape character area, as defined within the Local Plan.
- 8.34. The assessment considers the following scenarios:
- Baseline (as existing);
 - Future Baseline (with approved Plot 12 application), and;
 - Proposed Development.
- 8.35. A total of 4 developments currently under construction have been considered as part of the baseline, and include:
- **125799/FO/2019.** MMU Faculty of Science and Engineering. Demolition of existing John Dalton West Building and associated structures, and erection of a new 7 storey education building (Use Class D1) for the Faculty of Science and Engineering (comprising teaching and research spaces, academic offices, social learning areas, catering/kitchen facilities and an energy centre), physical connections to and external refurbishment of the John Dalton Tower, hard and soft landscaping works, car and cycle parking and associated works.
 - **125573/FO/2019.** First Street South. Construction of four buildings of heights varying from 10 storeys to 45 storeys together comprising Co-living bedspaces (use class sui generis) and associated amenity facilities, with ground floor commercial units (Use classes A3 (Café / Restaurant and D2 (Gym)), private amenity space and public realm comprising hard and soft landscaping, car parking and cycle facilities and other associated works.
 - **125654/FO/2019.** Church Inn Student Accommodation, Cambridge Street. Erection of a nine-storey purpose built student accommodation building comprising 62 units and associated landscape and highway works, following demolition of existing structures.
 - **118267/FO/2017.** iQ Echo Street. Full planning permission for the demolition of existing buildings on site and their replacement with a mixed use (sui generis) development comprising 3 towers ranging in height (from 14, 20 and to 25 storeys (including lower ground floor level) and intermediary link buildings and providing: 403 units of Co-Living residential accommodation with associated shared amenity spaces; 94 units of purpose built student accommodation with associated shared amenity spaces; ground floor commercial floor space and children's day nursery together with cycle parking, recycling and refuse bin storage, associated plant and public realm enhancements to Granby Row, Echo Street, Cobourg Street and Back Acton Street
- 8.36. Two cumulative schemes have been identified. These include:
- **132600/FO/2021** : Plot 9 First Street, Manchester, M15 4FN: Erection of a nine-storey building with rooftop plant and basement comprising office accommodation (Use Class E(c)) with ancillary facilities for occupiers including roof top terrace, winter gardens, gym/ yoga studio, basement car parking (26 spaces) and cycle parking (130 spaces) landscaping and other associated works

- **121252/FO/2018:** Great Marlborough Street Car Park, Great Marlborough Street Manchester: Partial reconfiguration of existing Multi-Storey Car Park (MSCP), including temporary access off Great Marlborough Street, construction of 5 storey external ramps, closure of vehicular access to top level; and construction of new facade; and partial demolition of the surplus part of existing MSCP and erection of a part 55, part 11 storey, part 4 storey mixed-use building comprising 853 Purpose Built Student Accommodation units (sui generis), ancillary amenity space and support facilities, and 786sqm (GIA) SME incubator workspace (Use Class B1), including public realm improvements and other associated work

- 8.37. Due to the urban environment, especially along Oxford Road, there is unlikely to be a visual connection at pedestrian level between the Proposed Development and either of the above developments. Neither of the cumulative schemes can be seen in the views.
- 8.38. Potential viewpoints were initially identified through a process of desktop and onsite survey before being checked on site and agreed with the Local Authority. Viewpoints were excluded where there was likely to be no significant impact beyond that which was already identified within the selected views.
- 8.39. Photographs for the selected viewpoints were taken by a professional photographer on the 31st of March 2022, in accordance with Landscape Institute's Technical Guidance Note 06/19 *Visual Representation of Development Proposals*.
- 8.40. In order to provide the most comprehensive, rounded and objective view of the Townscape and Visual Impacts of the proposed development, assessed effects have been agreed following round-table review by a team of individual assessors.

Baseline Townscape Value

- 8.41. 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 8.1 below. However, the value attached to undesignated townscapes also needs to be assessed and this is considered in Table 8.2.
- 8.42. Table 8.1 sets out the relative importance of generic townscape designations and descriptions.

Table 8.1: Value of Designated Townscapes

Value	Description
High	Sites, features or areas of national or international importance with settings of high quality such as World Heritage Site, AONB, National Parks, Grade I and Grade II* Listed buildings or Registered Parks and Gardens.
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.

- 8.43. 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 9.2 below. The criteria are taken from the Planning Practice Guidance which supports the National Planning Policy Framework.

Table 8.2: Criteria for Assessing the Value of Non-Designated Townscapes

Attribute	Criteria
Functional	A building or place should be fit for purpose, designed and delivered in a way that delivers the intended function and achieves value for money in terms of lifetime costs.
Mix of uses	Mix of uses to ensure easy access to facilities and encourage a healthier environment, reducing the need to travel.

Well-designed public space	Functional and attractive hard and soft landscape elements, well orientated and designed routes, inclusion of facilities such as seats and play equipment and public art.
Buildings designed to be adaptable.	Flexibility to be able to respond to a range of future needs – how easily buildings change be adapted for change of use, places that are easy and practical to manage with good access, natural surveillance and hard wearing materials that are easy to repair.
Distinctive character	Consideration of the local pattern of street blocks and plots; building forms; details and materials; style and vernacular.
Attractive spaces	Consideration of streetscapes, townscape, 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.
8.44.	An overall assessment of value has been made for each townscape receptors (refer to Appendix 8.2), based on an overview of the assessments made using each of the above criteria, in terms of high, medium and low value.

Baseline Susceptibility of Townscape Receptors to Change

8.45. Susceptibility of townscape receptors to change has been assessed using the criteria identified in Table 9.3, with reference to the baseline conditions.

Table 8.3: Townscape Receptor Susceptibility to Change

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

Overall Sensitivity of Townscape Receptors

8.46. 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 8.2**.

Criteria for Determining Sensitivity of Visual Receptors

Type of View and Number of Viewers

8.47. In terms of assessing the baseline visual sensitivity, key factors to consider are the type of view and the likely numbers of viewers (the visual receptors). The type of view and the number of viewers are described in the following terms

- Glimpsed (i.e. in passing)/Filtered/Oblique/Framed/Open Views; and
- Few/Moderate/Many Viewers

Value of Views

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

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

8.49. The assessment of the value of views is summarised in **Table 8.4** below, in terms of *high*, *medium* and *low* value. These criteria are provided for guidance only and are not intended to be absolute.

Table 8.4: Value Attached to Views

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

Susceptibility of Visual Receptors to Change

- 8.50. The susceptibility of different types of visual receptor to changes in views is mainly a result of:
- The occupation or activity of the viewer at a given location; and
 - The extent to which a person's attention or interest may therefore be focussed on a view and the visual amenity experienced at a given view.
- 8.51. The assessment of a visual receptor to change is specific to the proposed development. However, the Guidelines offers the generic guidance outlined in **Table 8.5** as a starting point for the assessment.

Table 8.5: Visual Receptor Susceptibility to Change

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

- 8.52. The Guidelines for Landscape and Visual Impact Assessment qualifies the above examples as follows:

“This division is not black and white and in reality, there will be a gradation in susceptibility to change. Each project needs to consider the nature of the groups of people who will be affected and the extent to which their attention is likely to be focussed on views and visual amenity.” (page 114, paragraph 6.35).

Overall Sensitivity of Visual Receptors

- 8.53. The assessment of receptor sensitivity combines judgements on the susceptibility of the receptor to the specific type of development proposed and the value attributed to that receptor, as detailed in **Appendix 8.2**.

Predicted Townscape and Visual Impact Criteria

- 8.54. The predicted townscape and visual impacts of the proposed development are set out in **Appendix 8.1** and **Appendix 8.2** respectively.

Size and Scale of Effects

- 8.55. 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

- 8.56. 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

- 8.57. 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
- 8.58. 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

- 8.59. 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.
- 8.60. 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.
- 8.61. The criteria used to assess magnitude of townscape effects are described in **Table 8.6**, below:

Table 8.6: Townscape Effects - Magnitude

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.
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

- 8.62. 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.
- 8.63. 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.
- 8.64. The criteria identified in **Table 8.7** are used to assess the magnitude of visual effects, based on the degree of change to the view or composition.

Table 8.7: 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

- 8.65. 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.
- 8.66. Effects may also be direct or indirect. Direct effects are those which result directly from a development itself, whereas indirect effects may arise as a consequential change resulting from development.

Significance of Effects

- 8.67. The scale shown in **Table 8.8** is used to guide the assessment of the significance of both townscape and visual effects, from a combination of the assessment of receptor sensitivity and the magnitude of effects:

Table 8.8: Assessment of Townscape or Visual Significance

		Magnitude of Effect				
		Major Effect	Moderate Effect	Minor Effect	Negligible Effect	Neutral/No Change
Sensitivity of Receptor	High	Significant	Moderately Significant	Moderately Significant	Minor Significance	Not Significant
	Medium	Moderately Significant	Moderately Significant	Minor Significance	Not Significant	Not Significant
	Low	Moderately Significant	Minor Significance	Not Significant	Not Significant	Not Significant

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

Consultation

- 8.70. The principal viewpoints were identified through a process of desktop study and on-site survey, and were then agreed with Local Planning Authority officers.

Limitations and Assumptions

- 8.71. The methodology described above 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 8.1 and 8.2**. The assessment is carried out by a team of assessors to provide scrutiny where professional judgement is relied upon.
- 8.72. Verified views have been produced to provide a high level of confidence in the assessment of effects resulting from the Proposed Development.
- 8.73. Certain assumptions have had to be made regarding construction in order to provide a basis for the assessment.
- 8.74. 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

- 8.75. The Site forms part of the Circle Square Masterplan. The Circle Square Masterplan and Delivery Strategy was endorsed by Manchester City Council's Executive Committee in April and July 2015.
- 8.76. The first phase comprised Plots 2, 3, 4, 5, 6, 7, 8 and 14 of the Circle Square Masterplan. These developments are now complete and form part of the baseline for this application and EIA.
- 8.77. To the west of the Site, is located the Manchester Technology Centre (Oxford House). This building remains in active use with commercial units located on the ground floor. The temporary 'Hatch' development is located adjacent to the Manchester Technology Centre and beneath the Mancunian Way and provides a range of flexible retail and leisure uses.
- 8.78. To the north of the Site, on the eastern bank of the River Medlock are Princess House and Montana House, both rising to approximately 11 storeys. Together these blocks accommodate c.130 residential apartments. Plot 11 of the Circle Square Masterplan is also located to the north, comprising a 12-storey Purpose Built Student Accommodation building.
- 8.79. To the east of the Site lies the University of Manchester North Campus comprising a number of buildings used for education and research purposes.
- 8.80. To the south of the Site, Plot 14 of the Circle Square masterplan holds a multi-storey car park and hotel. Beyond this lies the Mancunian Way flyover with the Sugden Sports Centre beyond.
- 8.81. The site location and study area for the TVIA are illustrated in **Figure 8.1** in **Appendix 8.3**.

Historical Development

- 8.82. There are no heritage designations within the Site, however it can be noted that the Site sits to the south of the Whitworth Street Conservation Area by approximately 170 metres.
- 8.83. **Figures 8.2a to 8.2d** in **Appendix 8.3** show a series of historical maps of the Site and surrounding area from 1896 to 2009, and illustrate the development of the Site and change of the urban fabric over time. The Site historically sat within a tight urban grain and experienced very little change, being mainly dominated by buildings associated with the textile industry. Cooke Street historically crossed the site, and built development was located on the now open part of the site.

- 8.84. In the 1960s the area went under considerable change which was initiated by the development of the A57 Mancunian Way which now forms the southern boundary of the site and encircles the heart of the city centre. The Mancunian Way's construction resulted in removal of much of the surrounding fine urban grain, to make way for the elevated ring road. Due to the central location within Manchester and proximity to the University of Manchester and Manchester Metropolitan University the Site was developed as part of the BBC's studios in 1979, the footprint of which is visible in **Figure 8.2**, and was demolished in 2012 to make way for the Circle Square development of which the Site sits within. Gradual redevelopment within the city centre has generally resulted in buildings with a larger floorplate and increased building heights.

Heritage Designations

- 8.85. The Site is not located within a Conservation Area but the border of Whitworth Street Conservation Area lies to the north of the Circle Square Masterplan on Whitworth Street. There are several Listed Buildings located in the vicinity of the Site including:
- 94-98 Grosvenor Street – Grade II Listed
 - Oddfellows Hall – Grade II Listed
 - Lass O'Gowrie Pub – Grade II Listed
 - The Palace Hotel – Grade II Listed
 - Dancehall Theatre – Grade II Listed
 - Oxford Road Railway Station – Grade II.
- 8.86. There are no scheduled ancient monuments in the Site.

Townscape Character Areas

- 8.87. The Site is located within the 'Manchester City Centre' area, as defined within the *Manchester Core Strategy 2012-2027*. 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, illustrated in **Figure 8.4 in Appendix 8.3**.
- 8.88. The Site is located in an area defined as 'The Corridor' townscape character area as defined within the Strategy, which 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.
- 8.89. There are several other character areas which are in proximity to the Site including the Southern Gateway, Petersfield and The Village, which have the potential to influence new development. The Southern Gateway largely provides a mix of commercial and residential properties and contains a large number of proposed and ongoing developments at present. The area of Petersfield contains the event venues of the Manchester Convention Centre and Bridgewater Hall alongside a large number of hotels, leisure and commercial use buildings which make use of the strong links to the Central Business District.
- 8.90. The Southern Gateway largely provides a mix of commercial and residential properties. This area is at the forefront of Manchester's growth of city centre living. Petersfield character area is defined by Manchester Central Convention Centre and Bridgewater Hall concert venue. These uses are supplemented by associated leisure, hotel and commercial uses which make the most of the proximity to the Central Business District. The Village is dominated by many high quality Victorian and Edwardian buildings which contain leisure and night life uses centred around the Lesbian, Gay, Bisexual and Transgender community.

Urban Grain

- 8.91. Urban grain within the Site and in the surrounding area is shown in **Figure 8.5 of Appendix 8.3**. There is currently no development within the Site, and it forms a gap within the urban grain in a key city centre location. The historic intricate urban grain was lost prior to the BBC development and recent redevelopment works to incorporate the Circle Square masterplan. The implementation of Circle Square has seen the introduction of a new grain within the wider Circle Square masterplan area, which reflects the wider general densification of development within the city centre, with buildings of substantial floorplate and height.

- 8.92. The Site forms a small gap in an otherwise dense urban grain with buildings arranged in an irregular grid. The new grain created by the Circle Square forms a significant enhancement to the grain in comparison to the substantial massing of the former BBC building and references the intricate urban grain that was historically present on the Site. The Site forms a small gap in this new grain which currently detracts from the wider Circle Square masterplan area.

Land use

- 8.93. Land use on the Site and in the surrounding area is shown in Figure 8.6 of Appendix 8.3. The Site is currently surrounded by hoarding and is mostly hardstanding, and has been used as a construction compound for building works around the masterplan area. The Site includes Newman Street (formerly Brancaster Road), Cloak Street and an under-utilised piece of open space. An electricity sub-station is located to the southern end of the Site, adjacent to the Mancunian Way.
- 8.94. Circle Square forms the immediate context for the site. It is an employment-led mixed-use development which includes commercial office space; other business/research space; a new residential neighbourhood; ground floor retail and leisure space; and a series of public realm interventions. The development construction is finished and therefore forms part of the baseline for this assessment. It turns this part of the city into a vibrant new district, legibly connecting in to the wider city centre fabric.
- 8.95. Land uses to the north of the site, beyond Circle Square, are a mix of uses associated with the city centre, and are generally retail and commercial mixed uses. To the south, land use is dominated by educational use associated with the Universities.

Building Heights

- 8.96. Building heights on the Site and in the surrounding area is shown in **Figure 8.7 of Appendix 8.3**. Buildings within Circle Square development are characterised by a mix of building heights, with development ranging from seven up to thirty-seven stories in height. The building heights within the city centre to the north and along the Oxford Road Corridor to the south are generally substantially reflecting their location within the Manchester City Centre Townscape Character Area, as defined within the Core Strategy. Building heights generally step up to the north within Circle Square, and more generally increase towards the city centre core to the north of the railway line.
- 8.97. There are currently no significant built structures on the Site. An electricity sub-station is located to the southern end of the site, adjacent to the Mancunian Way.

Flood Risk and Topography

- 8.98. **Figure 8.8 in Appendix 8.3** demonstrates that the Site is partially located in Flood Zone 2 and located close to Flood Zone 3. The Site is also bisected by the 35m contour line generally falls from south to north due to its proximity to the River Medlock. It is important to note that due to the construction of the Circle Square development ground levels have been modified within the wider Circle Square Masterplan to accommodate development and therefore ground levels within the Site are not sensitive to change and there is minimal flood risk.

Movement and Linkages

- 8.99. **Figure 8.9 in Appendix 8.3** shows the movement and linkages in and around the Site. Oxford Road and Upper Brook Street/Princess Street act as primary vehicular and pedestrian routes in and out of the city centre with key bus routes, and Oxford Road in particular featuring integrated cycle routes from Fallowfield to Oxford Road Station and a high concentration of bus stops. Oxford Road Station and Piccadilly Station are both a ten minute walk away from the Site and the St Peter's Square Metrolink stop can be found a fifteen minute walk north of the Site.
- 8.100. Secondary routes can be found along Charles Street to the north and Newman Street to the south framing the immediate surrounding area of the Site further. There are also many secondary routes of pedestrians and vehicles adjoining Oxford Road and Upper Brook Street/Princess Street solidifying the Site and the immediate area as a key link between both streets in the future.
- 8.101. Newman Street (formerly Brancaster Road) runs on an east-west axis to the north, and Cloak Street is located to the south of the building plot within the Site. Both routes are currently lack positive overlooking and activation.

Green Space

- 8.102. **Figure 8.10** in **Appendix 8.3** shows the green space in and around the Site. There is currently no high quality green open space within the Site due to the current temporary/changing use. Symphony Park within Circle Square amounts to 5.7 acres of high quality public space and forms a significant new public park within the city, overlooked by new shops, restaurants, bars and cafes. Manchester city centre has limited high quality green space elsewhere, with the nearest in Manchester Metropolitan University's All Saint's Square to the south west, Gartside Gardens to the south east and University of Manchester's north campus to the north east. There is a small amount of amenity space along the Mancunian Way which lacks a clear function.

Site Analysis

- 8.103. **Figure 8.12** in **Appendix 8.3** analyses the existing Site. In its current form, the Site currently detracts from the wider completed portions of Circle Square. The 2015 Circle Square masterplan sought to create a vibrant employment-led new district, connected into the wider fabric of the city centre, incorporating: commercial office space; other business/research space; a new residential neighbourhood; ground floor retail and leisure space; and a series of public realm interventions.
- 8.104. The Circle Square development adds creates a fine urban grain in the are which is well connected internally and to the wider context by high quality routes. The integration of ground floor retail and commercial units maximises t active frontages and encourages activity and animation of the spaces through human interaction. The introduction of a high quality central greenspace, Symphony Park, and street trees helps to bridge the scale between humans and buildings, creates an attractive environment, helps to guide pedestrian movement by reinforcing a route hierarchy, and act as a barrier to absorb noise.
- 8.105. A 30,391 sq m GIA commercial office building, with c.16,000 sq ft floorplates, was granted full planning permission on 7 February 2020 under application 125451/FO/2019 (as amended); however, works have not yet commenced. The vision for the Site has continued to evolve since the application was approved. This has resulted in an increase to proposed building floorplate to meet commercial demand.
- 8.106. Manchester Technology Centre (Oxford House) is located to the west of the Site. It remains in active use with commercial units located on the ground floor but the aspiration is that it will form Phase 3 of the Circle Square development. The temporary 'Hatch' development is located adjacent to the Manchester Technology Centre and beneath the Mancunian Way and provides a range of flexible retail and leisure uses.

Principal Viewpoints

- 8.107. A total of 6 viewpoints have been identified in conjunction with Manchester City Council. The locations of the viewpoints are illustrated in **Figure 8.1 of Appendix 8.4**.
- 8.108. The distribution of viewpoints illustrates that the Site visually strongly contained, with no medium or long-range views. This is largely due to the scale and density of built form within the surrounding Circle Square development, and the relatively flat ground levels. Views mostly utilise strong movement corridors which allow enclosed views.

Identification and Evaluation of Significant Effects

- 8.109. A detailed assessment of the construction and operational phase effects for landscape and views is set out in **Appendices 8.1 and 8.2**.
- 8.110. A draft 'Construction Management and Methodology Plan' has been created which allows for an assessment of likely construction phase effects on townscape and views. This represents a realistic 'worst case' scenario in accordance with the Guidelines.
- 8.111. Sources of temporary 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 vegetation and scrub 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 levelling & preparation (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 new events area (visual effects).
- Public Realm and associated landscaping works (townscape and visual effects).

- 8.112. 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 streets and spaces.
- 8.113. Likely townscape effects have been identified during both the construction and operational stages, and are outlined below. A comparison has been made between the Future Baseline (the extant planning permission) and the Proposed Development.

Table 8.9 Likely Significant Effects

Receptor	Construction Phase	Operational Phase
Townscape Character – The Corridor (500m study area)	Direct minor neutral effect on townscape character within the 500m study area. The existing use/function of the site as a construction compound is unchanged.	Direct minor beneficial effect. Neighbourhood-wide effect on the Circle Square sub-character area and wider 'The Corridor' townscape character area within the 500m defined study area.
Urban Grain	Direct minor neutral effect on the Circle Square sub-character area and wider 'The Corridor' townscape character area within the 500m defined study area.	Direct minor beneficial effect. Neighbourhood-wide effect on the Circle Square sub-character area and wider 'The Corridor' townscape character area within the 500m defined study area.
Land Use	Continued use for construction will result in 'no change' to land use within the site within the 500m study area.	Direct minor beneficial effect. Neighbourhood-wide effect on the Circle Square sub-character area and wider 'The Corridor' townscape character area within the 500m defined study area.
Building Heights	Direct minor neutral effect on building heights as a townscape receptor within the 500m study area. Gradual emergence of the 15 storey development throughout the construction period.	Direct minor beneficial effect. Neighbourhood-wide effect on the Circle Square sub-character area and wider 'The Corridor' townscape character area within the 500m defined study area.
Movement and Linkages	Direct minor adverse effects on movement and linkages within the 500m study area. The construction activity is not predicted to result in substantial detrimental change to existing poor quality routes.	Direct moderate beneficial effect on movement and linkages within the context of the study area. Neighbourhood-wide effect on the Circle Square sub-character area and wider 'The Corridor' townscape character area within the 500m defined study area.
Public Open Space	No designated public green space within the site. Continued use for construction will result in 'no change' to public open space within the site within the 500m study area.	Direct moderate beneficial effect. Neighbourhood-wide effect on the Circle Square sub-character area and wider 'The Corridor' townscape character area within the 500m defined study area.
Site Character	Direct minor neutral effect. Site level effect within the context of Circle Square. The site character is defined by ongoing construction works and is therefore not predicted to change as a result of the proposed works.	Direct major beneficial effect. The character of the site will be transformed from a construction site to a high quality development with a clearly defined use.
Viewpoint 1: View from the junction of Princess Street/Whitworth Street	Minor adverse effect on visual receptors. Partial views of construction works will be visible and terminate views along the street.	Minor beneficial effect on visual receptors. The Proposed Development will form a new backdrop to the view. The scale, massing and colour of the building is not out of keeping with the existing historic buildings along Princess Street.
Viewpoint 2: View from the junction of A34/Charles Street	Minor neutral effect on visual receptors. Partial views of construction works will be visible but construction works will largely be screened behind existing development.	Minor beneficial effect on visual receptors. Partial views of high quality new development, which fills an existing 'gap' in the urban grain.

Receptor	Construction Phase	Operational Phase
Viewpoint 3: View from Sackville Street	Moderate neutral effect on visual receptors. Clear views of construction works due to elevated, close-range and direct views of the site.	Moderate beneficial effect on visual receptors. Views of high quality addition to the view, fills in the existing 'gap' in the urban form, and aids legibility by continuing the building line, creating enclosure Newman Street. The vertical glazed setback visually 'breaks up' the scale and massing of the development.
Viewpoint 4: View from Mancunian Way pedestrian island	Moderate neutral effect on visual receptors. Partial views of construction works will be available.	Minor beneficial effect on visual receptors. High quality new built focus within the view.
Viewpoint 5: View from junction of Upper Brook Street/Grosvenor Street	Minor neutral effect on visual receptors. Partial views of construction works to the upper storeys will be visible but are not considered detrimental to the view.	Minor beneficial effect on visual receptors. The Proposed Development will be partially visible and will appear as a high quality element that has cohesion with the wider Circle Square development.
Viewpoint 6: View from Oxford Road down Newman Street	Minor neutral effect on visual receptors. Partial views of construction works, above Manchester Technology Centre and along Newman Street.	Minor beneficial effect on visual receptors. Partial views of high quality new development, which fills an existing 'gap' in the urban grain, positively encloses the street and defines a legible route down Newman Street.

Mitigation Measures

- 8.114. The assessment of the townscape and visual effects is set out in full within **Appendices 8.1 and 8.2**.
- 8.115. The implementation of good site management, maintenance and housekeeping would ensure that the temporary deterioration to townscape character and visual amenity will be kept to a practical minimum. Despite these better practice measures, there would still remain inevitable adverse effects during construction works.
- 8.116. The Proposed Development has been designed through an iterative process, which avoids, reduces or offsets potential impacts on townscape and views, minimising the need for additional mitigation. The extent of mitigation 'designed in' to the Proposed Development means that townscape and visual effects are likely to remain as residual effects after any supplementary mitigation has been implemented. A summary of the 'designed in' embedded mitigation relevant to townscape and views is outlined below:
- The building height and aesthetic parameters for the Proposed Development are as set by the Circle Square masterplan.
 - The commercial use will support the wider commercial led use of the Masterplan, and wider townscape character of 'The Corridor'.
 - Substantial enhancement of the public realm, including Symphony Gardens, which will complement the already established Symphony Park.
 - Retention and enhancement of existing pedestrian routes and creation of a dynamic front onto Newman Street and Princess Street. Enhanced route east west to connect with wider context including ID Manchester.
 - Reduced vehicular traffic on Newman Street to priorities pedestrian and cycle movement and enhance accessibility to public transport linkages.
 - The Proposed Development will improve access, servicing and parking strategy within the site to the benefit of the wider masterplan. Access for car parking and servicing will be re-routed through the MSCP and between the site and MSCP to remove the need for these vehicle movements on Newman Street.
 - Greening of Newman Street will add to the positive experience for users, enhance legibility, and complement the wider green space provision within the site and wider Circle Square masterplan.
 - The design of Symphony Gardens focusses on biodiversity and will create a space for residents, workers and visitors to Circle Square to appreciate inner city nature.

- Elevated ground levels to the southern edge within the Gardens will provide visual screening of sub stations to the south, as well as providing visual interest, opportunities for prospect, and reflecting the design of Symphony Park.
- Sustainable design principles embedded into the landscape with a focus on planting to encourage biodiversity and rain garden design to accommodate rain water run-off.

Sustainable design with the ability to accommodate potential future redevelopment of the Manchester Technology Centre.

Cumulative Effects

- 8.117. Two cumulative schemes have been identified. Due to the urban environment, especially along Oxford Road, there is unlikely to be a visual connection at pedestrian level between the Proposed Development and either of the above developments. Neither of the cumulative schemes can be seen in the views. As such, there is considered to be no change to the townscape at the Proposed Development as a result of the cumulative developments.

Residual Effects

- 8.118. There are no additional mitigation measures proposed in relation to townscape and views in addition to embedded mitigation measures. Therefore, residual townscape effects are as described below.
- 8.119. For the purposes of this Townscape and Visual Impact Assessment, only effects deemed 'moderately significant' and 'significant' are considered to be significant in the meaning of EIA Regulations (2017).
- 8.120. A detailed assessment of effects is contained within **Appendix 8.1** and **Appendix 8.2**.
- 8.121. Due to the poor quality and under-use of the existing Site, there are not predicted to be any significant townscape effects during the construction phase.
- 8.122. There are predicted to be significant **beneficial effects** during the operational phase for movement and linkages (moderate beneficial), public open space (moderate beneficial) and site character (major beneficial). The beneficial effects on movement and linkages are as assessed for the consented scheme (future baseline). The consented scheme predicted 'no change' to the effects on public open space. The current assessment therefore predicts a substantial improvement to public open space as a result of the Proposed Development due to the inclusion of Symphony Gardens when compared to the future baseline.
- 8.123. There are predicted to be moderately significant effects during the construction phase on viewpoints 3 and 4 due to the clear views of construction works and close-range of the views. The effects are predicted to be 'neutral' in nature however, and are not considered to be harmful. The assessment of a neutral effect has been determined due to the ongoing construction that has been undertaken within the wider context. The Proposed Development will symbolise the final stages of regeneration within the Circle Square development. Redevelopment of the Site will involve revitalisation and reuse of an area which is currently visually very poor, and detracts from the wider Circle Square masterplan area.
- 8.124. The visual effects for the operational phase are as predicted for the consented scheme (future baseline), and are beneficial in nature. There are predicted to be significant beneficial effects for view 3 (moderate beneficial), and view 4 (moderate beneficial).

Table 8.10 Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

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				
Minor neutral effects	Townscape character	None	N/A	Minor neutral effects. Temporary. Minor significance.
Minor neutral effects	Urban grain	None	N/A	Minor neutral effects. Temporary. Minor significance.
No Change	Land use	None	N/A	No Change . Temporary. Not Significant.
Minor neutral effects	Building heights	None	N/A	Minor neutral effects. Temporary. Minor significance.
Minor neutral effects	Movement and linkages	None	N/A	Minor neutral effects. Temporary. Not Significant.

No Change	Public open space	None	N/A	No Change. Temporary. Not Significant.
Minor neutral effects	Site character	None	N/A	Minor neutral effects. Temporary. Minor significance.
Minor adverse effects	Viewpoint 1	None	N/A	Minor adverse effects. Temporary. Minor significance.
Minor neutral effects	Viewpoint 2	None	N/A	Minor neutral effects. Temporary. Minor significance.
Moderate neutral effects.	Viewpoint 3	None	N/A	Moderate neutral effects. Temporary. Minor significance.
Moderate neutral effects.	Viewpoint 4	None	N/A	Moderate neutral effects. Temporary. Minor significance.
Minor neutral effects	Viewpoint 5	None	N/A	Minor neutral effects. Temporary. Minor significance.
Minor neutral effects	Viewpoint 6	None	N/A	Minor neutral effects. Temporary. Minor significance.
Operational Phase				
Minor beneficial effects	Townscape character	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Minor beneficial effects	Urban grain	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Minor beneficial effects	Land use	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Minor beneficial effects	Building heights	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Moderate beneficial effects	Movement and linkages	None	N/A	Moderate beneficial effect. Permanent. Moderately significant.
Moderate beneficial effects	Public open space	None	N/A	Moderate beneficial effect. Permanent. Moderately significant.
Major beneficial	Site character	None	N/A	Major beneficial effect. Permanent. Moderately significant.
Minor beneficial effects	Viewpoint 1	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Minor beneficial effects	Viewpoint 2	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Moderate beneficial effects	Viewpoint 3	None	N/A	Moderate beneficial effect. Permanent. Moderately significant.
Moderate beneficial effects	Viewpoint 4	None	N/A	Moderate beneficial effect. Permanent. Moderately significant.
Minor beneficial effects	Viewpoint 5	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Minor beneficial effects	Viewpoint 6	None	N/A	Minor beneficial effect. Permanent. Not significant

Reference List

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

- Council of Europe (Florence, 2000). The European Landscape Convention.
- Department for Communities and Local Government (2012), National Planning Policy Framework, London, DCLG.
- Planning Practice Guidance. The National Planning Policy Framework and relevant planning practice guidance. Available at: <https://www.gov.uk/government/collections/planning-practice-guidance>. [Accessed: 18/08/2020].
- Institute of Environmental Management & Assessment (IEMA), 2015. IEMA Environmental Impact Assessment Guide to Shaping Quality Development.
- The Town and Country Planning (Environmental Impact Assessment.)
- Landscape Institute, IEMA, 2013. Guidelines for Landscape & Visual Impact Assessment, 3rd Edition, Oxon, Routledge.

- Landscape Institute Technical Guidance Note 06/09 (2019). Visual Representation of Development Proposals. Available at: <https://www.landscapeinstitute.org/visualisation/>. [Accessed: 23/06/2022]. Environmental Impact Assessment EU Directive and UK Regulations, (85/337/EEC).
- Manchester's Core Strategy 2012-2027
https://www.manchester.gov.uk/downloads/download/5672/core_strategy [Accessed: 23/06/2022].
- Historic England Advice Note 4: Tall Buildings (2nd Edition) 4 March 2022

9. Water Quality, Drainage and Flood Risk

Introduction

- 9.1. This Chapter of the ES has been prepared by Curtins Consulting and assesses the likely Flood Risk and Drainage 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.
- 9.2. This Chapter is accompanied by one technical appendix, a Flood Risk Assessment and Drainage Strategy Report (Appendix 9.1).
- 9.3. The author of this chapter has BSc(Hons) Civil Engineering qualification and 15 years' experience for EIA developments.

Legislative and Policy Context

- 9.4. The following legislation, policy and guidance documents are relevant to this chapter.

Legislation

- 9.5. The following legislation has been utilised in the preparation of this EIA chapter:
- Water Resources Act, 1991. Sets out the regulatory controls and restrictions that provide protection to the water environment through controls on abstraction, impounding and discharges as well as identifying water quality and drought provisions.
 - Land Drainage Act, 1991. Places responsibility for maintaining flows in watercourses on landowners.
 - Environmental Act, 1995. Establishes basic terms of reference for the Environment Agency.
 - Water Act, 2003. Formalises the Government's commitment to the sustainable management and use of water resources.
 - The Water Environment (Water Framework Directive (2000/60/EC) WFD) (England & Wales) Regulations, 2003. These Regulations establish a framework for protecting the water environment, with the aim of achieving chemical and ecological water quality targets.
 - Floods Directive (2007/60/EC), 2007. Its aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity.
 - Building Regulations Part H (Drainage and Waste Disposal), 2010. Statutory guidance for building drainage and sewerage.

National Planning Policy

- 9.6. National Planning Policy Framework, 2021 sets out the national framework for delivering sustainable development, Chapter 14 "Meeting the challenge of climate change, flooding and coastal change" para 148 to 165.
- 9.7. National Planning Policy Framework Technical Guidance to the National Planning Policy Framework (2019), provides additional guidance to ensure the effective implementation of the planning policy for development in areas at risk of flooding.
- 9.8. Flood Risk and Coastal Change Planning Practice Guidance (PPG), 2014 provides guidance on how the suitability of incorporating SuDS into a new development should be assessed within a planning application's site-specific Flood Risk Assessment. Para 051, 079 & 080.

- 9.9. House of Commons: Written Statement (HCWS161) – Sustainable Drainage (2014), strengthens existing planning policy relating to the use of SuDS within ‘major’ planning applications. From the 6th April 2015, all ‘major’ planning applications (as defined by Town and Country Planning (Development Management Procedure) (England) Order 2010) will be required to consider using SuDS as part of the development’s management of surface water run-off, unless it can be demonstrated to be inappropriate.
- 9.10. Non-Statutory Sustainable Drainage Technical Standards (2015) provides a set of technical standards for which all future SuDS are recommended to be designed to in order to achieve the aims (in relation to surface water management and flood risk) of current National planning policy.

Local Planning Policy

- 9.11. The following documents comprise the Development Plan and policies relevant to Flood Risk:
- Manchester Core Strategy – relevant policies (EN8, EN14, EN17, DM1).
 - Manchester City Council Strategic Flood Risk Assessment (SFRA) 2011 provides guidance on local flood risk and surface water management issues as well as local policy requirements for managing surface water run-off from proposed development sites.

Guidance Documents

- 9.12. The following documents comprise the Guidance relevant to Flood Risk:
- CIRIA C753: The SuDS Manual, 2015. Statutory guidance for Sustainable Urban Drainage.
 - Manchester City Council Strategic Flood Risk Assessment (SFRA) 2011 provides guidance on local flood risk and surface water management issues as well as local policy requirements for managing surface water run-off from proposed development sites.
 - Environment Agency Online Flood Mapping tool – Delineates areas on the basis of High, medium and low risk areas and includes risk from both fluvial and surface water sources.
 - The North West River Basin District, within which the Proposed Development Site sits, has a River Basin Management Plan (RBMP) prepared under the WFD, which focuses on the protection, improvement and sustainable use of the water environment and Environment Agency Report SC030219 Rainfall Runoff Management for Developments (2013) provides advice on the management of stormwater drainage for developments and in particular to assist in sizing of storage elements for the control and treatment of stormwater runoff.
 - British Geological Survey (BGS) mapping – online mapping tool indicating predominant underlying geology of Britain, and at a site/area specific level.

Assessment Methodology and Significance Criteria

Technical Scope

- 9.13. The ES Chapter will be based on the FRA and the Drainage Strategy, and the following issues will be addressed:
- Flood Risk (Fluvial, Reservoir Breach and Surface Water)
 - Drainage Infrastructure (surface and foul water); and
 - Water Quality
- 9.14. The FRA has been carried out in accordance with the National Planning Policy Framework document (NPPF), which provides technical guidance on how flood risk should be assessed during the planning and development process. The intention is to ensure that development planning decisions are made in a manner that deliver sustainable development in terms of current and future flood risk.
- 9.15. In April 2015, the Government made changes to the National Planning Policy Framework which made Sustainable Urban Drainage Systems (SuDS) a material consideration in the determination of planning applications for ‘major’ developments.
- 9.16. The Flood Risk Assessment and Drainage Strategy reviews the following information:
- Environment Agency flood maps for rivers and sea flooding.

- UK Government Long Term Flood Risk Information for surface water flooding and reservoir flooding.
- Manchester City, Salford City and Trafford Councils Level 1 Hybrid Strategic Flood Risk Assessment (SFRA) published in March 2010.
- Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA, User Guide, Final, dated May 2010.
- Manchester City, Salford City and Trafford Councils Level 2 Hybrid Strategic Flood Risk Assessment (SFRA) published in March 2011.
- Preliminary Flood Risk Assessment (PFRA) for Manchester County Council dated May 2011.
- Environment Agency Model Data from Manchester Ship Canal 2018 Study.
- United Utilities Public Sewer Records.
- Manchester City Council SuDS Requirements for New Developments.
- Survey Operations CCTV Survey Dated July 2012.
- Subscan Ltd CCTV Survey dated September 2015.
- GPR Survey by Survey Solutions dated October 2015.
- CIRIA SuDS Manual 2015

9.17. The following consultations have been carried out and reported in Appendix G of the Flood Risk Assessment.

- Manchester LLFA
- Environment Agency
- United Utilities

Flood Risk

- 9.18. The assessment of the impact of flood risk is based on the Flood Risk Assessment (FRA) prepared for the Site in accordance with the NPPF. The FRA has been included in Appendix 9.1. In accordance with the requirements of the NPPF, the FRA identifies and quantifies the risk to and from the site from a variety of sources. The FRA uses information both freely available online and the purchased information obtained from the Environment Agency, Manchester City, Salford City and Trafford Councils Level 2 Hybrid Strategic Flood Risk Assessments.
- 9.19. The risk associated with fluvial, and Reservoir Breach has been assessed using available information. The risk of flooding from other sources is considered lower therefore it has been scoped out of the assessment.
- 9.20. In accordance with the requirements of the Environmental Statement, Table 9.1 and Table 9.2 have been used to summarise the significance criteria and the impact on receptor sensitivity respectively.

Table 9.1 - Flood Risk Management Hierarchy

Significance of Effect	Fluvial	Surface Water	Reservoir Breach
Major	Change of more than one flood zone classification	Change in surface water flows and/or routing affecting properties internally	Change in extent of inundation affecting properties internally
Moderate	Change of a single flood zone classification	Change in surface water flows and/or routing affecting external areas around properties	Change in extent of inundation affecting external areas around properties
Minor	Change in risk but no change in flood zone classification	Change in risk that does not affect properties	Change in risk that does not affect properties
Negligible	No change in fluvial Flood Risk	No Change in surface water flood risk	No change in reservoir breach flood risk.

Table 9.2 - Flood Risk impact on receptor sensitivity - Impact of flood risk/water level

Sensitivity	Watercourse
High	Increase in water levels and changes flood zone
Moderate	Increase in water levels which does not result in flood zone change
Low	No noticeable change in water level

Drainage Infrastructure

- 9.21. The Drainage infrastructure includes a separate private surface and foul network within the site and the public combined water sewerage system outside of the boundary. United Utilities, The EA, and Manchester City Council have been consulted on the proposals. The FRA provides details of the existing conditions and the proposed water strategy, therefore will be used as the basis to assess the impact of the Proposed Development on the local surface water strategy.
- 9.22. A summary of the significance criteria used to assess the effect on the water supply and a sewer infrastructure in Table 9.3 and the receptor sensitivity in Table 9.4.

Table 9.3 - Drainage infrastructure magnitude of change assessment criteria

Significance of Effect	Fluvial
Major	Potential change in the flooding behaviour of the existing systems
Moderate	Potential change in the surcharging behaviour of the existing systems
Minor	Change in the flow behaviour within the system but hydraulic performance is unchanged
Negligible	No changes needed to the existing system

Table 9.4 - Drainage Infrastructure impact on receptor sensitivity - Impact on the Performance of the Sewer

Sensitivity	Watercourse
High	Surface flooding of the system and the operation of the Combined Sewer Overflows is more frequent with storms of a magnitude less than the 1 in 30-year storm event.
Moderate	Surface Flooding of the system and the operation of the Combined Sewer Overflows is more frequent with storms of a magnitude less than 1 in 100-year storm events
Low	Operation of the network is visually unaffected. No Increase in the levels of the frequency of surface water flooding.

Water Quality

- 9.23. The assessment of the likely effect of the Proposed Development on water quality considers both watercourses and groundwater.
- 9.24. The water quality within the local watercourses has been assessed based on the guidance set out in the CIRIA SuDS Manual 2015. To date, no intrusive ground investigation works have been undertaken therefore the groundwater quality is unknown. The assessment is based on best practice and information provided by the EA and the British Geological Society (BGS).
- 9.25. The assessment of the likely effects of the Proposed Development on water quality will be assessed based on the criteria set out in Table 9.5 and corresponding receptors sensitivity in Table 9.6.

Table 9.5 - Water Quality Magnitude of change assessment criteria

Significance of Effect	Water course	Groundwater
Major	Change in both ecological and chemical water quality	Change in both ecological and chemical water quality
Moderate	Change in either ecological or chemical water quality	Change in either ecological or chemical water quality
Minor	Minor change in water quality	Minor change in water quality
Negligible	No change in quality	No change in quality

Table 9.6 - Water Quality Impact on receptor sensitivity

Sensitivity	Water Quality
High	Detrimental effect on the water Quality leading to a change in water quality designation of 2 or more classifications
Moderate	Detrimental effect on the water Quality leading to a change in water quality designation of 1 classification.
Low	Water quality remains unaffected, with no change in the water quality classification.

Impact Significance.

9.26. The Significance of an environmental impact is determined by the interaction of magnitude and sensitivity whereby the impacts can be positive or negative. The impact significance Matrix is set out in Table 9.7.

Table 9.7 - Impact Significance

	Sensitivity (adverse/beneficial)		
Magnitude	High	Moderate	Low
Major	Major – High	Major - Moderate	Major-Low
Moderate	Moderate-High	Moderate	Moderate - Low
Minor	Minor - High	Minor – Moderate	Minor - Low
Negligible	negligible	negligible	negligible

Limitations and Assumptions

9.27. The findings are limited to information available. The EA water levels are used to determine the flood level and is assumed based on the latest information available.

9.28. The ground water and quality baseline and impacts are based on engineering judgement.

Baseline Conditions

Flood Risk

- 9.29. This section summaries the existing flood risk that is experienced by the Proposed Development in its current condition and surrounding area. Full details are provided in the FRA. Only the flooding sources that have been identified as presented a specific risk on the Proposed Development and within the surrounding area has been considered.

Fluvial Flooding

- 9.30. The Environment Agency Flood Map indicates that the Proposed Development has areas located with Flood Zones 1 and 2, with the Flood Zone 2 designation associated with the River Medlock which flows on the northern boundary of the site. Drawing reference CS3-CUR-03-XX-DR-C-9210-P01 in the FRA shows the flood zone 1 (great than a 1 in 100 year) and flood zone 2 (less than 1 in 100 and greater than 1 in 1000 year) mapping based on the 2018 EA modelling the River Irwell/Manchester Ship Canal. The EA level data set shows that the maximum water level across the site assuming the Undefended scenario in the 1 in 100 year is 32.46mAOD and the 1 in 1000-year event is 33.97mAOD.
- 9.31. The existing topography generally falls towards the Medlock towards the north-east corner of the site. The water level from modelling shows that flooding occurs between the 1 in 100 year and the 1 in 1000-year event. This gives rise to water levels of up to approximately 0.6m during the 1 in 1000year undefended modelling simulation.

Reservoir Breach

- 9.32. Online information available from the Environment Agency details that the Site is susceptible to flooding from a breach occurring in the wider Reservoir network. The breach water is conveyed using the River Medlock channel and the resultant flooding covers a larger area than the Flood zone 2.

Infrastructure

- 9.33. The public sewer records have been obtained for the development Site and is shown in the Flood Risk Assessment.
- 9.34. The public sewer records indicate the following public sewers within the proposed development boundary:
- There is a combined public sewer noted as a 690x610mm brick sewer and upsizing to a 750x620mm brick sewer within Cloak Street. The sewer flows in a west to east direction and connects to a 850x700 Brick sewer in Brook Street. This section of sewer is to be abandoned, and a S116 agreement is in place with United Utilities. The sewer currently serves the site compound present on the site and will be abandoned once the compound is removed.
 -
- 9.35. The following public sewers are shown within the vicinity of the site:
- The sewer from Cloak Street - noted above, flows in a south-east direction, and connects to a Combined Sewer Overflow (CSO), before upsizing to an 850x650mm Brick sewer, flowing in a west to east direction.
 - There is a combined public sewer noted as a 300mm clay sewer within Princess Street, to the east of the site. The sewer flows in a north to south direction into Brook Street, where it connects to the sewer overflow noted above.
 - The outfall sewer from the CSO flows in a south to direction, running under Brook Street and princess Street to the east of the site, before discharging to the River Medlock to the north of the site.
- 9.36. There are further sewers within the vicinity of the site, but they are not considered of relevance to the development.
- 9.37. There are various existing private sewers within the application site which served the BBC buildings, previously located on site.
- 9.38. Since the surveys were undertaken, earlier phase drainage has now been installed and some of the drainage is installed within the redline boundary for this Phase. In summary:
- There is a surface water network within Brancaster Road, which collects drainage from the MSCP (Plot 14) which is south of this Phase. Allowance was made for the future connection of drainage from this phase. All surface water discharges to the Medlock via a restricted outfall.
 - There is a foul water network within the MSCP (Plot 14) site south of this phase. Some of the drainage is located within this Phase boundary and allowance has been made for future connection from this phase.

Water Quality

Watercourses

- 9.39. The River Medlock is one of the 55% of UK Rivers that failed to reach the standards required under the Water Framework Directive (WFD). The main reasons for not achieving good status/potential was the result of diffuse pollution from contaminated land, transport and other urban sources and point source from intermittent discharges.

Ground Water

- 9.40. No intrusive testing has been carried out on site at the time of writing. The whole site is not within a groundwater protection zone. The bedrock is described as Chester Formation – Sandstone with nearby boreholes available through the BGS website mapping suggest that the primary material identified is sands and clays over sandstone.

Identification and Evaluation of Significant Effects

- 9.41. This section is split into two phases: Construction Phase and Operational Phase. The effects described in this section are based on a pre-mitigation scenario. Mitigation will be described later in this chapter.
- 9.42. The proposed site drainage strategy is to create a private surface water network discharging into an existing outfall (constructed under earlier phase) into the nearby River Medlock. Peak flows will be restricted by more than 50% of existing brownfield flows as set out under an earlier phase of the masterplan. The FRA reports the full details of the proposed drainage strategy.

Fluvial Flooding

Construction

- 9.43. During construction, the preparation of the ground is readiness for the commencement of construction will impact the levels on Site.
- 9.44. The changes in level will be largely temporary and once development is above ground floor level, topography will largely be in line with existing site levels. On this basis, the pre-mitigation effect signification at construction is considered **Moderate adverse** which is **not significant**

Operation

- 9.45. The Proposed Development will have a similar extent of impermeable area compared to the current condition. Therefore, the volume of surface water generated by the Site will be unchanged. The proposed drainage strategy is designed to manage the runoff from the site and provides a discharge to the River Medlock under a restricted outfall as agreed under an earlier phase. The flows agreed are 1-year event = 25.0 l/s, 1 in 30-year event = 58.0 l/s and 1 in 100-year event = 73.0 l/s (including 30% allowance for climate change) as described in section 6.3 of the FRA.
- 9.46. The development will include areas of soft landscaping and there will be localised SuDS features, such as rain gardens in the tree pits within Newman Road and permeable construction within Symphony Gardens.
- 9.47. The only water entering the sewerage network will be the foul water.
- 9.48. The majority of areas within the building onsite are built above the water level of the 1 in 1000 undefended level therefore the threshold levels to the building are situated outside of the floodplain. There are localised areas (retail unit 1 and cycle storage) area which are set below the 1 in 1000-year flood level and as such, is at an increased risk.
- 9.49. On this basis, the operational pre-mitigation effect signification for fluvial flood risk to the site and the wider catchment area is considered to be **Moderate adverse** which is **not significant**.

Reservoir Breach

- 9.50. The flooding which results from a reservoir breach manifests itself in a similar way as the flood mapping. The building levels will be above the water level set out in the 1 in 1000 year undefended level for the majority of the site, therefore on this basis both the construction and operational pre-mitigation effect significance for reservoir breach to the site and the wider catchment area is considered to be **Moderate adverse** which is **not significant**

Combined Sewer

Construction

- 9.51. The primary impact on off-site surface water sewerage during construction is silt and other debris being washed into the pipework on site. Debris may accumulate over time and progressively reduce flow capacity within the pipeline which could lead to surcharging and possible flooding from the upstream system.

- 9.52. The construction site welfare facilities will generate foul water flows which are expected to be discharged in the local foul water sewerage network. The flow rates are expected to be lower than the proposed design rates.
- 9.53. On this basis, the pre-mitigation effect signification at construction on the Water Supply and Sewer Infrastructure is considered to be **Minor adverse** which is **not significant**.

Operation

- 9.54. The Proposed drainage solution will remove existing surface water flows on site and discharge to the Watercourse. There are existing connections to the combined sewer which will improve the operation of the adopted sewer network by freeing up the available capacity within the network, which will reduce the flood risk on the wider network catchment.
- 9.55. The Proposed Development will increase the amount of foul water discharging to the sewerage system compared to the existing situation. This will result in an increase of foul water flow rates to the Water Supply and Sewer Infrastructure. The foul connection was agreed with United Utilities under a Section 106 Agreement ref EC4436 (enclosed in Appendix J of FRA). This is offset by the potential reduction in surface water flow that will not be entering the system once the surface water network is operational.
- 9.56. On this basis, the operational pre-mitigation effect signification on the Water Supply and Sewer Infrastructure is considered to be **Minor Beneficial** which is **not significant**.

Water Quality – Water Course

Construction

- 9.57. The Construction activities adjacent to the River Medlock will have the potential to pollute the watercourse. Run-off from the Site can reach the river via overland flows dictated by the natural and proposed topography on the Site. Potential pollutants include silt, fuel, oil and hydraulic fluid from construction plant, cement, concrete, and other construction related chemicals. These will have an adverse impact on the ecology of the watercourse but to the potential to change the chemical quality.
- 9.58. On this basis, the pre-mitigation effect signification at construction on the Local Watercourses is considered to be **Moderate adverse** which is **not significant**.

Operation

- 9.59. The proposed development has opportunities to pollute the watercourse as there are areas with regular vehicle movement located within the site.
- 9.60. On this basis, the operational pre-mitigation effect signification on the Local Watercourses is considered to be **Moderate adverse** which is **not significant**.

Water Quality – Groundwater

Construction

- 9.61. During construction, there is a potential risk to groundwater quality as a result of pollutants from construction operations and materials able to infiltrate into the ground. Construction dig may create a more direct flow path for any contaminants to reach the groundwater. As the ground conditions, namely the coefficient of infiltration is currently unknown and is dependent on the excavation depth therefore the exact rate at which a contaminant can reach the ground water cannot be determined.
- 9.62. On this basis, the pre-mitigation effect signification at construction on the Ground water is considered to be **Moderate adverse** which is **not significant**.

Operation

- 9.63. The proposed development is largely impermeable material however there are areas of soft landscaping; primarily in Symphony Gardens, which has opportunity for water/contaminants to enter the ground water table.
- 9.64. On this basis, the operational pre-mitigation effect signification on the Groundwater is considered to be **Moderate adverse** which is **not significant**.

Mitigation Measures

Fluvial Flooding

Construction

- 9.65. During construction of the Proposed Development, there must be an excavation to formation level in the area of the Flood Zone 2. There is a chance that the construction may be impacted by a significant storm event. The time in which the construction level is below ground is minimal therefore this process can be managed by a construction management plan and the construction environmental management plan (CEMP). This plan should include an early warning method (Sign up to the EA flooding warning service) and a robust evacuation plan which should be included in the site induction pack.
- 9.66. On this basis, the proposed mitigation measures allow the construction impact to remain at **Minor adverse**

Operation

- 9.67. The majority of areas within the building onsite are built above the water level of the 1 in 1000 undefended level therefore the threshold levels to the building are situated outside of the floodplain. There are localised areas (retail unit 1 and cycle storage area) which are set below the 1 in 1000-year flood level and as such, is at an increased risk. This can be managed by introducing resilience measures set out in the FRA as recommended by the LLFA in Appendix G and by preparing a Flood Emergency plan. This plan should include an early warning method (Sign up to the EA flooding warning service) and a robust evacuation plan.
- 9.68. On this basis, the proposed mitigation measures allow the operational impact to remain at **Moderate adverse** therefore **not significant**.

Reservoir Breach Flooding

Construction

- 9.69. The time in which the construction level is below ground is minimal therefore this process can be managed by a construction management plan and the construction environmental management plan (CEMP). This plan should include an early warning method (Sign up to the EA flooding warning service) and a robust evacuation plan which should be included in the site induction pack.
- 9.70. On this basis, the proposed mitigation measures allow the construction impact to remain at **Minor adverse**.

Combined Sewer

Construction

- 9.71. The control of flow routes on site is the primary mitigation measure required to minimise silt and sediment from entering the sewer network. Areas where silt build up is expected, such as material stockpiles or at the bottom of slopes additional monitoring should take place and where required control measures such as traps and settlement plant installed. Additionally, to control the quantity of sediment washing into the wider network, a regime of road sweeping in conjunction with wheel washing for all construction vehicles will be implemented at all Site accesses.
- 9.72. The combined water sewers should be monitored by the Contractor using CCTV and lifting manholes to check from debris accumulation and any structural deformation or other defects. As required, debris can be removed by jetting and disposing of the resultant material appropriately. Appropriate remedial actions can be put in place to address any structural issues.
- 9.73. On this basis, the proposed mitigation measures allow the construction impact to be reduced from a Minor-Low Adverse to **Negligible** therefore **not significant**.

Operation

- 9.74. As the pre-mitigation impact significance for Sewer network is considered to be Minor Beneficial, no further mitigation is required.

Water Quality – Watercourses

Construction

- 9.75. During construction, measures will be put in place to limit the amount of silt and other pollutants that are able to reach the River Medlock. Silt can be controlled using traps and measures implemented to reduce the amount of material that could be washed into the Watercourse via overland flows. The use of cut off trenches to intercept the overland flow routes will also prevent pollution.
- 9.76. The risk of fuel and other oils entering the watercourse can be controlled by designating specific areas where refuelling and maintenance occurs. There should be spill kit's location around the site in easy reach and appropriate training included in the site induction/toolbox talk on how to effectively use the kits.
- 9.77. Storage of materials should be located an appropriate distance away from the watercourse to ensure there is limited flow routes for contamination to use to get the River Irwell.
- 9.78. All the proposed mitigation measures must be incorporated into the CEMP and recorded as part of the Construction Design and Management (CDM) requirements.
- 9.79. The mitigation is generally reliant on regular maintenance and appropriate training procedures onsite to allow each operative to understand their role should a spill occur.
- 9.80. On this basis, the proposed mitigation measures allow the construction impact to be reduced from Moderate to **Minor adverse**.

Operational

- 9.81. The proposed development has opportunities to pollute the watercourse as there are areas with regular vehicle movement located within the site.
- 9.82. The proposed drainage system has been installed for the extent of Newman Street; this includes a two-stage treatment system. The additional areas are considered lower risk areas with infrequent traffic use, and it is proposed that these areas also receive a level of treatment prior to discharge to the existing outfall to the Medlock.
- 9.83. On this basis, the proposed mitigation measures allow the operational impact to be reduced from Moderate to **Minor adverse**.

Water Quality – Ground Water

Construction

- 9.84. During construction, controls must be put in place to reduce the risk of pollutants such as oil, diesel and other construction related chemicals being spilled on the ground surface and then infiltrating. The risk can be controlled by limiting refuel/maintenance activities to an area where impermeable membranes and spill trays should be considered. Static plant placed through the site should have spill trays and be subjected to regular maintenance to minimise leaks and rectify as soon as possible.
- 9.85. Care should be taken when choosing material storage areas. Appropriate containment and monitoring should be in place to limit the degree to which infiltration can occur. Impermeable membranes may be considered, and spill kits located throughout the site from use if required.
- 9.86. All the proposed mitigation measures must be incorporated into the CEMP and recorded as part of the CDM requirements.
- 9.87. This mitigation measures are reliant on the operatives locating the issue and timely and correctly implementing the protection. There remains a risk that this is not carried out however the risk post mitigation can be reduced from Moderate to **Minor adverse**.

Operation

- 9.88. Symphony Gardens has opportunity for water/contaminants to enter the ground water table. However, the design will ensure that run-off will be treated and discharged into a designated drainage system. Any run-off directed towards symphony gardens will be designed with a specific construction to deal with contaminants and be directed appropriately to the downstream sewer network which will have adequate additional treatment.
- 9.89. On this basis, the proposed mitigation measures allow the operational impact to be reduced from Moderate to **negligible**.

Cumulative Effects

Fluvial Flooding

Construction

- 9.90. The cumulative effect on fluvial flood risk that other developments located in proximity pose to the Proposed Development are considered **Negligible**. It is assumed that the developments will implement their respective CEMP's and mitigation set out the NPPF which will ensure no increase in flood risk.

Operation

- 9.91. The operational cumulative effects of developments in proximity to the Proposed Development on fluvial flood risk is considered **Negligible**. It is assumed the developments are subject to the requirements of the NPPF and have the necessary approvals in place with United Utilities and the LLFA to ensure their developments do not increase the risk to any development outside of their respective redline boundaries.

Reservoir Flooding

Construction

- 9.92. The cumulative effects on the reservoir breach flooding the developments within or in close proximity pose to the development are considered **Negligible**. It is assumed that the developments will implement their respective CEMP's and mitigation set out the NPPF which will ensure no increase in flood risk.

Operation

- 9.93. The operational cumulative effects of developments in proximity to the Proposed Development of Reservoir Flooding is considered **Negligible**. It is assumed the developments are subject to the requirements of the EA and those included in the Manchester SFRA in terms of Flood Risk.

Combined Sewer

Construction

- 9.94. The cumulative effects of the developments in the vicinity of the Proposed Development during construction on combined water sewerage are considered **Negligible**. During Construction it is expected that each site follows an approved CEMP. Any connection to the sewer is managed by United Utilities therefore the cumulative impact of all developments is assumed to be **Negligible**.

Operation

- 9.95. United Utilities have confirmed there is sufficient capacity in the network to accept the foul water flows from the Proposed Development without restriction. It is assumed all nearby developments have discussed the discharge with United Utilities and are following the guidance provided. The cumulative impact to the network from the developments is considered **Negligible**.

Water Quality - Watercourses

Construction

- 9.96. The cumulative effect during construction of the developments in the vicinity of the Proposed Development on the water quality of local watercourses is considered **negligible**. It is assumed that each development has a CEMP and is followed to ensure protection is achieved.

Operation

- 9.97. The operational cumulative effects of developments in the vicinity of the Proposed Development on the water quality of watercourses is expected to be **negligible**. Each development must comply with the EA guidance and have an approved strategy to minimise the risk of contamination.

Water Quality – Ground Water

Construction

- 9.98. The cumulative effects of developments in the vicinity of the Proposed Development on groundwater quality are expected to be **negligible**. The underlying conditions are unknown therefore a direct pathway to the water table cannot be ruled out. The implementation of impermeable barriers will prevent cross contamination. It is assumed that the surrounding developments have a CEMP that minimises ground water contamination and is followed on site.

Operation

- 9.99. The cumulative effects of developments in the vicinity of the Proposed Development on groundwater quality are expected to be **negligible**. The underlying conditions are unknown therefore a direct pathway to the water table cannot be ruled out. It is assumed that the surrounding schemes limit contamination entering the watercourse in line with the guidance by the EA.

Residual Effects

- 9.100. Table 9.8 shows the summary of the effects, mitigation measures and the residual effects.

Table 9.8 - Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (i.e., Temporary/Permanent)	EIA Significance
Fluvial Flooding – Operation Phase Moderate adverse	Proposed development site and site end user	The majority of finished floor levels of the building are set in excess of the 1 in 1000-year scenario. Where below, resilience measures are proposed, and emergency procedures set out for occupation.	Mitigation through design and site management.	Minor adverse Permanent Impact	Not significant
Fluvial Flooding - Construction Phase Moderate adverse	Onsite Construction staff Wider Catchment area	During construction there is a chance of fluvial flooding during construction. An onsite Evacuation plan linked to the EA warning is required. Positions of the Compound, site welfare and storage should be at higher elevations on site.	An onsite Evacuation plan linked to the EA warnings. Positions of compound and site storage at higher elevations on site.	Minor. Temporary Impact	Not significant

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (i.e., Temporary/Permanent)	EIA Significance
Reservoir Flooding – Operation Phase Moderate adverse	Proposed development site and site end user	A robust flood evacuation plan developed in line with the Emergency services and future building management.	An onsite Evacuation plan linked to the EA warnings.	Minor adverse Permanent Impact	Not significant
Reservoir Flooding – Construction Phase Moderate adverse	Onsite Construction Staff	A robust flood evacuation plan developed as part of the CEMP by the contractor.	Development of the Flood Evacuation Plan as part of the CEMP.	Minor adverse Temporary Impact	Not significant
Combined Sewer Construction Phase Minor-Low Adverse.	Local sewer network	Onsite control of silt and sediment	Monitor wider network, CCTV, and surveys Placement of storage areas away from entrances to the network	Minor-adverse. Temporary Impact	Not significant
Combined Sewer Operation Phase Minor-Low Beneficial	Local Sewer network	None	None	Minor- Beneficial, Permanent Impact	Not significant
Groundwater Contamination – Construction Phase Moderate	Wider Catchment area Groundwater Quality Local Watercourses	Ensuring leachate from the material stores and spillages do not enter the groundwater table by ensuring material storage is away from the watercourse and the monitored to ensure no runoff is seen.	Contractor led CEMP	Minor-adverse. Temporary Impact	Not significant
Groundwater Contamination – Operational Phase Moderate	Wider Catchment area Groundwater Quality Local Watercourses	Run-off will be directed to designated drainage system. Where purpose-built SuDS introduced to public realm landscaping, adequate lining provided.	Mitigation through design and site management.	Minor-adverse. Permanent Impact	Not significant

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (i.e., Temporary/Permanent)	EIA Significance
Watercourse contamination – Construction Phase Moderate	Wider Catchment area Groundwater Quality Local Watercourses	Ensure the Leachate/sediment from materials storage does not enter the watercourse. To do this the material stores should be located away from the watercourse and the monitored to ensure no runoff gets to the watercourse. Care should be taken when working near the watercourse to make sure no material falls into the water	Contractor Lead CEMP	Minor-adverse. Temporary Impact	Not significant
Watercourse Contamination – Operational Phase Moderate	Wider Catchment area Groundwater Quality Local Watercourses	Pollution treatment measures	Mitigation through design and site management.	Negligible Permanent Impact	Not significant

Reference List

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

- Environment Agency flood maps for rivers and sea flooding.
- UK Government Long Term Flood Risk Information for surface water flooding and reservoir flooding.
- Manchester City, Salford City and Trafford Councils Level 1 Hybrid Strategic Flood Risk Assessment (SFRA) published in March 2010.
- Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA, User Guide, Final, dated May 2010.
- Manchester City, Salford City and Trafford Councils Level 2 Hybrid Strategic Flood Risk Assessment (SFRA) published in March 2011.
- Preliminary Flood Risk Assessment (PFRA) for Manchester County Council dated May 2011.
- Environment Agency Model Data from Manchester Ship Canal 2018 Study.
- United Utilities Public Sewer Records.
- Manchester City Council SuDS Requirements for New Developments.
- Survey Operations CCTV Survey Dated July 2012.
- Subscan Ltd CCTV Survey dated September 2015.
- GPR Survey by Survey Solutions dated October 2015.

10. Wind Microclimate

Introduction

- 10.1. This Chapter of the ES has been prepared by NOVA Fluid Mechanics Ltd and assesses the 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.
- 10.2. This Chapter is accompanied by a technical appendix, being the supporting technical report (NOVA Report 75019rep5v1, dated 11th May 2022) (Appendix 10.1).
- 10.3. The author of this chapter holds a PhD in Unsteady Aerodynamics and a Master's Degree in Aeronautical Engineering, both from Imperial College London, is an Associate of The City & Guilds Institute and a Member of the Royal Aeronautical Society, and has 8 years of experience in wind engineering, including over 75 wind microclimate wind tunnel studies and 10+ EIA's, both as a Principal Engineer and Project Manager with responsibility for the technical supervision and management of project engineering and technical support staff and commercial management of projects.

Legislative and Policy Context

National Planning Policy

- 10.4. The UK wide National Planning Policy Framework (NPPF) was revised in July 2021. 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 at paragraph-130.f:
"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;".
- 10.5. The Planning Practice Guidance provides a web-based resource in support of the NPPF. There is no specific guidance directly relating to wind microclimate issues.

Local Planning Policy

- 10.6. The Manchester Core Strategy Development Plan was adopted in July 2012. Policy EN2 states:
"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."
- 10.7. Section 12.14 states:
"Tall buildings by their very nature can dominate the street scene and be highly visible over long distances. They can also have an impact on the micro-climatic conditions, for example, by creating wind tunnels. It is for these reasons that it is considered particularly important that they are designed to the highest quality, both in terms of appearance and their impact on the functioning of surrounding space."
- 10.8. The Guide to Development in Manchester Supplementary Planning Document and Planning Guidance was adopted in April 2007. Section 2.4 states:
"Where the public realm includes hard landscaped areas, its design should reflect the level and nature of their use, and should consider issues such as overshadowing, prevailing winds and rain, and the potential to contribute to sustainable urban drainage. The opportunity will be taken to improve the quality of existing areas of public realm and to ensure that areas of public realm in new developments, are designed so that they can be enjoyed by residents and users, rather than being simply functional"
- 10.9. Section 12.8 states:
"Schemes will be considered on an individual basis, by reference to their appearance, their impact on the immediate area and the effect on the City's skyline. Key questions will be the quality and interest of the roofline; the design of the lower floors; the relationship to the surrounding streets; the impact of servicing and parking requirements; the microclimate, including overshadowing and air turbulence effects, created by the relationship of the building to those adjacent; and the quality and usability of the spaces surrounding the building"

Assessment Methodology and Significance Criteria

Assessment Methodology

- 10.10. The assessment of environmental wind flows in the built environment lies outside the scope of internationally recognised wind codes, which focus on wind loading issues. In addition, there are no handbooks or engineering guidelines from which reliable assessments of the complex environmental wind flows that shape the pedestrian level wind conditions can be derived.
- 10.11. A detailed quantification of the local wind microclimate requires a purposely designed boundary layer wind tunnel study, which combines wind speed-up factors at key areas in and around the Site with long-term wind frequency statistics to determine the probability of local wind speeds exceeding comfort and safety thresholds for a range of common pedestrian activities, based on the industry standard Lawson criteria, and wind mitigation measures developed and validated as required.
- 10.12. The methodology for quantifying the pedestrian level wind microclimate of the Proposed Development is outlined below:
1. Measure the building-induced wind speeds at pedestrian level in the wind tunnel;
 2. Adjust standard meteorological data to account for conditions at the Site;
 3. Combine these to obtain the expected frequency and magnitude of wind speeds at pedestrian level; and
 4. Compare the results with the widely accepted Lawson criteria to 'grade' conditions around the Site by reference to the planned/desired pedestrian activities.

Meteorological Conditions

- 10.13. Wind microclimate studies require that wind speed data obtained from a measurement station be transposed to the site of interest. The wind speed history, provided by weather centres such as Manchester International Airport, is reformatted into the number of observations of mean hourly wind speeds within each of several wind speed ranges, for each wind direction and for each month of the year.
- 10.14. A mathematical model (the Weibull cumulative distribution) is then used to determine the probability that, for a given wind direction, a particular wind speed, will be exceeded.
- 10.15. The resulting weather centre wind data is transposed to open country terrain at sea-level, accounting for upwind terrain, topography and altitude for the weather centre, before being transposed to reference height at the site of the Proposed Development, accounting for upwind terrain, topography and altitude for the Site.
- 10.16. The resulting annual and seasonal directional and wind speed probability distributions at the Site, at a reference height of 65 m above ground are given in Figure 10.1. As illustrated within these figures, the most frequent winds and the strongest winds at the Site blow from 180°. These winds are the most common cause of problematic wind conditions due to the possible combination of strong downdraughts, redirecting fast-moving upper-level winds toward ground, and acceleration around building corners or funnelling through narrow gaps.
- 10.17. Westerly winds are common during summer, with a strong component year-round. North and easterly winds are generally light, rarely occurring and usually do not cause adverse impacts at pedestrian level, except in spring when there is a north-easterly inversion.

Wind Tunnel Model

- 10.18. A 1:300 scale model of the Proposed Development and surrounding buildings within a 300m radius of the centre of the Site was constructed, in order to provide a reasonable balance between resolution and coverage of the study area.
- 10.19. At this scale, the model is large enough to allow a good representation of the details that are likely to affect the local and overall wind flows at full scale. In addition, this scale enables a good simulation of the turbulence properties of the wind to be achieved.
- 10.20. The model of the Proposed Development was constructed based on drawing information supplied by Deloitte, and the model of the existing surrounding area was based on publicly available information.

Soft Landscaping

- 10.21. The wind microclimate has been assessed for the Proposed Development with current soft landscaping proposals. As illustrated graphically within Figure 10.2, the modelled soft landscaping comprised of the following:
- 21 x ~4.5 m tall deciduous trees;
 - 16 x ~5.4 m tall deciduous trees; and

- 29 x ~7.5 m tall deciduous trees.

10.22. In addition, the model also incorporated the soft landscaping for the wider masterplan, comprising 60 x ~7.5 m tall deciduous trees and 33 x ~5.4 m tall deciduous trees, as well as three existing ~10.5 m tall deciduous trees to the south of the Mancunian Way underpass along Princess Street, illustrated graphically within Figure 10.3.

Measurement Technique and Data Analysis

- 10.23. Wind speed measurements at assessment locations were made using probes capable of measuring fluctuating pressure differences that are calibrated against wind speed. A system of probes running simultaneously was used to obtain results from 65 locations, 58 located at the ground level and 7 located on the rooftop terraces, at a height corresponding to 1.5 m at full scale.
- 10.24. Measurements were taken for a full range of wind directions in increments of 22.5° (0° coinciding with OS grid north). Recordings were taken for a sufficient length of time to determine the mean and gust wind speeds.
- 10.25. For each location, the measured wind speeds were combined with long-term wind frequency statistics to assess the potential effects of the Proposed Development on the local wind conditions in terms of the probability of local wind speeds exceeding comfort and safety thresholds considered suitable for a range of common pedestrian activities, based on the industry standard Lawson criteria.

Assessment Criteria

- 10.26. The assessment of wind conditions requires a 'standard' against which to benchmark the microclimate. The Lawson Criteria have been established for around 30 years and have been widely used on building developments across the UK.

Lawson Safety Criteria

- 10.27. At each area investigated, both within the Site and surrounding area, the suitability of the pedestrian level wind microclimate in terms of safety has been assessed based on the Lawson criteria for pedestrian safety. Safety is determined for the 'able-bodied' and for the 'general public'.
- 10.28. For the general public, a wind speed of 15 metres-per-second (m/s) occurring once per year is rated as unsafe with the potential to de-stabilise the less able members of the public, including the elderly, cyclists and children.
- 10.29. Able-bodied users are more likely to be capable of defending themselves against extreme pedestrian level winds and thus experience distress at a higher threshold wind speed of 20 m/s, once per year.
- 10.30. Details of the safety criteria are presented in the Table 10.1 and are based on the exceedance of the threshold wind speeds, based on the worst case of the mean hourly value and on the gust equivalent mean value, occurring once per annum.

Table 10.1 Lawson Safety Criteria

Threshold Wind Speed	Safety Rating	Description
> 15 m/s	S2 Unsuitable for general public	Less able and cyclists find conditions physically difficult
> 20 m/s	S1 Unsuitable for able-bodied	Able-bodied persons find conditions difficult. Physically impossible to remain standing during gusts.

Lawson Comfort Criteria

- 10.31. Lawson devised a scale for assessing the suitability of wind conditions in the built environment. The Lawson comfort criteria define a range of pedestrian activities from sitting through to more transient activities such as crossing the road, and for each activity define a threshold wind speed and frequency of occurrence beyond which the wind microclimate would be unsuitable for the stated activity. A frequency of occurrence of 5% has been established as giving a reasonable allowance for extreme and relatively infrequent winds that are acceptable within each category. The wind speeds and activities are described in Table 10.2.
- 10.32. The criteria reflect the fact that sedentary activity, such as sitting, requires a low wind speed for a reasonable level of comfort whereas for more transient activity (such as walking) pedestrians would tolerate stronger winds.
- 10.33. If the wind conditions exceed the threshold then the conditions are unacceptable for the stated activity. If the wind conditions are below the threshold then they are described as suitable for the stated activity.

- 10.34. The assessment takes full account of seasonal variations in wind conditions and pedestrian activities. For example, conditions for recreational activities focus on summer, but also consider spring and autumn, whilst conditions for pedestrian thoroughfare, access or waiting (e.g. bus stops) consider all seasons, with winter usually being the critical season. The pedestrian level wind environment assessment is summarised in terms of suitability for various activities.

Table 10.2 Lawson Comfort Criteria

Threshold Wind Speed	Comfort Rating	Description
4 m/s	C4	Long-term sitting Reading a newspaper and eating and drinking.
6 m/s	C3	Short-term standing / sitting Appropriate for bus stops, window shopping and building entrances.
8 m/s	C2	Leisure thoroughfare / strolling General areas of walking and sightseeing.
10 m/s	C1	Pedestrian transit (A-B) Local areas around tall buildings where people are not likely to linger.
> 10 m/s	C0	Uncomfortable for all users Uncomfortable for all pedestrian activities.

Target Wind Conditions

- 10.35. The target wind conditions for the Proposed Development are to be suitable, in terms on pedestrian safety and comfort, for a mixture of leisurely thoroughfare, entrance and recreational uses. At the terrace levels of the Proposed Development, target wind conditions should be suitable for outdoor seating.
- 10.36. The activities considered, and their relation to the Lawson comfort criteria, are summarised in Table 10.3.

Table 10.3 Suitability Assessment

Activity	Description	Lawson Comfort Criteria
Outdoor seating	For long periods of sitting such as for an outdoor café / bar, a private balcony.	‘Long-term sitting’ (C4) in Summer
Entrances, waiting areas, shop fronts	For pedestrian ingress / egress at a building entrance / shop front, window shopping, or short periods of sitting or standing such as at a bus stop, taxi rank, meeting point, etc.	‘Short-term standing / sitting’ (C3) in all seasons
Recreational spaces	For outdoor leisure uses such as a park, children’s play area, etc.	‘Short-term standing / sitting’ (C3) from Spring to Autumn
Leisure Thoroughfare	For access to and passage through the development and surrounding area.	‘Strolling’ (C2) in all seasons
Pedestrian Transit	For access to and passage through the development and surrounding area.	‘Pedestrian transit (A-B)’ (C1) in all seasons

Significance Criteria

- 10.37. The significance of effects is assessed based on the suitability of wind conditions in each area against either the current or planned pedestrian activities (as appropriate) at these locations. Although pedestrian perception, and thus sensitivity, differs with the activity being undertaken, this is directly considered within the assessment criteria.
- 10.38. The assessment criteria apply upper bounds of acceptability, and the exceedances have the potential to fundamentally alter the character of a space. It is therefore appropriate to consider the sensitivity of receptors as high.
- 10.39. In summary, the following criteria were used to assess likely wind conditions as a result of the Proposed Development:
- **Major Beneficial:** Any effect on wind conditions which improves pedestrian safety (such as an improvement in conditions from being considered unsafe to being considered safe);
 - **Moderate Beneficial:** Any effect on wind conditions that improves pedestrian comfort from unsuitable to suitable for planned activities;
 - **Minor Beneficial:** Any effect on wind conditions which improves pedestrian comfort from unsuitable to marginal/tolerable for planned activities, or from marginal/tolerable to suitable for planned activities;

- **Negligible:** Any effect that does not alter the suitability of existing wind conditions with respect to planned activities;
- **Minor Adverse:** Any effect on wind conditions which worsens pedestrian comfort from suitable to marginal/tolerable for planned activities, or from marginal/tolerable to unsuitable for planned activities;
- **Moderate Adverse:** Any effect on wind conditions that worsens pedestrian comfort from suitable to unsuitable for planned activities;
- **Major Adverse:** Any effect adversely affecting pedestrian safety.

10.40. A significant impact constitutes any adverse impact that is moderate in nature or more severe.

Limitations and Assumptions

- 10.41. The conditions for the Site during construction have not been directly assessed by the wind tunnel tests. Instead, professional judgement has been made to assess the conditions based on NOVA's extensive expertise in wind microclimate assessments, formed from detailed boundary layer wind tunnel studies on a variety of similar schemes.
- 10.42. The soft landscaping included on the wind tunnel model was represented as deciduous trees in winter, or bare, format in order to obtain conservative results, but it is presumed that trees planted as part of the development will be a species which is robust, and offers a worthwhile degree of alleviation of accelerated winds, i.e. the trees retain a substantial level of solidity during winter (lots of twigs and branches).

Baseline Conditions

Existing Baseline

- 10.43. The existing site is empty, being mostly hardstanding surrounded by hoarding, and has been used as a construction compound for building works around the wider masterplan area. The site is sheltered from prevailing winds by the surrounding mid-rise buildings and as such conditions are generally suitable for the existing uses.
- 10.44. The results of the assessment for the existing site are summarised in Figure 7.4.

Safety

- 10.45. Wind conditions in and around the existing site are suitable, in terms of pedestrian safety, for all users.

Comfort

- 10.46. Wind conditions in and around the existing site are suitable, in terms of pedestrian comfort, for the intended uses being a mixture of leisurely thoroughfare, entrances and recreational spaces.
- 10.47. The sole exception to this is the outdoor seating area on the south-west corner of the Vita Living building to the north-west [Location 43], which exceeds the criteria for long-term sitting in summer (5.9% against a threshold of 5%), being suitable for short-term sitting / standing only.

Future Baseline

- 10.48. The future baseline (the Extant Consent in the existing surrounding conditions) was assessed by BMT in 2019 for the extant planning permission on the Site. It should be noted that the cumulative schemes assessed at the time have now been completed and thus the corresponding scenario is considered in this assessment.
- 10.49. The results of the assessment for the future baseline are reproduced in Figure 7.5.

Safety

- 10.50. With the introduction of the Extant Consent into the existing surrounds, wind conditions were suitable, in terms of pedestrian safety, for all users.
- 10.51. A single exception to this occurred at the south-eastern corner of the Vita Living building to the north-west [location 44], where wind conditions rated as unsuitable for the general public, but suitable for the able-bodied. While the exceedance was marginally above the threshold criteria, BMT attributed this to the canopy around the building, which was missing during the BMT study (but has been included for the current assessment), and thus in all likelihood conditions at location 44 were expected to be acceptable in terms of pedestrian safety.

Comfort

- 10.52. With the introduction of the Extant Consent into the existing surrounds, wind conditions were generally suitable, in terms of pedestrian comfort, for the intended uses being a mixture of leisurely thoroughfare, entrances and recreational spaces.

- 10.53. It should be noted that whilst the vast majority of thoroughfares were suitable for leisurely thoroughfare, the south-eastern corner of the Vita Living building to the north-west [location 44] was suitable for pedestrian transit only.
- 10.54. However, the original assessment targeted pedestrian transit conditions as a minimum rather than leisurely thoroughfare, which is no longer recommended for wind microclimate assessments in general unless access is limited as anecdotally this level of comfort still results in complaints regarding the wind conditions.

Identification and Evaluation of Significant Effects

During Construction

- 10.55. During the demolition and construction works, there is potential for wind conditions to differ significantly from the completed scheme, due to the gradual construction of the proposed massing and relative exposure to prevailing winds. Pedestrian activities within the site will also be different during construction and will include restrictions on pedestrian movements in some areas for health and safety reasons, with construction workers constituting a variable but significant proportion of pedestrians around the site. Consequently, whilst wind conditions during the construction phase are expected to deteriorate, pedestrian perception of conditions, both within the Site and in the surrounding area, is likely to be as much affected by expectations of conditions around a building site as by the actual wind speeds, with pedestrians more likely to tolerate windier conditions, as they can appreciate it is a temporary situation. On this basis, the potential effect is **negligible**, which is **not significant**.
- 10.56. As construction of the Proposed Development progresses, the wind microclimate would gradually adjust to those of the completed Proposed Development described below.

During Operation

- 10.57. The Proposed Development is generally similar in height to the immediate surrounding buildings, which provide shelter from prevailing winds minimising the impact of any downdraughts. Consequently, wind conditions generally remain suitable for the intended uses.
- 10.58. The results of the assessment for the Proposed Development in existing surrounds are summarised in Figure 7.6.

Safety

- 10.59. Wind conditions in and around the Proposed Development in existing surrounds are suitable, in terms of pedestrian safety, for all users. This represents a **negligible** impact, which is **not significant**.

Comfort - Thoroughfares

- 10.60. With the introduction of the Proposed Development, wind conditions along the vast majority of thoroughfares in and around the Site remain suitable for the intended use, being comfortable for leisurely thoroughfare as a minimum throughout the year. This represents a **negligible** impact, which is **not significant**.
- 10.61. However, wind conditions around the north-east corner of the MSCP [Location 26] and the south-east corner of the Vita Living building to the north-west [Location 44] marginally exceed the criteria in winter (5.2-5.3% against a threshold of 5%), being suitable for pedestrian transit only, but would still be considered tolerable for the intended use in these areas. This represents a **minor adverse** impact, which is **not significant**.
- 10.62. Furthermore, there is also a localised winter-time exceedance to the east of the entrance at the north-west corner of the Proposed Development [Location 17] (6.7% against a threshold of 5%), being suitable for pedestrian transit only, but as the majority of the area is suitable for at least leisurely thoroughfare use throughout the year this is still considered to be acceptable. Consequently, the potentially **moderate adverse** impact is reduced to a **minor adverse** impact, which is **not significant**.

Comfort - Entrances

- 10.63. With the introduction of the proposed development, wind conditions at the designated entrances to the proposed development and surrounding buildings are suitable, in terms of pedestrian comfort, for ingress / egress and thus entrance use. This represents a **negligible** impact, which is **not significant**.

Comfort – Recreational Spaces

- 10.64. Wind conditions within the recreational spaces around the Proposed Development are suitable, in terms of pedestrian comfort, for short periods of sitting or standing from spring to autumn, and thus are suitable for their intended use. This represents a **negligible** impact, which is **not significant**.

Comfort – Outdoor Seating

- 10.65. Wind conditions within the vast majority outdoor seating areas around the Proposed Development are suitable, in terms of pedestrian comfort, for long-term sitting in summer, and thus suitable for their intended use. This represents a **negligible** impact, which is **not significant**.
- 10.66. The sole exception being the to the west of the south-west corner of the Proposed Development [Location 11], where wind conditions marginally exceed the criteria for long-term sitting in summer (5.4% against a threshold of 5%), being suitable for short-term sitting / standing only. Noting that the trees will provide additional shelter at this time of year compared to the bare winter-time trees modelled, it is expected that wind conditions will be at least tolerable, if not entirely suitable. This represents a **minor adverse** impact, which is **not significant**.

Comfort - Terraces

- 10.67. Wind conditions on the rooftop terraces are suitable for the intended use, being a mixture of outdoor seating and entrance use. This represents a **negligible** impact, which is **not significant**.

Mitigation Measures

- 10.68. The assessment has not identified any significant adverse impacts with respect to the wind microclimate for the Proposed Development. As such, no wind specific mitigation is required.

Cumulative Effects

- 10.69. Two cumulative schemes have been identified, however these do not fall within the wind tunnel model radius and thus a cumulative assessment was not required.

Residual Effects

- 10.70. The assessment has not identified any significant adverse impacts with respect to the wind microclimate for the Proposed Development. As such, the residual effects will be **negligible** to **minor adverse** and **not significant**.
- 10.71. A summary of the residual impacts is provided in Table 10.4.

Table 10.4 Summary of Receptors, Likely Significant Effects, Mitigation Measures, and Residual Effects

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				
Negligible effects on pedestrian safety	All	Not Required	N/A	Negligible effects on pedestrian safety. Permanent and not significant.
Negligible effects on pedestrian comfort	All	Not Required	N/A	Negligible effects on pedestrian comfort. Permanent and not significant.
Operational Phase				
Negligible effects on pedestrian safety	All	Not Required	N/A	Negligible effects on pedestrian safety. Permanent and not significant.
Minor adverse effects on pedestrian comfort - thoroughfares	All	Not Required	N/A	Minor adverse effects on pedestrian comfort – thoroughfares. Permanent and not significant.
Negligible effects on pedestrian comfort - entrances	All	Not Required	N/A	Negligible effects on pedestrian comfort – entrances. Permanent and not significant.
Negligible effects on pedestrian comfort - recreational spaces	All	Not Required	N/A	Negligible effects on pedestrian comfort - recreational spaces. Permanent and not significant.
Minor adverse effects on pedestrian comfort - outdoor seating	All	Not Required	N/A	Minor adverse effects on pedestrian comfort – outdoor seating. Permanent and not significant.
Negligible effects on pedestrian comfort - terraces	All	Not Required	N/A	Negligible effects on pedestrian comfort - Terraces. Permanent and not significant.

Reference List

- 10.72. This ES Chapter has been prepared by reference to the following:
1. Ministry of Housing, Communities & Local Government (2021), 'National Planning Policy Framework', London UK.
 2. Ministry of Housing, Communities & Local Government (2021), 'Planning practice guidance' Available at: <https://www.gov.uk/government/collections/planning-practice-guidance> (Accessed 4th April 2022), London UK.
 3. Manchester City Council (2012), 'Core Strategy Development Plan Document', Manchester, UK.
 4. Manchester City Council (2007), 'Guide to Development in Manchester Supplementary Planning Document and Planning Guidance', Manchester, UK.
 5. Lawson, T.V. (1990), 'The Determination of The Wind Environment of A Building Complex Before Construction'. University of Bristol, Department of Aeronautical Engineering, TVL/9025.
 6. BMT Report 600416rep1v1 (20th September 2019), 'Circle Square, Plot 12 - Wind Microclimate Study'.

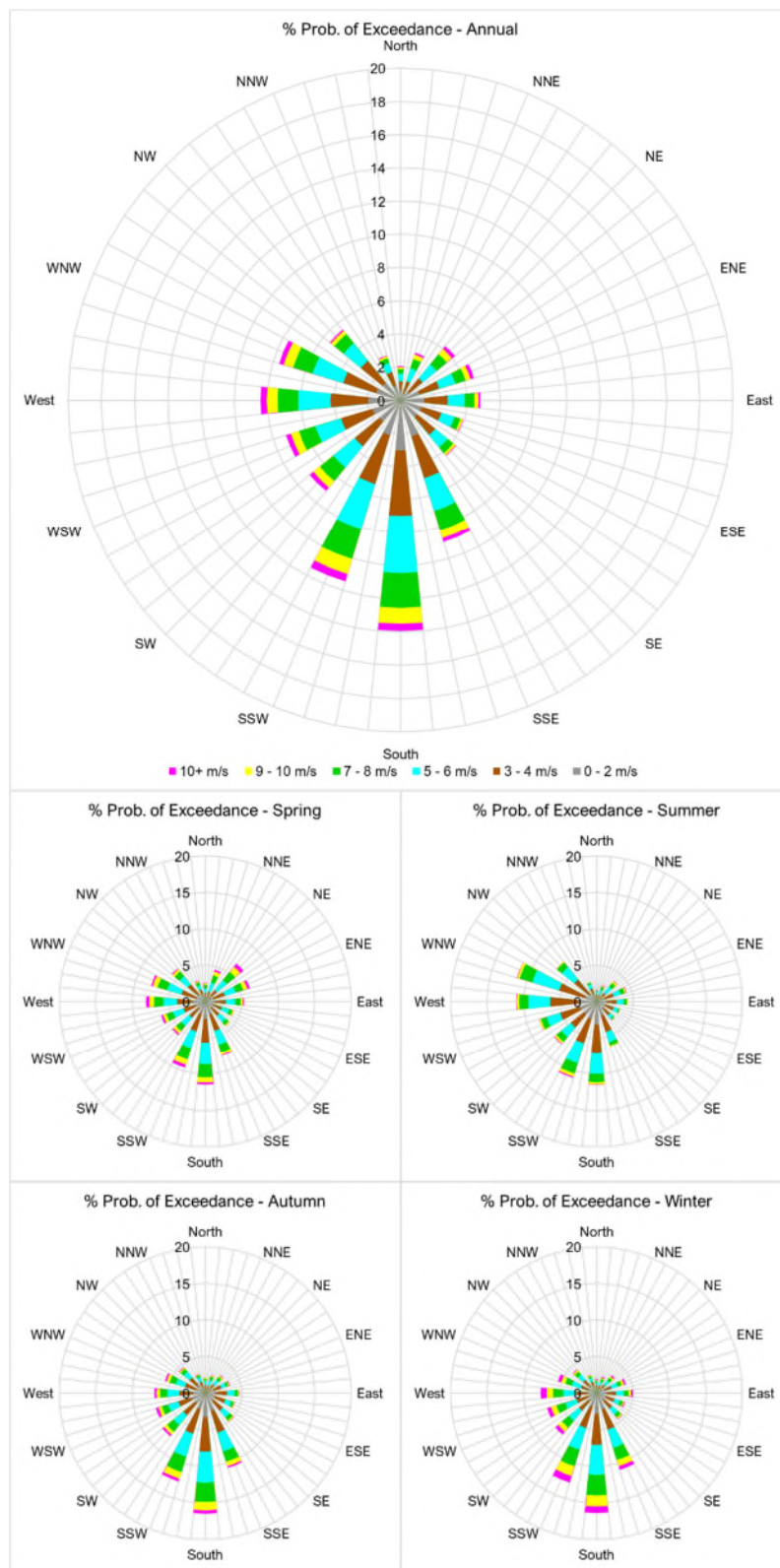


Figure:

Figure 10.1

Title:

Annual and Seasonal Cumulative Probability Distributions at the Site

	Project:	No.3 CSQ		
	Date:	June 2022	Scale:	Not To Scale

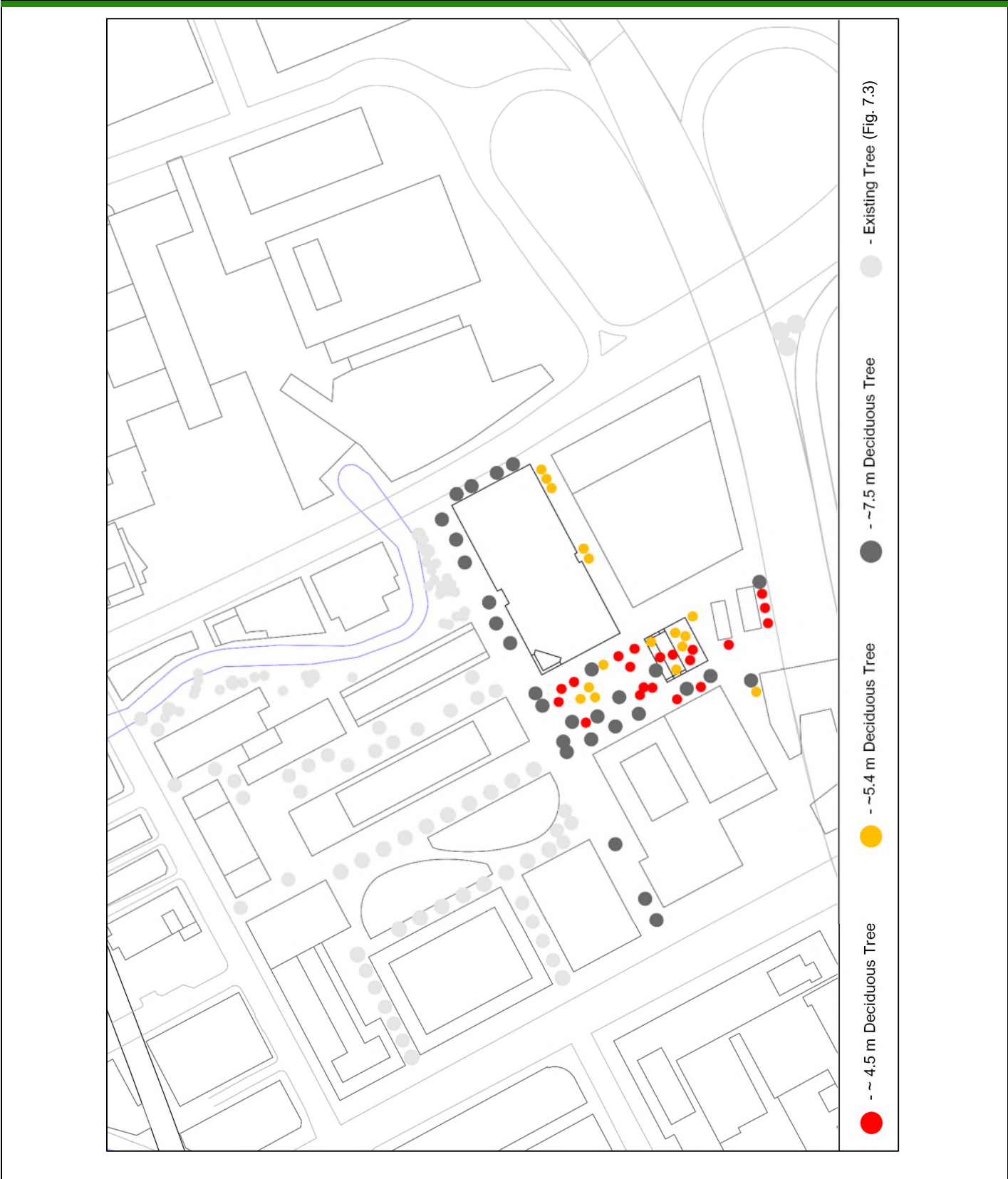


	Figure:	Figure 10.2
	Title:	Proposed Soft Landscaping

	Project:	No.3 CSQ		
	Date:	June 2022	Scale:	Not To Scale

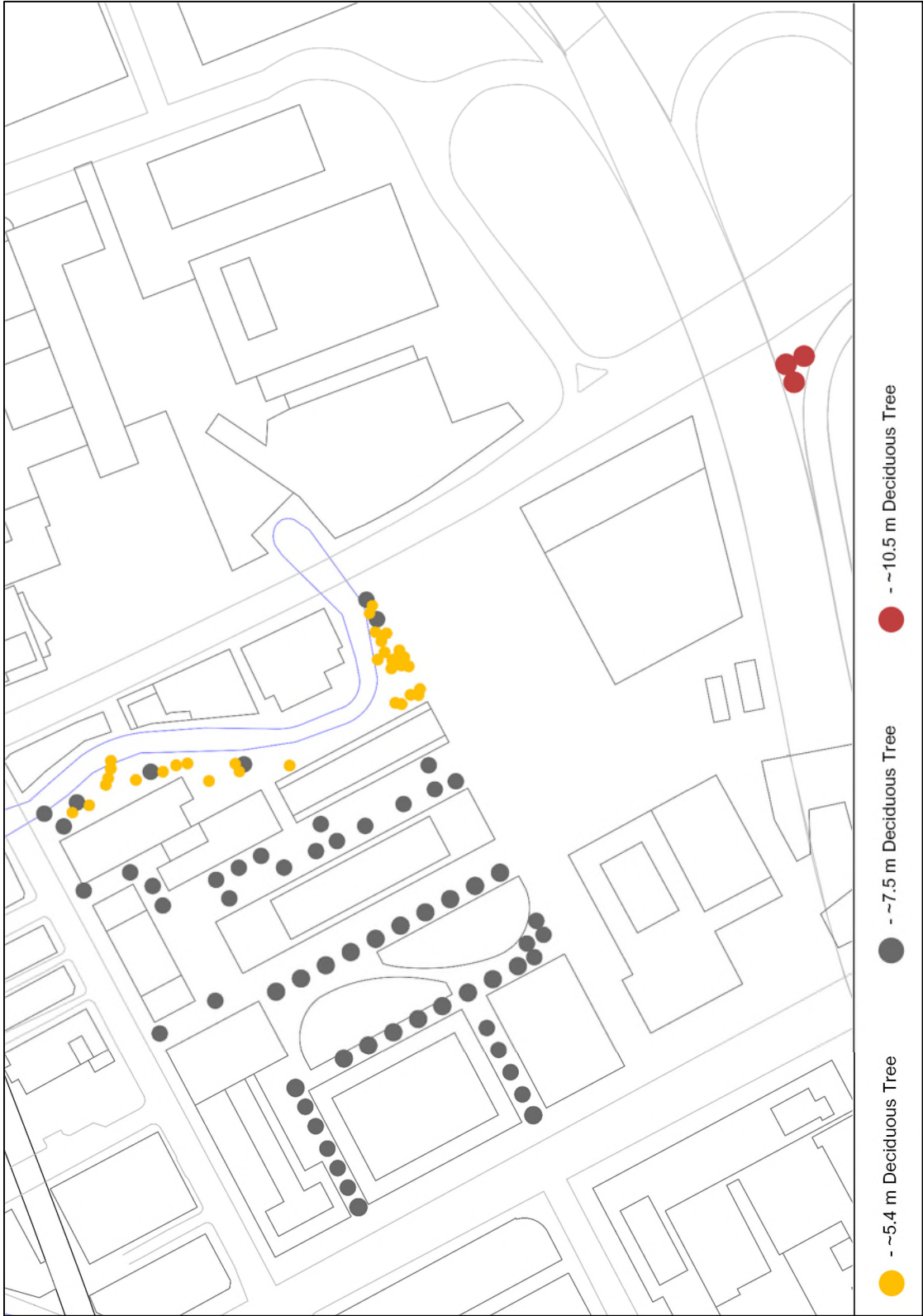


	Figure:	Figure 10.3
	Title:	Existing Soft Landscaping

	Project:	No.3 CSQ		
	Date:	June 2022	Scale:	Not To Scale

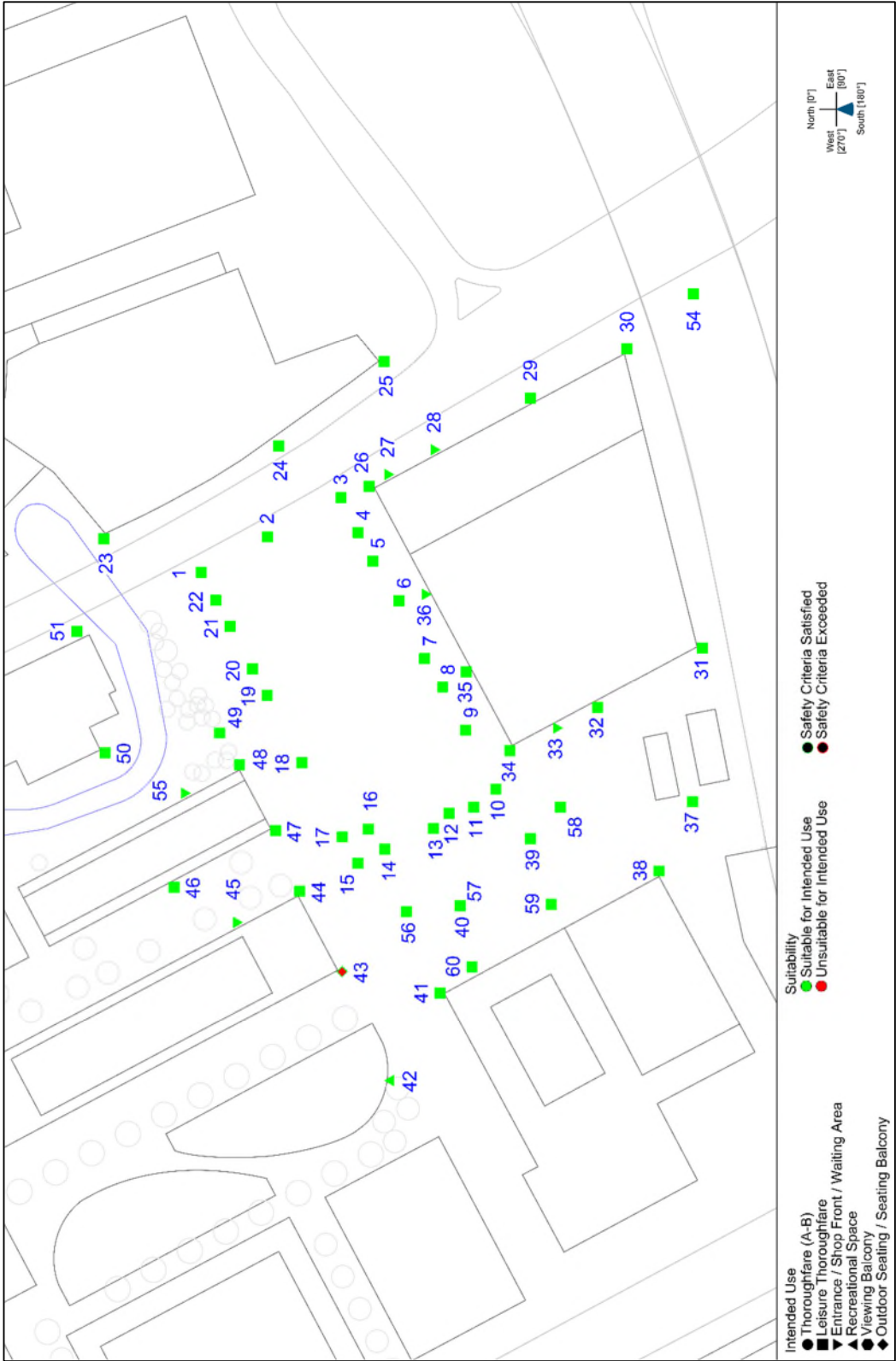


	Figure:	Figure 10.4
	Title:	Wind Microclimate Summary, Existing Site

	Project:	No.3 CSQ		
	Date:	June 2022	Scale:	Not To Scale

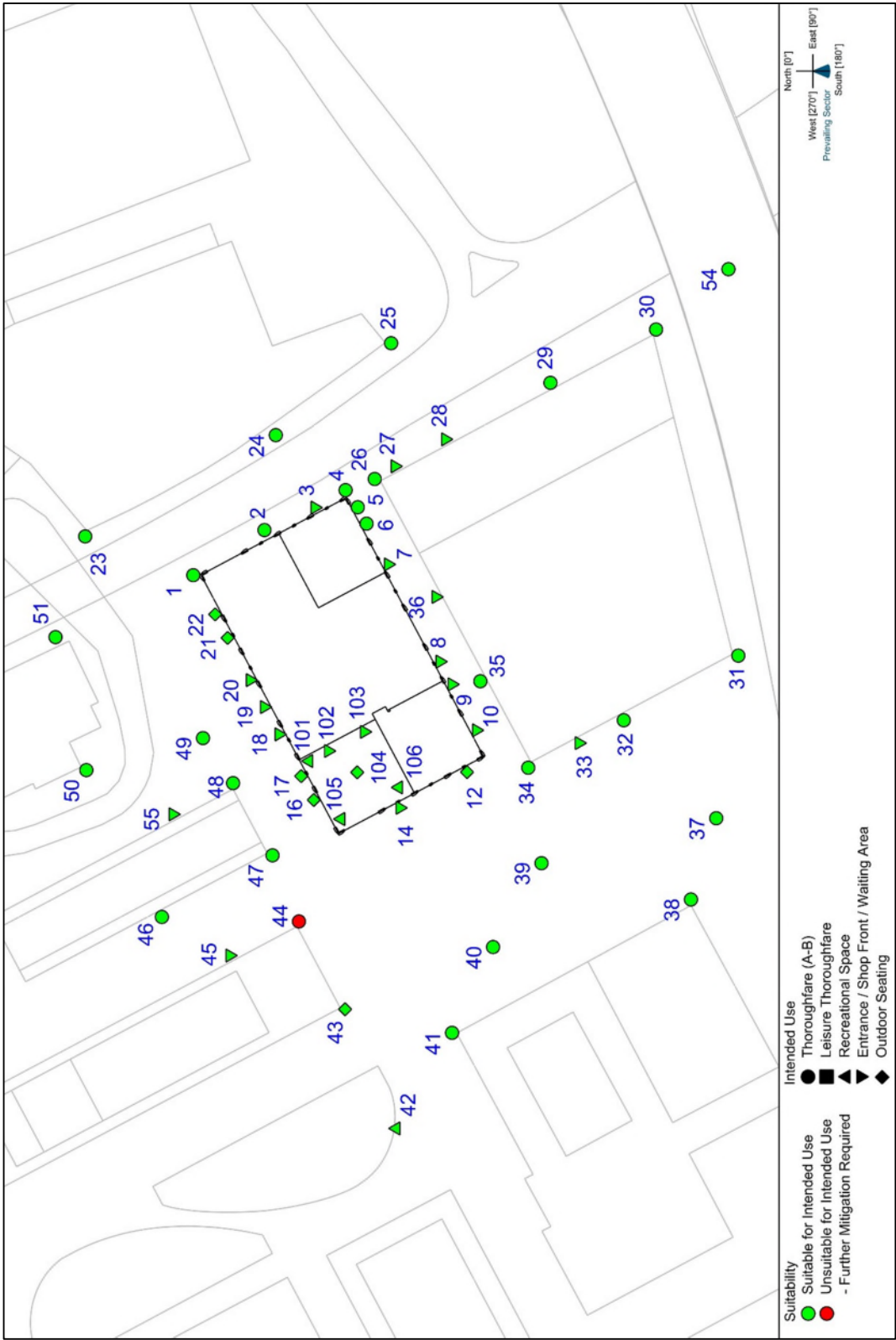


	Figure:	Figure 10.5		
	Title:	Wind Microclimate Summary, Future Baseline (BMT Report 600416rep1v1, dated 20 th Sep. 2019)		

	Project:	No.3 CSQ		
	Date:	June 2022	Scale:	Not To Scale

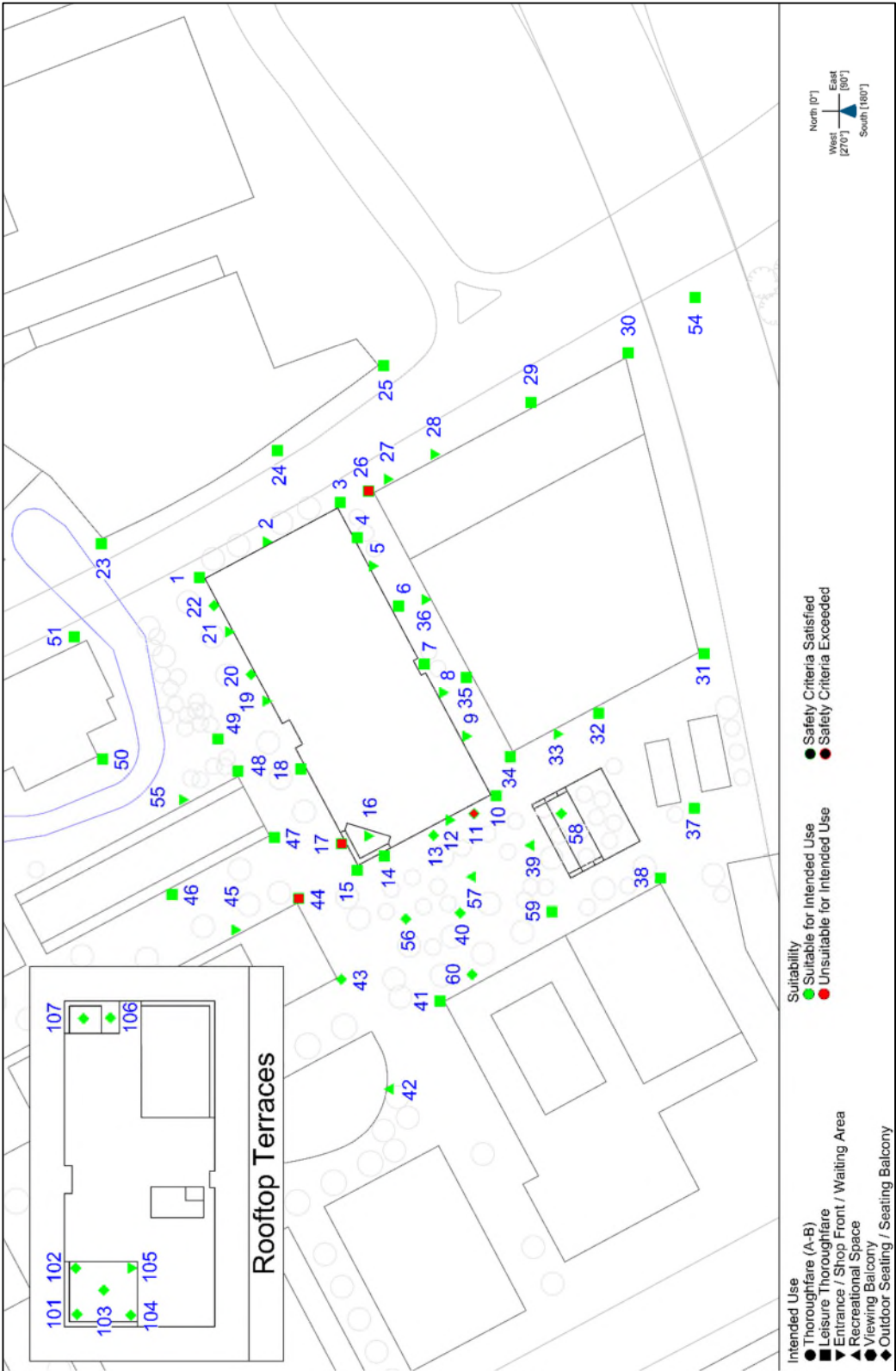


	Figure:	Figure 10.6
	Title:	Wind Microclimate Summary, Proposed Development in Existing Surrounds

	Project:	No.3 CSQ		
	Date:	June 2022	Scale:	Not To Scale

11.Type 1 Cumulative Effects

Introduction

- 11.1. This section gives consideration to 'Type 1' cumulative effects.
- 11.2. The assessment is informed by the results of the technical assessments as set out in Chapter 6 - 10 of the ES.
- 11.3. 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.
- 11.4. 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

- 11.5. 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'.
- 11.6. The EIA Regulations require 'a description of the likely significant effects', including cumulative effects.
- 11.7. 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

- 11.8. 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 19.9. 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.
- 11.9. The EC guidelines 'are not intended to be formal or prescriptive, but are designed to assist EIA practitioners in developing an approach which is appropriate to a project'.
- 11.10. Paragraph 24 of the National Planning Practice Guidance (NPPG) (Reference ID: 4-024-20170728) outlines the consideration to be given to cumulative effects in the context of EIA:

"Each application (or request for a screening opinion) should be considered on its own merits. There are occasions, however, when other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a Proposed Development. The local planning authorities should always have regard to the possible cumulative effects arising from any existing or approved development."

Assessment Methodology and Significance Criteria

Methodology

- 11.11. This assessment is primarily concerned with where there is a likelihood of significant Type 1 cumulative effects occurring, in accordance with EIA practice and the NPPG guidance.
- 11.12. The assessment is based on experience and professional judgement, drawing upon relevant guidance set out above and the residual environmental effects identified within the results of the EIA technical assessments. The assessment has been undertaken by suitably qualified and experienced EIA practitioners.

- 11.13. The assessment has primarily focused on sensitive receptors identified within close proximity to the Site (e.g. local residents and businesses located in close proximity to the Site), likely cumulative effects, and their capacity to accommodate changes that will occur as a result of the combined residual environmental effects.
- 11.14. Relevant guidance has been reviewed, and an approach has been developed which uses the residual environmental effects identified within the ES. An exercise which tabulates the residual effects against receptors or receptor groups has then been carried out in order to identify the potential for Type 1 cumulative effects.
- 11.15. Negligible or neutral residual effects have been excluded from the assessment as, by their nature, they are considered to be imperceptible. Therefore, only minor, moderate or major effects have been given consideration during the assessment.
- 11.16. For the purposes of the assessment, receptor groups have been identified as those surrounding the Site and those identified within the individual technical assessments.

Significance Criteria

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

Limitations and Assumptions

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

Identification of Likely Significant Type 1 Cumulative Effects

Construction Phase

- 11.21. Based on the methodology detailed above, Table 11.1 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 12.1 Type 1 Cumulative Effects – Construction Phase

Sensitive Receptor Group	Construction Phase Residual Effects	Likely Significant Effects
Construction site workers	Noise: Potential minor adverse noise, vibration on construction workers during construction works.	No likely significant Type 1 cumulative effects.
Neighbouring users	Noise: Short term minor adverse impacts arising from construction noise and vibration, and transport.	No likely significant Type 1 cumulative effects.

	Wind: Negligible impact on pedestrian safety and comfort in regard to wind microclimate.	
Local watercourses and ground water	Water Courses: Minor to moderate adverse possibility of leachate or sediment entering a watercourse / groundwater Combined Sewers: Negligible to minor adverse impact on combined sewers Flooding: Moderate adverse possibility for fluvial / reservoir flooding	No likely significant Type 1 cumulative effects.
Views, visual setting, and townscape	Townscape and Visual Impact: Minor adverse impacts on surrounding townscape character.	No likely significant Type 1 cumulative effects.
Carbon Emissions	Climate Change: Minor adverse impacts when considered whole life carbon emissions in relation to RIBA 2030.	No likely significant Type 1 cumulative effects.

- 11.22. Table 11.1 shows that there is unlikely to in-combination construction phase Type 1 cumulative effects. The proposals construction methods are typical of an urban construction project and the ES has identified a number of key mitigation measures to be employed during the construction phase to mitigate and minimise construction impacts. These mitigation measures are expected to be secured by a Construction and Environmental Method Plan, which is standard construction best practice, to be agreed between the Applicant and MCC as a planning condition.

Operational Phase

- 11.23. Based on the methodology detailed above, Table 11.2 presents the results of the review of the potential for interactions of individual effects during the operational phase of development. The potential effect interactions are then discussed further.

Table 11.1 Type 1 Cumulative Effects – Operational Phase

Sensitive Receptor Group	Operational Phase Residual Effects	Likely Significant Effects
Neighbouring residential properties	Daylight and Sunlight: Negligible to Moderate adverse on impacts on daylight and sunlight of surrounding properties.	No likely significant Type 1 cumulative effects.
Views, visual setting, and townscape	Townscape and Visual Impact: Minor to major adverse beneficial impacts on select views.	No likely significant Type 1 cumulative effects.
Proposed Residential Population	Wind Microclimate: Negligible to minor adverse impact on comfort and safety.	No likely significant Type 1 cumulative effects.
Pedestrians and Cyclists	Wind Microclimate: Negligible to minor adverse impact on comfort and safety.	No likely significant Type 1 cumulative effects.
Local watercourses	Water Courses: Minor to moderate adverse possibility of groundwater contamination and negligible impact on watercourses Combined Sewers: Negligible to minor beneficial impact on combined sewers Flooding: Moderate adverse possibility for fluvial / reservoir flooding	No likely significant Type 1 cumulative effects.

Carbon Emissions	Climate Change: Minor to moderate adverse impacts when considered whole life carbon emissions in relation to RIBA 2030.	No likely significant Type 1 cumulative effects.
------------------	---	--

11.24. Table 11.2 shows that there is unlikely to be in-combination operational phase Type 1 cumulative effects to arise. This is due to the extensive technical assessments throughout the design process and the identified mitigation in-built into the design.

Mitigation Measures

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

11.26. No mitigation is proposed for the identified Type 1 cumulative effects.

12. Summary of Residual Impacts

Climate Change

Environmental Effect	Sensitivity of Receptor	Nature of Impact	Impact Magnitude	Significance	Additional Mitigation	Residual Impact Magnitude	Residual Significance of Effect
Whole Life Embodied emissions	High	Adverse	Minor	Minor	Whole life carbon and construction reduction measures and the reuse and efficient use of materials	Minor	Minor Adverse
Operational Building Emissions	High	Adverse	Moderate - Minor	Moderate-Minor Adverse	Robust monitoring, enhanced fabric, low energy use M&E and smart controls. The inclusion of PV's and air and water source heat pumps.	Moderate - Minor	Moderate-Minor Adverse

Daylight, Sunlight and Overshadowing

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				
Daylight	Scoped Out	-	-	-
Sunlight	Scoped Out	-	-	-
Operational Phase				
Daylight	Vita Living	None Required	N/A	Minor Permanent Adverse (Non-Significant Effect)
	Montana House	None Required	N/A	Negligible Permanent Adverse (Non-Significant Effect)
	Princess House	None Required	N/A	Moderate Permanent Adverse (Non-Significant Effect)
Sunlight	Vita Living	None Required	N/A	Minor Permanent Adverse (Non-Significant Effect)
	Montana House	None Required	N/A	Negligible Permanent Adverse (Non-Significant Effect)
	Princess House	None Required	N/A	Moderate Permanent Adverse (Non-Significant Effect)

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				
Minor neutral effects	Townscape character	None	N/A	Minor neutral effects. Temporary. Minor significance.
Minor neutral effects	Urban grain	None	N/A	Minor neutral effects. Temporary. Minor significance.
No Change	Land use	None	N/A	No Change. Temporary. Not Significant.
Minor neutral effects	Building heights	None	N/A	Minor neutral effects. Temporary. Minor significance.
Minor neutral effects	Movement and linkages	None	N/A	Minor neutral effects. Temporary. Not Significant.
No Change	Public open space	None	N/A	No Change. Temporary. Not Significant.
Minor neutral effects	Site character	None	N/A	Minor neutral effects. Temporary. Minor significance.
Minor adverse effects	Viewpoint 1	None	N/A	Minor adverse effects. Temporary. Minor significance.
Minor neutral effects	Viewpoint 2	None	N/A	Minor neutral effects. Temporary. Minor significance.
Moderate neutral effects.	Viewpoint 3	None	N/A	Moderate neutral effects. Temporary. Minor significance.
Moderate neutral effects.	Viewpoint 4	None	N/A	Moderate neutral effects. Temporary. Minor significance.
Minor neutral effects	Viewpoint 5	None	N/A	Minor neutral effects. Temporary. Minor significance.
Minor neutral effects	Viewpoint 6	None	N/A	Minor neutral effects. Temporary. Minor significance.
Operational Phase				
Minor beneficial effects	Townscape character	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Minor beneficial effects	Urban grain	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Minor beneficial effects	Land use	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Minor beneficial effects	Building heights	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Moderate beneficial effects	Movement and linkages	None	N/A	Moderate beneficial effect. Permanent. Moderately significant.
Moderate beneficial effects	Public open space	None	N/A	Moderate beneficial effect. Permanent. Moderately significant.
Major beneficial	Site character	None	N/A	Major beneficial effect. Permanent. Moderately significant.
Minor beneficial effects	Viewpoint 1	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Minor beneficial effects	Viewpoint 2	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Moderate beneficial effects	Viewpoint 3	None	N/A	Moderate beneficial effect. Permanent. Moderately significant.

Moderate beneficial effects	Viewpoint 4	None	N/A	Moderate beneficial effect. Permanent. Moderately significant.
Minor beneficial effects	Viewpoint 5	None	N/A	Minor beneficial effect. Permanent. Minor significance.
Minor beneficial effects	Viewpoint 6	None	N/A	Minor beneficial effect. Permanent. Not significant

Water Quality, Drainage and Flood Risk

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (i.e., Temporary/Permanent)	EIA Significance
Fluvial Flooding – Operation Phase Moderate adverse	Proposed development site and site end user	The majority of finished floor levels of the building are set in excess of the 1 in 1000-year scenario. Where below, resilience measures are proposed, and emergency procedures set out for occupation.	Mitigation through design and site management.	Minor adverse Permanent Impact	Not significant
Fluvial Flooding - Construction Phase Moderate adverse	Onsite Construction staff Wider Catchment area	During construction there is a chance of fluvial flooding during construction. An onsite Evacuation plan linked to the EA warning is required. Positions of the Compound, site welfare and storage should be at higher elevations on site.	An onsite Evacuation plan linked to the EA warnings. Positions of compound and site storage at higher elevations on site.	Minor. Temporary Impact	Not significant
Reservoir Flooding – Operation Phase Moderate adverse	Proposed development site and site end user	A robust flood evacuation plan developed in line with the Emergency services and future building management.	An onsite Evacuation plan linked to the EA warnings.	Minor adverse Permanent Impact	Not significant
Reservoir Flooding – Construction Phase Moderate adverse	Onsite Construction Staff	A robust flood evacuation plan developed as part of the CEMP by the contractor.	Development of the Flood Evacuation Plan as part of the CEMP.	Minor adverse Temporary Impact	Not significant

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (i.e., Temporary/Permanent)	EIA Significance
Combined Sewer Construction Phase Minor-Low Adverse.	Local sewer network	Onsite control of silt and sediment	Monitor wider network, CCTV, and surveys Placement of storage areas away from entrances to the network	Minor-dverse. Temporary Impact	Not significant
Combined Sewer Operation Phase Minor-Low Beneficial	Local Sewer network	None	None	Minor- Beneficial, Permanent Impact	Not significant
Groundwater Contamination – Construction Phase Moderate	Wider Catchment area Groundwater Quality Local Watercourses	Ensuring leachate from the material stores and spillages do not enter the groundwater table by ensuring material storage is anyway from the watercourse and the monitored to ensure no runoff is seen.	Contractor led CEMP	Minor-adverse. Temporary Impact	Not significant
Groundwater Contamination – Operational Phase Moderate	Wider Catchment area Groundwater Quality Local Watercourses	Run-off will be directed to designated drainage system. Where purpose-built SuDS introduced to public realm landscaping, adequate lining provided.	Mitigation through design and site management.	Minoradverse. Permanent Impact	Not significant
Watercourse contamination – Construction Phase Moderate	Wider Catchment area Groundwater Quality Local Watercourses	Ensure the Leachate/sediment from materials storage does not enter the watercourse. To do this the material stores should be located away from the watercourse and the monitored to ensure no runoff gets to the watercourse.	Contractor Lead CEMP	Minoradverse. Temporary Impact	Not significant

Likely Significant Effect	Receptor(s)	Mitigation Measure	Means of Implementation of Mitigation	Post Mitigation Residual Effect – Significance and Duration (i.e., Temporary/Permanent)	EIA Significance
		Care should be taken when working near the watercourse to make sure no material falls into the water			
Watercourse Contamination – Operational Phase Moderate	Wider Catchment area Groundwater Quality Local Watercourses	Pollution treatment measures	Mitigation through design and site management.	Negligible Permanent Impact	Not significant

Wind Microclimate

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				
Negligible effects on pedestrian safety	All	Not Required	N/A	Negligible effects on pedestrian safety. Permanent and not significant.
Negligible effects on pedestrian comfort	All	Not Required	N/A	Negligible effects on pedestrian comfort. Permanent and not significant.
Operational Phase				
Negligible effects on pedestrian safety	All	Not Required	N/A	Negligible effects on pedestrian safety. Permanent and not significant.
Minor adverse effects on pedestrian comfort - thoroughfares	All	Not Required	N/A	Minor adverse effects on pedestrian comfort – thoroughfares. Permanent and not significant.
Negligible effects on pedestrian comfort - entrances	All	Not Required	N/A	Negligible effects on pedestrian comfort – entrances. Permanent and not significant.
Negligible effects on pedestrian comfort - recreational spaces	All	Not Required	N/A	Negligible effects on pedestrian comfort - recreational spaces. Permanent and not significant.
Minor adverse effects on pedestrian comfort - outdoor seating	All	Not Required	N/A	Minor adverse effects on pedestrian comfort – outdoor seating. Permanent and not significant.
Negligible effects on pedestrian comfort - terraces	All	Not Required	N/A	Negligible effects on pedestrian comfort - Terraces. Permanent and not significant.



This report has been prepared for Bruntwood Circle Square 12 Ltd and on the understanding that it will be made publicly available.

All copyright and other proprietary rights in the report remain the property of Deloitte LLP and any rights not expressly granted in these terms or in the Contract are reserved. No party other than Bruntwood Circle Square 12 Ltd is entitled to rely on the report for any purpose whatsoever and thus we accept no liability to any other party who is shown or gains access to this document. The information contained within this report is provided to assist Bruntwood Circle Square 12 Ltd with this Application. The report makes use of a range of third-party data sources.

Whilst every reasonable care has been taken in compiling this report, Deloitte LLP cannot guarantee its accuracy. If this document contains details of an arrangement that could result in a tax or National Insurance saving, no such conditions of confidentiality apply to the details of that arrangement (for example, for the purpose of discussion with tax authorities). The scope of our Services does not include any consideration of the likely impact of Coronavirus (COVID-19) on the project or transaction to which our Services relate (including but not limited to any impact on valuation, planning, construction, maintenance, or costs). We recommend that if you have not done so already, you should consider the increasingly broad effects of COVID-19 and its negative impact on the UK and global economy and major financial markets.

Deloitte LLP is a limited liability partnership registered in England and Wales with registered number OC303675 and its registered office at 1 New Street Square, London, EC4A 3HQ, United Kingdom. Deloitte LLP is the United Kingdom affiliate of Deloitte NSE LLP, a member firm of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"). DTTL and each of its member firms are legally separate and independent entities. DTTL and Deloitte NSE LLP do not provide services to clients.

Please see www.deloitte.com/about to learn more about our global network of member firms. Real Estate Services regulated by RICS.

© 2022 Deloitte LLP. All rights reserved. This publication has been written in general terms and we recommend that you obtain professional advice before acting or refraining from action on any of the contents of this publication. Deloitte LLP accepts no liability for any loss occasioned to any person acting or refraining from action as a result of any material in this publication.